Optoelectronics, Solid State Illumination & Displays

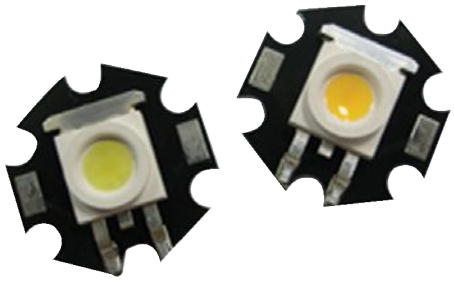
Latest Products from...

LED's



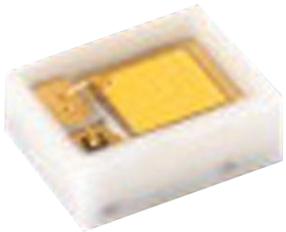
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Power LED's



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Flash LED's



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TFT Colour LCD Modules



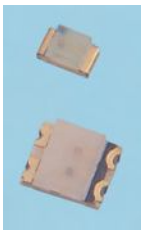
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Avago Technologies Light Emitting Diodes (LEDs)

Surface Mount – 'Flip Chip'

Top, Right Angle and Reverse Mounting



Dimensions (mm)
C170 - W=2.0, D=1.25, H=1.1
C155 - W=3.2, D=2.7, H=1.1
C660, S660 - W=3.0, D=1.0, H=2.0
C110 - W=3.2, D=1.0, H=1.5
C265 - W=3.4, D=1.25, H=1.1
S690 - W=1.6, D=0.8, H=0.7
S670 - W=2.0, D=1.25, H=1.1
Supplied on 8mm tape.
Peak Inverse Voltage (PIV)=5

Colour	View Angle	Typ Lum Intensity @ 20mA (mcd)	I_F (mA) (max)	Peak Wavelength	Mftrs. List No.	Order Code
Tinted, Diffused Lens - Top Mount						
HE Red	170°	10	20	630nm	HSMS-C170	579-0839
HE Red	170°	17	25	660nm	HSMH-C170	579-0840
Orange	170°	8	20	605nm	HSMD-C170	579-0864
Yellow	170°	8	20	589nm	HSMY-C170	579-0876
Green	170°	15	20	570nm	HSMG-C170	579-0852
Blue	170°	6	25	428nm	HSMB-C170	322-5100
Blue	170°	6	25	428nm	HSMB-C190	322-5112
Untinted, Diffused Lens - Top Mount						
Red	170°	10	25	630nm	HSMS-C150.	855-4757
Red	170°	10	20	630nm	HSMS-C190.	855-4765
Red	170°	10	30	630nm	HSMH-C150.	855-4633
Red	170°	10	25	630nm	HSMH-C190.	855-4641
Red	170°	10	25	630nm	HSMH-C191.	855-4650
Red	170°	90	25	637nm	HSMC-C170.	855-4501
Red	170°	90	25	637nm	HSMC-C190.	855-4510
Red	170°	90	25	637nm	HSMC-C191.	855-4528
Red	170°	165	25		HSMZ-C170	165-2120
Red	165°	50	30	630nm	HSMC-S670	322-5150
Red	170°	165			HSMZ-C190	165-2121
Amber	165°	65	30	592nm	HSMA-S670	322-5136
Amber	165°	65	30	592nm	HSMA-S690	322-5148
Amber	170°	90	25	595nm	HSMA-C170.	855-4463
Amber	170°	90	25	595nm	HSMA-C190.	855-4471
Amber	170°	90	25	595nm	HSMA-C191.	855-4480
Orange	170°	8	25	605nm	HSMD-C150.	855-4544
Orange	170°	8	20	605nm	HSMD-C190.	855-4552
Orange	170°	90	25	609nm	HSML-C170.	855-4676
Orange	170°	90	25	609nm	HSML-C191.	855-4684
Orange	170°	90	25		HSML-C190	165-2103
Yellow	170°	8	25	570nm	HSMY-C150.	855-4773
Yellow	170°	8	20	570nm	HSMY-C190.	855-4781
Yellow	170°	8	20	570nm	HSMY-C191.	855-4790
Green	170°	15	25	570nm	HSMG-C150.	855-4595
Green	170°	15	20	570nm	HSMG-C190.	855-4609
Green	170°	15	20	570nm	HSMG-C191.	855-4617
Green	170°	50	20		HSME-C170	165-2087
Green	170°	50	20		HSME-C190	165-2088
Green	140°	145	20		HSMQ-C190	165-2106
Green	140°	145	20	520nm	HSMQ-C150.	855-4706
Green	140°	145	20	520nm	HSMQ-C170.	855-4714
Blue	140°	55	20	469nm	HSMR-C150.	855-4730
Blue	140°	55	20	469nm	HSMR-C170.	855-4749
Blue	140°	55	20		HSMR-C190	165-2108
Bi-Colour Untinted, Diffused Lens - Top Mount						
HE Red / Green	170°	10 / 15	25	630nm / 570nm	HSMF-C155	579-0888
Tri-Colour Untinted, Diffused Lens - Top Mount						
Red / Green / Blue	130°	40 / 120 / 120	20	637nm / 523nm / 468nm	HSMF-C118	165-2090
Untinted, Non-diffused Lens - Right Angle Mount						
Red	130°	95	25	637nm	HSMC-C110.	855-4498
Red	130°	10	30	630nm	HSMH-C110.	855-4625
Red	130°	170	25		HSMZ-C110	165-2119
Amber	130°	95	25	595nm	HSMA-C110.	855-4455
Orange	130°	8	25	605nm	HSMD-C110.	855-4536
Orange	130°	95	25	609nm	HSML-C110.	855-4668
Green	130°	150	20	520nm	HSMQ-C110.	855-4692
Green	130°	52	20		HSME-C110	165-2086
Blue	170°	6.5	30	428nm	HSMB-C110	322-5124
Blue	130°	60	20	469nm	HSMR-C110.	855-4722
Untinted, Diffused Lens - Right Angle Mount						
HE Red	130°	11	25	630nm	HSMS-C110	322-9567
Red	155°	16	25	650nm	HSMH-C660	947-994
Red	155°	50	30	630nm	HSMC-S660	322-9555
Orange	155°	65	30	609nm	HSMD-S660	322-9592
Yellow	130°	9	25	589nm	HSMY-C110	322-9579
Green	130°	16	25	570nm	HSMG-C110	322-9580
Blue White	155°	110	20		HSMW-B120	165-2112
Untinted, Non-diffused Lens - Reverse Mount						
Green	170°	50	20		HSME-C265	165-2089
Green	140°	140	20		HSMQ-C265	165-2107
Blue	150°	45	20		HSMR-C265	165-2109
Untinted, Diffused Lens - Reverse Mount						
HE Red	170°	17	25	660nm	HSMH-C265	579-0890
Green	170°	15	25	570nm	HSMG-C265	579-0906
Blue White	150°	110	20		HSMW-B265	165-2115
White	150°	180			HSMW-C265	165-2116

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Order Multiple=5

Colour	Mftrs. List No.	Order Code	Price Each 5+	100+	250+	500+
Tinted, Diffused Lens - Top Mount						
HE Red	HSMS-C170	SMD 579-0839 RL	0.129	0.095	0.082	0.076
HE Red	HSMH-C170	SMD 579-0840 RL	0.129	0.095	0.082	0.076
Orange	HSMD-C170	SMD 579-0864 RL	0.129	0.095	0.082	0.076
Yellow	HSMY-C170	SMD 579-0876 RL	0.129	0.095	0.082	0.076
Green	HSMG-C170	SMD 579-0852 RL	0.144	0.106	0.092	0.085
Blue	HSMB-C170	SMD 322-5100 RL	0.470	0.410	0.380	0.310
Blue	HSMB-C190	SMD 322-5112 RL	0.470	0.410	0.380	0.310
Untinted, Diffused Lens - Top Mount						
Red	HSMS-C150.	SMD 855-4757 RL	0.106	0.091	0.073	0.059
Red	HSMS-C190.	SMD 855-4765 RL	0.062	0.052	0.045	0.041
Red	HSMH-C150.	SMD 855-4633 RL	0.106	0.091	0.073	0.059
Red	HSMH-C190.	SMD 855-4641 RL	0.069	0.059	0.048	0.040
Red	HSMH-C191.	SMD 855-4650 RL	0.092	0.079	0.063	0.051
Red	HSMC-C170.	SMD 855-4501 RL	0.185	0.153	0.129	0.105
Red	HSMC-C190.	SMD 855-4510 RL	0.240	0.196	0.161	0.133
Red	HSMC-C191.	SMD 855-4528 RL	0.210	0.171	0.144	0.118
Red	HSMZ-C170 NEW	SMD 165-2120 RL	0.330	0.240	0.196	0.164
Red	HSMC-S670	SMD 322-5150 RL	0.290	0.270	0.250	0.190
Red	HSMZ-C190 NEW	SMD 165-2121 RL	0.330	0.240	0.196	0.164
Amber	HSMA-S670	SMD 322-5136 RL	0.290	0.270	0.250	0.190
Amber	HSMA-S690	SMD 322-5148 RL	0.280	0.260	0.240	0.184
Amber	HSMA-C170.	SMD 855-4463 RL	0.210	0.175	0.144	0.119
Amber	HSMA-C190.	SMD 855-4471 RL	0.125	0.105	0.086	0.071
Amber	HSMA-C191.	SMD 855-4480 RL	0.180	0.149	0.125	0.102
Orange	HSMD-C150.	SMD 855-4544 RL	0.092	0.079	0.063	0.051
Orange	HSMD-C190.	SMD 855-4552 RL	0.063	0.053	0.045	0.037
Orange	HSML-C170.	SMD 855-4676 RL	0.114	0.092	0.079	0.068
Orange	HSML-C191.	SMD 855-4684 RL	0.144	0.123	0.109	0.097
Orange	HSML-C190 NEW	SMD 165-2103 RL	0.230	0.164	0.137	0.115
Yellow	HSMY-C150.	SMD 855-4773 RL	0.095	0.081	0.065	0.053
Yellow	HSMY-C190.	SMD 855-4781 RL	0.068	0.052	0.045	0.041
Yellow	HSMY-C191.	SMD 855-4790 RL	0.092	0.079	0.063	0.051
Green	HSMG-C150.	SMD 855-4595 RL	0.106	0.091	0.073	0.059
Green	HSMG-C190.	SMD 855-4609 RL	0.069	0.059	0.048	0.040
Green	HSMG-C191.	SMD 855-4617 RL	0.092	0.079	0.063	0.051
Green	HSME-C170 NEW	SMD 165-2087 RL	0.230	0.164	0.137	0.115
Green	HSME-C190 NEW	SMD 165-2088 RL	0.230	0.164	0.137	0.115
Green	HSMQ-C190 NEW	SMD 165-2106 RL	0.720	0.520	0.430	0.360
Green	HSMQ-C150.	SMD 855-4706 RL	0.820	0.680	0.570	0.460
Green	HSMQ-C170.	SMD 855-4714 RL	1.690	1.420	1.170	0.970
Blue	HSMR-C150.	SMD 855-4730 RL	1.390	1.170	0.970	0.800
Blue	HSMR-C170.	SMD 855-4749 RL	1.500	1.270	1.040	0.870
Blue	HSMR-C190 NEW	SMD 165-2108 RL	0.490	0.360	0.300	0.250
Bi-Colour Untinted, Diffused Lens - Top Mount						
HE Red / Green	HSMF-C155	SMD 579-0888 RL	0.170	0.158	0.157	0.113
Tri-Colour Untinted, Diffused Lens - Top Mount						
Red / Green / Blue	HSMF-C118	NEW 165-2090 RL	1.480	1.060	0.880	0.750
Untinted, Non-diffused Lens - Right Angle Mount						
Red	HSMC-C110.	SMD 855-4498 RL	0.290	0.240	0.191	0.159
Red	HSMH-C110.	SMD 855-4625 RL	0.113	0.096	0.080	0.064
Red	HSMZ-C110 NEW	SMD 165-2119 RL	0.330	0.240	0.196	0.164
Amber	HSMA-C110.	SMD 855-4455 RL	0.290	0.240	0.191	0.159
Orange	HSMD-C110.	SMD 855-4536 RL	0.113	0.096	0.080	0.064
Orange	HSML-C110.	SMD 855-4668 RL	0.200	0.166	0.140	0.115
Green	HSMQ-C110.	SMD 855-4692 RL	1.510	1.270	1.040	0.870
Green	HSME-C110 NEW	SMD 165-2086 RL	0.230	0.164	0.137	0.115
Blue	HSMB-C110	SMD 322-5124 RL	0.380	0.330	0.310	0.250
Blue	HSMR-C110.	SMD 855-4722 RL	1.680	1.420	1.170	0.970
Untinted, Diffused Lens - Right Angle Mount						
HE Red	HSMS-C110	SMD 322-9567 RL	0.163	0.152	0.129	0.101
Red	HSMH-C660	SMD 947-994 RL	0.200	0.171	0.160	0.119
Red	HSMC-S660	SMD 322-9555 RL	0.310	0.280	0.250	0.200
Orange	HSMD-S660	SMD 322-9592 RL	0.310	0.280	0.250	0.200
Yellow	HSMY-C110	SMD 322-9579 RL	0.163	0.152	0.129	0.101
Green	HSMG-C110	SMD 322-9580 RL	0.163	0.152	0.129	0.101
Blue White	HSMW-B120 NEW	SMD 165-2112 RL	0.790	0.560	0.470	0.400
Untinted, Non-diffused Lens - Reverse Mount						
Green	HSME-C265 NEW	SMD 165-2089 RL	0.197	0.141	0.117	0.099
Green	HSMQ-C265 NEW	SMD 165-2107 RL	0.830	0.590	0.490	0.410
Blue	HSMR-C265 NEW	SMD 165-2109 RL	0.490	0.360	0.300	0.250
Untinted, Diffused Lens - Reverse Mount						
HE Red	HSMH-C265	SMD 579-0890 RL	0.152	0.140	0.139	0.101
Green	HSMG-C265	SMD 579-0906 RL	0.152	0.140	0.139	0.101
Blue White	HSMW-B265 NEW	SMD 165-2115 RL	0.790	0.560	0.470	0.400
White	HSMW-C265 NEW	SMD 165-2116 RL	0.790	0.560	0.470	0.400

Surface Mount - Bi-colour

Diffused Optics



3.2 x 2.7mm



1.6 x 0.8mm

Reverse Voltage = 5V

Colour	Lum. Intensity (mcd) @ 20mA min.	Typ.	Peak Wavelength (nm)	Forward Voltage Typ. (V)	Max. (V)	Mftrs. List No.	Order Code
3.2mm x 7mm (Viewing Angle = 170°)							
HE Red / Green	2.5 / 4	10 / 15	630 / 570	2.1 / 2.2	2.6	HSMF-C155	579-0888
HE Red / Yellow	2.5 / 2.5	10 / 8	630 / 589	2.1 / 2.1	2.6	HSMF-C153	165-2091
Amber / Green	28.5 / 4	55 / 15	595 / 570	1.9 / 2.2	2.4	HSMF-C158	165-2092
Green / Yellow	4 / 2.5	15 / 8	572 / 589	2.2 / 2.1	2.6	HSMF-C156.	855-4560
Green / Orange	4 / 2.5	15 / 8	572 / 605	2.2 / 2.2	2.6	HSMF-C157.	855-4579
1.6mm x 0.8mm (Viewing Angle = 120°)							
HE Red / Green	2.5 / 4	10 / 15	630 / 572	2.1 / 2.2	2.6	HSMF-C165.	855-4587

RL Re-reeling available

Colour	Lum. Intensity (mcd) @ 20mA min.	Typ.	Peak Wavelength (nm)	Forward Voltage Typ. (V)	Max. (V)	Mftrs. List No.	Order Code
1.6mm x 0.8mm (Viewing Angle = 120°)							
Red / Amber	28.5 / 28.5	90 / 90	637 / 595	1.9 / 1.9	2.4	HSMF-C162	165-2093
Red / Green	28.5 / 18	90 / 45	637 / 523	1.9 / 3.4	3.8	HSMF-C163	165-2094
Red / Blue	28.5 / 2.8	90 / 10	637 / 468	1.9 / 3.4	3.8	HSMF-C164	165-2095
Green / Yellow	18 / 2.8	45 / 8	523 / 589	2.2 / 2.1	2.6	HSMF-C166	165-2097
Green / Orange	18 / 2.8	45 / 8	523 / 605	2.2 / 2.2	2.6	HSMF-C167	165-2098
Green / Blue	18 / 2.8	45 / 10	523 / 468	3.4 / 3.4	3.8	HSMF-C168	165-2099

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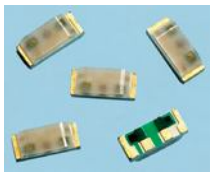
Order Multiple=5 Colour	Order Code	5+	100+	Price Each 250+	500+	1K+
3.2 x 2.7mm footprint						
HE Red / Green	SMD 579-0888● RL	0.170	0.158	0.157	0.113	0.101
HE Red / Yellow	NEW SMD 165-2091● RL	0.230	0.164	0.137	0.115	0.105
Amber / Green	NEW SMD 165-2092● RL	0.530	0.380	0.320	0.270	0.240
Green / Yellow	SMD 855-4560● RL	0.158	0.132	0.109	0.090	0.083
Green / Orange	SMD 855-4579● RL	0.158	0.132	0.109	0.090	0.083
1.6 x 0.8mm footprint						
HE Red / Green	SMD 855-4587● RL	0.230	0.196	0.161	0.133	0.123
Red / Amber	NEW SMD 165-2093● RL	0.530	0.380	0.320	0.270	0.240
Red / Green	NEW SMD 165-2094● RL	1.080	0.780	0.640	0.540	0.490
Red / Blue	NEW SMD 165-2095● RL	1.080	0.780	0.640	0.540	0.490
Green / Yellow	NEW SMD 165-2097● RL	0.230	0.164	0.137	0.115	0.105
Green / Orange	NEW SMD 165-2098● RL	0.230	0.164	0.137	0.115	0.105
Green / Blue	NEW SMD 165-2099● RL	1.350	0.960	0.810	0.670	0.610

Surface Mount - ChipLED's

Top and Side Emitting



C120 (0603) Package



C113 and C115 Packages



C114 Package

- Small footprint packages
- High reliability LED package
- High optical efficiency
- Super wide viewing angles
- Compatible with both IR and TTW soldering process

Package Style	Colour	Lum. Intensity (mcd) @ 20mA min.	Typ.	Peak Wavelength (nm)	Forward Voltage Typ. (V)	Max. (V)	Order Code (V)
C120 (0603) Package - H = 1.0, W = 1.6, D = 0.6mm							
C120 Right Angle	Amber	25	90	595	1.9	2.4	105-8355
C120 Right Angle	Red	25	90	637	1.9	2.4	105-8357
C120 Right Angle	Orange	2.5	8	605	2.2	2.6	105-8358
C120 Right Angle	Green	18	52	570	2.1	2.6	105-8360
C120 Right Angle	Green	4	15	572	2.2	2.6	105-8364
C120 Right Angle	Red	4	15	660	1.8	2.6	105-8365
C120 Right Angle	Orange	25	90	609	1.9	2.4	105-8367
C120 Right Angle	Blue	18	55	469	3.4	3.9	105-8369
C120 Right Angle	HE Red	2.5	10	630	2.1	2.6	105-8372
C120 Right Angle	White	45	160		3.6	3.9	105-8374
Low Profile (C191) Package - H = 0.4, W = 1.6, D = 0.8mm							
C191 Top	Orange	2.5	8	605	2.2	2.6	105-8359
C191 Top	Blue	18	55	469	3.4	3.9	105-8371
C191 Top	HE Red	2.5	10	630	2.1	2.6	105-8373
C191 Top	White	71.5	200		3.6	3.9	105-8375
Tri - Colour (C113, C114 and C115) - Common Anode							
C113	Red	28.5	80	626	1.9	2.4	105-8361
H = 1.0, W = 2.5, D = 1.0mm	Green	18	50	572	2.0	2.6	
	Blue	28.5	60	470	3.4	3.9	
C114	Red	28.5	85	626	1.9	2.4	105-8362
H = 0.35, W = 1.6, D = 1.5mm	Green	45	180	525	3.4	3.9	
	Blue	28.5	70	470	3.4	3.9	
C115	Red	28.5	80	626	1.9	2.4	105-8363
H = 1.0, W = 2.5, D = 1.0mm	Green	71.5	170	525	3.4	3.9	
	Blue	28.5	60	470	3.4	3.9	

Mftrs. List No. to Order Code
HSMA-C120=105-8355
HSMC-C120=105-8357
HSMD-C120=105-8358
HSMD-C191=105-8359
HSME-C120=105-8360
HSMF-C113=105-8361
Mftrs. List No. to Order Code

Mftrs. List No. to Order Code
HSMF-C114=105-8362
HSMF-C115=105-8363
HSMG-C120=105-8364
HSMH-C120=105-8365
HSML-C120=105-8367
HSMR-C120=105-8369

Mftrs. List No. to Order Code
Mftrs. List No. to Order Code
HSMR-C191=105-8371
HSMS-C120=105-8372
HSMS-C191=105-8373
HSMW-C120=105-8374
HSMW-C191=105-8375

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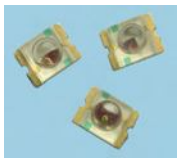
Order Multiple=5 Colour	Order Code	5+	25+	Price Each 100+	250+	500+
Single - Colour						
Amber	SMD 105-8355● RL	0.240	0.180	0.146	0.126	0.115
Red	SMD 105-8357● RL	0.240	0.180	0.146	0.126	0.115
Orange	SMD 105-8358● RL	0.135	0.106	0.086	0.074	0.067
Orange	SMD 105-8359● RL	0.091	0.069	0.057	0.048	0.044
Green	SMD 105-8360● RL	0.240	0.180	0.146	0.126	0.115
Green	SMD 105-8364● RL	0.139	0.109	0.089	0.076	0.069
Red	SMD 105-8365● RL	0.139	0.109	0.089	0.076	0.069
Orange	SMD 105-8367● RL	0.111	0.088	0.071	0.061	0.055
Blue	SMD 105-8369● RL	0.620	0.480	0.400	0.350	0.320
Blue	SMD 105-8371● RL	1.240	0.960	0.800	0.670	0.620
HE Red	SMD 105-8372● RL	0.135	0.106	0.086	0.074	0.067
HE Red	SMD 105-8373● RL	0.094	0.071	0.059	0.049	0.045

Order Multiple=5 Colour	Order Code	5+	25+	Price Each 100+	250+	500+
Tri - Colour						
Red, Green and Blue	SMD 105-8361● RL	0.800	0.610	0.490	0.430	0.390
Red, Green and Blue	SMD 105-8362● RL	1.280	0.990	0.820	0.700	0.640
Red, Green and Blue	SMD 105-8363● RL	1.370	1.060	0.880	0.760	0.690
White						
White	SMD 105-8374● RL	1.500	1.160	0.950	0.820	0.760
White	SMD 105-8375● RL	1.500	1.160	0.960	0.820	0.760

Surface Mount AF Lamp



AF Lamp



Mini AF Lamp

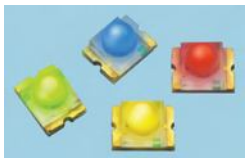
Viewing Angle	Colour	Luminous Intensity (typ)	Peak Wavelength	Forward Current	Voltage Vf (max)	Mftrs. List No.	Order Code
AF Lamp							
6°	Green	40cd	525nm	20mA	3.9V	ASMT-FG10-NFJ00	165-2074
8°	Orange	22cd	612nm	50mA	2.4V	ASMT-FJ10-ADH00	165-2075
Mini AF Lamp							
18°	Orange	–	–	–	–	ASMT-FJ30-AB000	165-2076

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Order Multiple=1 Colour	Order Code	1+	25+	Price Each 100+	250+	500+
AF Lamp						
Green	165-2074● RL	1.26	0.90	0.75	0.62	0.57
Orange	165-2075● RL	0.89	0.63	0.53	0.45	0.41
Mini Lamp						
Orange	165-2076● RL	0.89	0.63	0.53	0.45	0.41

PCB Based Subminiature Lamps

PCB PolyLED



Viewing Angle 15°
Operating Temperature -40°C to +85°C
Reverse Voltage 5V

- Small foot print
- Available in four colors
- Low power consumption
- Non-diffused dome for high brightness
- Supreme product quality and reliability
- Compatible with automated placement equipment
- Compatible with infrared and vapor phase reflow soldering process
- Applications include panel indicator, LCD backlighting, symbol backlighting, push-button backlighting, indoor mono/ full color sign

Colour	Luminous Intensity Typ. (mcd)	Wavelength Peak (nm)	Wavelength Dominant (nm)	Forward Current (mA)	Forward Voltage Typ. (V)	Order Code
Amber	750	592	590	30	2	160-3884
Blue	650	470	468	20	3.2	160-3885
Green	650	565	569	30	2	160-3886
Red	650	635	626	30	2	160-3888

512318

Order Multiple=5 Colour	Mftrs. List No.	Order Code	5+	25+	Price Each 100+	250+	1K+
Amber	ASMT-BA20-AS000	SMD 160-3884●	0.135	0.115	0.101	0.090	0.081
Blue	ASMT-BB20-NS000	SMD 160-3885●	0.240	0.200	0.174	0.155	0.140
Green	ASMT-BG20-AS000	SMD 160-3886●	0.135	0.115	0.101	0.090	0.081
Red	ASMT-BR20-AS000	SMD 160-3888●	0.135	0.115	0.101	0.090	0.081

Surface Mount

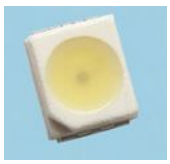
PLCC-2 Package



White Face



Black Face



White

- Industry standard 1.9 x 2.8 x 3.2mm package
- High reliability LED package
- Super wide 120° viewing angle
- Compatible with both IR and TTW soldering process
- Black Face version to minimize reflection to improve contrast
- White version has built in reflector to increase light intensity

RL Re-reeling available

Avago Technologies Light Emitting Diodes (LEDs) - continued

Surface Mount - continued

PLCC-2 Package - continued

Colour	Lum. Intensity (mcd) @ 20mA min.	Typ.	Peak Wavelength (nm)	Forward Voltage Typ. (V)	Max. (V)	Order Code
White Face						
HE Red	4	15	635	2.2	2.6	105-8404
Red	25	50	645	1.9	2.6	105-8394
Red	40	—	635	1.9	2.4	105-8384
Red	100	140	635	1.9	2.4	105-8385
Red	160	220	635	1.9	2.4	105-8386
Red	250	350	639	2.2	2.6	105-8413
Red / Orange	250	350	623	2.2	2.6	105-8408
Orange	10	15	600	2.2	2.6	105-8389
Orange	160	220	609	1.9	2.4	105-8397
Amber	63	100	592	1.9	2.4	105-8378
Amber	100	320	592	1.9	2.4	105-8379
Amber	160	220	592	1.9	2.4	105-8380
Amber	160	320	594	1.9	2.6	105-8405
Yellow	10	12	583	2.2	2.6	105-8412
Green	10	40	566	1.9	2.4	105-8390
Green	10	—	558	2.2	2.6	105-8392
Green	16	70	566	1.9	2.4	105-8391
Blue	40	70	468	3.4	4.05	105-8401
White	250	1000	—	3.4	4.05	105-8409
White	100	395	—	3.4	4.05	105-8410
Black Face						
Red	63	100	635	1.9	2.4	105-8387
Red	160	220	635	1.9	2.4	105-8388
Amber	63	100	592	1.9	2.4	105-8382
Amber	160	220	592	1.9	2.4	105-8383
Green	100	200	523	3.4	4.05	105-8399
Green	160	350	523	3.4	4.05	105-8398
Blue	25	50	468	3.4	4.05	105-8403
Blue	40	70	468	3.4	4.05	105-8402
Red	250	350	639	2.2	2.6	105-8414

422852

Colour	Mftrs. List No.	Order Code	Price Each 5+	25+	100+	250+	500+
Order Multiple=5							
White Face							
Amber	HSMA-A100-Q00J1	SMD 105-8378● RL	0.094	0.071	0.059	0.049	0.045
Amber	HSMA-A100-R0PJ1	SMD 105-8379● RL	0.115	0.091	0.074	0.063	0.058
Amber	HSMA-A101-S00J1	SMD 105-8380● RL	0.161	0.126	0.104	0.089	0.081
Red	HSMC-A100-P30J1	SMD 105-8384● RL	0.094	0.071	0.059	0.049	0.045
Red	HSMC-A100-R00J1	SMD 105-8385● RL	0.112	0.089	0.072	0.061	0.056
Red	HSMC-A101-S00J1	SMD 105-8386● RL	0.139	0.108	0.089	0.076	0.074
Orange	HSMD-A100-L00J1	SMD 105-8389● RL	0.072	0.060	0.051	0.045	0.040
Green	HSME-A100-L01J1	SMD 105-8390● RL	0.210	0.160	0.131	0.113	0.103
Green	HSME-A100-M02J1	SMD 105-8391● RL	0.180	0.141	0.116	0.100	0.091
Green	HSMG-A100-K42J2	SMD 105-8392● RL	0.068	0.053	0.044	0.038	0.035
Red	HSMH-A100-N00J1	SMD 105-8394● RL	0.075	0.062	0.053	0.046	0.041
Red / Orange	HSMJ-A101-R80J1	SMD 105-8395● RL	0.135	0.105	0.086	0.074	0.067
Red / Orange	HSMJ-A101-S00J1	SMD 105-8396● RL	0.135	0.105	0.086	0.074	0.067
Orange	HSML-A101-S00J1	SMD 105-8397● RL	0.147	0.115	0.095	0.086	0.078
Blue	HSMN-A100-R00J1	SMD 105-8401● RL	0.580	0.450	0.380	0.330	0.300
HE Red	HSMS-A100-L00J1	SMD 105-8404● RL	0.068	0.053	0.044	0.038	0.035
Amber	HSMU-A100-S00J1	SMD 105-8405● RL	0.260	0.197	0.161	0.139	0.126
Red / Orange	HSMV-A100-T00J1	SMD 105-8408● RL	0.260	0.198	0.161	0.139	0.126
White	HSMW-A100-T50J1	SMD 105-8409● RL	0.580	0.450	0.380	0.330	0.300
White	HSMW-A101-R50J1	SMD 105-8410● RL	0.420	0.340	0.270	0.240	0.200
Yellow	HSMY-A100-L00J1	SMD 105-8412● RL	0.094	0.071	0.059	0.049	0.045
Red	HSMZ-A100-T00J1	SMD 105-8413● RL	0.260	0.198	0.161	0.139	0.126
Black Face							
Amber	HSMA-A160-Q00J1	SMD 105-8382● RL	0.112	0.089	0.072	0.061	0.056
Amber	HSMA-A161-S00J1	SMD 105-8383● RL	0.133	0.106	0.088	0.076	0.069
Red	HSMC-A160-Q00J1	SMD 105-8387● RL	0.115	0.091	0.074	0.063	0.058
Red	HSMC-A161-S00J1	SMD 105-8388● RL	0.143	0.125	0.107	0.094	0.083
Green	HSMM-A160-S00J1	SMD 105-8398● RL	0.660	0.490	0.410	0.360	0.330
Green	HSMM-A161-R00J1	SMD 105-8399● RL	0.430	0.390	0.360	0.310	0.280
Blue	HSMN-A160-P00J1	SMD 105-8402● RL	0.440	0.340	0.270	0.240	0.210
Blue	HSMN-A161-N00J1	SMD 105-8403● RL	0.380	0.290	0.220	0.210	0.187
Amber	HSMU-A160-R00J1	SMD 105-8406● RL	0.182	0.147	0.125	0.109	0.096
Amber	HSMU-A160-T00J1	SMD 105-8407● RL	0.240	0.180	0.147	0.128	0.116
Red	HSMZ-A160-T00J1	SMD 105-8414● RL	0.270	0.200	0.171	0.147	0.134

Surface Mount - PLCC-2 High brightness



A range of high brightness, high reliability SMT LEDS in the industry standard PLCC-2 package.
The Agilent range features SMT package enhancements over conventional PLCC-2 devices with availabilty in a broad range of colours and dice technologies including AlGaP, InGaN and TS AlInGaP.

Colour	View Angle	Lum Intensity (mcd) @ I_F=10mA min.	typ.	I_F (mA) (max)	PIV (max)	Mftrs. List No.	Order Code
Untinted Clear Lens							
Red	120°	4	15	30	5	HSMS-A100-J00J1	413-4321
Red	120°	10	50	30	5	HSMH-A100-L00J1	413-4333
Red	120°	63	100	30	5	HSMC-A100-Q00J1	413-4345
Red	120°	100	400	30	5	HSMZ-A100-R00J1	413-4357
Red / Orange	120°	63	200	30	5	HSMJ-A100-Q00J1	413-4369
Orange	120°	4	15	30	5	HSMD-A100-J00J1	413-4382
Orange	120°	63	160	30	5	HSML-A100-Q00J1	413-4394
Amber	120°	100	270	30	5	HSMU-A100-R00J1	413-4400
Amber	120°	4	15	30	5	HSMY-A100-J00J1	413-4412
Yellow	120°	4	18	30	5	HSMG-A100-J02J1	413-4424
Emerald Green	120°	2.5	8	30	5	HSMG-A100-H01J1	413-4436
Green	120°	160	280	30	5	HSMM-A100-S00J1	413-4448
Green	120°	100	200	30	5	HSMM-A101-R00J1	413-4450
Cyan	120°	160	280	30	5	HSMK-A100-S00J1	413-4461
Cyan	120°	100	170	30	5	HSMK-A101-R00J1	413-4473
Blue	120°	4	15	30	5	HSMB-A100-J00J1	413-4485
Blue	120°	40	70	30	5	HSMN-A100-P00J1	413-4497
Blue	120°	25	50	30	5	HSMN-A101-N00J1	413-4503

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Colour	Order Code	Price Each 5+	25+	100+	250+	500+
Order Multiple=5						
Untinted Clear Lens						
Red	SMD 413-4321● RL	0.129	0.106	0.095	0.078	0.066
Red	SMD 413-4333● RL	0.153	0.131	0.106	0.090	0.079
Red	SMD 413-4345● RL	0.197	0.158	0.131	0.101	0.100
Red	SMD 413-4357● RL	0.350	0.300	0.240	0.199	0.187
Red / Orange	SMD 413-4369● RL	0.086	0.068	0.057	0.044	0.043
Red / Orange	SMD 413-4370● RL	0.240	0.189	0.153	0.131	0.121
Orange	SMD 413-4382● RL	0.070	0.065	0.058	0.053	0.042
Orange	SMD 413-4394● RL	0.176	0.141	0.117	0.090	0.089
Amber	SMD 413-4400● RL	0.320	0.270	0.210	0.178	0.167
Amber	SMD 413-4412● RL	0.131	0.106	0.095	0.079	0.067
Yellow	SMD 413-4424● RL	0.064	0.053	0.046	0.039	0.034
Emerald Green	SMD 413-4436● RL	0.153	0.131	0.106	0.090	0.079
Green	SMD 413-4448● RL	0.890	0.740	0.580	0.480	0.450
Green	SMD 413-4450● RL	0.560	0.450	0.380	0.320	0.300
Cyan	SMD 413-4461● RL	0.780	0.640	0.500	0.420	0.390
Cyan	SMD 413-4473● RL	0.450	0.390	0.340	0.310	0.280
Blue	SMD 413-4485● RL	0.480	0.400	0.330	0.270	0.260
Blue	SMD 413-4497● RL	0.800	0.660	0.520	0.430	0.400
Blue	SMD 413-4503● RL	0.570	0.450	0.380	0.320	0.300

Surface Mount - Envisium

Power PLCC-4



H=1.9, W=3.2, D=2.8mm

Envisium is a class of mid-Power LEDs from Agilent and Lumileds utilising the very best solid-state lighting technologies from these two industry leaders.
The Envisium Power PLCC-4 SMT package may be driven at a higher current and is capable of dissipating the heat more efficiently compared to a conventional PLCC-2 SMT package.
These LEDs produce higher light output with better flux performance than conventional PLCC-4 SMT LEDs.
The performance characteristics of these new mid-power LEDs make them uniquely suitable for use in harsh conditions such as in automotive applications, and in electronics signs and signals.

- Industry standard PLCC-4 (Plastic Leaded Chip Carrier)
- High reliability LED package
- Mid-Power intensity brightness with optimum flux performance
- TS AlInGaP dice technologies
- High optical efficiency
- Wide operating temperature of -40°C to 100°C
- Wide viewing angle of 120°
- Compatible with both IR and TTW soldering process

Applications

- Interior automotive
  - Instrument panel backlighting
  - Central console backlighting
  - Navigation and audio system
  - Push button backlighting
- Exterior automotive
  - Turn signals
  - Side repeaters
  - Rear combination lamp
  - Puddle light
- Electronic signs and signals
  - Channel lettering
  - Contour lighting
  - Indoor variable message sign
- Office automation, home appliances, industrial equipment
  - Front panel backlighting
  - Push button backlighting
  - Display backlighting

Colour	View Angle	Typ. Lum. Intensity (mcd) @ 50mA min.	max.	Peak Wavelength (nm)	Mftrs. List No.	Order Code
40° x 100° - Untinted Clear Oval Lens						
Amber	120°	630	1000	594	ASMC-PAB9-TV005	980-6946
Red / Orange	120°	630	1000	594	ASMC-PRB9-TV005	980-6962
Red / Orange	120°	1580	2500	594	ASMC-PHB9-TW005	980-6954

413014

Colour	Order Code	Price Each 5+	25+	100+	250+	500+
Amber	SMD 980-6946● RL	0.290	0.210	0.162	0.140	0.121
Red / Orange	SMD 980-6962● RL	0.310	0.240	0.187	0.152	0.134
Red / Orange	SMD 980-6954● RL	0.360	0.280	0.210	0.169	0.147

£ € 40,000 PRICES REDUCED

RL Re-reeling available

Surface Mount

PLCC-4, 120 ° Viewing Angle

AVAGO TECHNOLOGIES



PLCC-4

Applications include:

- Exterior automotive, turn signals, side repeaters, CHSML, rear combination lamp, side markers and truck clearance lamps
- Electronic signs and signals, channel lettering, contour lighting, Indoor variable message sign

SMD

- Compact, highly efficient design
- Easy pick and place assembly
- IR solder reflow process capable
- Medium luminous intensity

Multicolour

Dual Colour	Luminous Intensity Colour: 1,2, 3, (mcd)	Mftrs List No.	Order Code
Red, Yellow / Green	25,20	HSMF-A211-A00J1	122-3746
Red, Yellow	25,12	HSMF-A212-A00J1	122-3747
Red, Amber	80,80	HSMF-A222-A00J1	122-3748
Red, Blue	80,10	HSMF-A227-A00J1	122-3749
Amber, Blue	80,10	HSMF-A228-A00J1	122-3750
3-Colour			
R, G, B	80,160,8	HSMF-A331-A00J1	122-3751
Red / Orange, Green, Blue	80,160,8	HSMF-A332-A00J1	122-3752
Red / Orange, Green, Blue	80,160,40	HSMF-A342-A00J1	122-3753

Envisium 0.5W LEDs

Single Colour	Luminous Flux (lm) @ 150mA min.	typ.	max.	V_R max, (V)	Wavelength Dominant, typ. (nm)	I_F (mA)	Mftr List No.	Order Code
Amber	4.3	6.6	9	5	593.5	150	ASMC-QAB2-TAC0E	133-2562
Red / Orange	7	9.3	11.5	150	619.3	150	ASMC-QHB2-TCD0E	133-2563

454690

Mftrs. List No.	Order Code	5+	25+	100+	250+
HSMF-A211-A00J1	SMD 122-3746● RL	0.280	0.210	0.175	0.153
HSMF-A212-A00J1	SMD 122-3747● RL	0.240	0.187	0.152	0.140
HSMF-A222-A00J1	SMD 122-3748● RL	0.380	0.300	0.250	0.210
HSMF-A227-A00J1	SMD 122-3749● RL	0.680	0.520	0.420	0.370
HSMF-A228-A00J1	SMD 122-3750● RL	0.680	0.520	0.420	0.370
HSMF-A331-A00J1	SMD 122-3751● RL	1.380	1.080	0.890	0.770
HSMF-A332-A00J1	SMD 122-3752● RL	1.000	0.790	0.650	0.560
HSMF-A342-A00J1	SMD 122-3753● RL	1.650	1.300	1.060	0.920
ASMC-QAB2-TAC0E	SMD 133-2562● RL	0.360	0.280	0.250	0.199
ASMC-QHB2-TCD0E	SMD 133-2563● RL	0.360	0.280	0.250	0.199

Surface Mount

PLCC-4 Package

AVAGO TECHNOLOGIES



L=1.9, W=2.8, D=3.2

SMD

- Industry standard package
- High reliability LED package
- High optical efficiency
- High current capacity
- Super wide 120° viewing angle
- Compatible with both IR and TTW soldering process
- White version has built in reflector to increase light intensity

Colour	Lum. Intensity (mcd) @ 20mA Min.	Typ.	Peak Wavelength (nm)	Forward Voltage Typ. (V)	Max. (V)	Order Code (V)
Red	160	400	635	2.2	2.5	105-8417
Red	250	800	635	2.2	2.5	105-8418
Red	250	800	621	2.2	2.5	105-8429
Red	500	1600	639	2.8	3.4	105-8439
Amber	250	630	592	2.2	2.5	105-8415
Amber	400	1260	592	2.2	2.5	105-8416
Amber	500	1600	592	2.8	3.4	105-8437
Orange	400	1260	609	2.2	2.5	105-8431
Green	40	130	568	2.2	2.5	105-8419
Green	160	500	518	3.8	4.6	105-8433
Green	310	1000	518	3.8	4.6	105-8432
Cyan	310	1000	502	3.8	4.6	105-8430
Blue	50	130	468	3.8	4.6	105-8436
Blue	80	250	468	3.8	4.6	105-8434
White	400	700	—	3.8	4.6	105-8438
White	—	1100	—	3.5	—	124-1256

422854

Order Multiple=5 Colour	Mftrs. List No.	Order Code	5+	25+	100+	250+
Red	HSMC-A400-S30M1	SMD 105-8417● RL	0.112	0.089	0.072	0.061
Red	HSMC-A401-T40M1	SMD 105-8418● RL	0.139	0.109	0.089	0.076
Red	HSMJ-A401-T40M1	SMD 105-8429● RL	0.132	0.117	0.106	0.092
Red	HSMZ-A400-U80M1	SMD 105-8439● RL	0.240	0.180	0.146	0.126
Amber	HSMA-A400-T35M1	SMD 105-8415● RL	0.112	0.089	0.072	0.061
Amber	HSMA-A401-U20M1	SMD 105-8416● RL	0.132	0.117	0.106	0.092
Amber	HSMU-A400-U85M1	SMD 105-8437● RL	0.260	0.198	0.161	0.139
Orange	HSML-A401-U40M1	SMD 105-8431● RL	0.132	0.117	0.106	0.092
Green	HSME-A401-P4PM1	SMD 105-8419● RL	0.240	0.180	0.146	0.126
Green	HSMM-A401-S4YM2	SMD 105-8433● RL	0.530	0.420	0.380	0.330
Green	HSMM-A400-T8YM2	SMD 105-8432● RL	0.660	0.490	0.410	0.360
Cyan	HSMK-A400-T80M2	SMD 105-8430● RL	0.450	0.360	0.300	0.260
Blue	HSMN-A401-P7QM2	SMD 105-8436● RL	0.400	0.310	0.260	0.210
Blue	HSMN-A400-Q8QM2	SMD 105-8434● RL	0.540	0.430	0.360	0.310
White	HSMW-A400-U00M2	SMD 105-8438● RL	0.620	0.480	0.400	0.350
White	ASMT-SWBM-NU803	SMD 124-1256● RL	0.800	0.500	0.420	0.370

Surface Mount

PLCC - 4 with Domed Lens

AVAGO TECHNOLOGIES



H = 3.87, W = 2.8, D = 3.2mm

SMD

These Power PLCC-4 SMT LED's with lens are high performance devices targeted mainly at the automotive and electronic signs and signal markets. The top mount single-chip packages with focused radiation offer high brightness in the beam direction. This design coupled with careful selection of component materials allow the product to perform with higher reliability across a large temperature range of -40°C to 100°C.

- Industry standard PLCC-4 package
- High reliability LED package
- High optical efficiency
- Compatible with both IR and TTW soldering process

Colour	Viewing Angle (°)	Luminous Intensity Typ. (mcd)	Peak Wavelength Typ. (nm)	Forward Voltage Typ. (V)	Max. (V)	Mftrs. List No.
Amber	30	3000	592	2.2	2.5	HSMA-A430-W90M1
Amber	30	4700	592	2.2	2.5	HSMA-A431-X90M1
Amber	30	5000	592	2.2	2.5	HSMA-A431-Y00M1
Amber	30	4500	592	2.2	2.5	HSMA-A431-Z50M1
Amber	50	2100	592	2.2	2.5	HSMA-A460-W50M1
Amber	50	3300	592	2.2	2.5	HSMA-A461-X83M1
Red	30	2300	635	2.2	2.5	HSMC-A430-W50M1
Red	30	4000	635	2.2	2.5	HSMC-A431-X90M1
Red	30	3550	635	2.2	2.5	HSMC-A431-Y80M1
Red	50	580	635	2.2	2.5	HSMC-A460-U30M1
Red	50	1750	635	2.2	2.5	HSMC-A461-V00M1
Red / Orange	30	2300	621	2.2	2.5	HSMJ-A430-W50M1
Red / Orange	30	4500	621	2.2	2.5	HSMJ-A431-X90M1
Red / Orange	30	6000	623	2.8	3.4	HSMV-A430-Y90M1
Red / Orange	50	1850	621	2.2	2.5	HSMJ-A461-W40M1
Orange	30	4500	609	2.2	2.5	HSML-A431-X90M1
Orange	50	1850	609	2.2	2.5	HSML-A461-W40M1
Yellow / Green	50	285				HSME-A460-T52M1
Green	30	2400	518	3.9	4.6	HSMM-A430-W90M2
Green	50	112.5	518	3.9	4.6	HSME-A460-R01M1
Cyan	30	2000		3.9	4.6	HSMK-A430-W4PM2
Blue	30	950	468	3.9	4.6	HSMN-A430-U50M2
Blue	30	360	468	3.9	4.6	HSMN-A431-T50M2

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Order Multiple=5 Single - Colour	Mftrs. List No.	Order Code	5+	25+	100+	250+
Amber	HSMA-A430-W90M1	SMD 110-8948● RL	0.280	0.200	0.167	0.139
Amber	HSMA-A430-W90M1	SMD 110-8948● RL	0.280	0.200	0.167	0.139
Amber	HSMA-A431-X90M1	SMD 110-8949● RL	0.210	0.151	0.128	0.108
Amber	HSMA-A431-Y00M1	SMD 110-8950● RL	0.280	0.189	0.156	0.132
Amber	HSMA-A431-Z50M1	NEW SMD 160-4617● RL	0.400	0.290	0.220	0.184
Amber	HSMA-A460-W50M1	NEW SMD 160-4620● RL	0.310	0.210	0.168	0.138
Amber	HSMA-A461-X83M1	NEW SMD 160-4621● RL	0.340	0.250	0.187	0.152
Red	HSMC-A430-W50M1	SMD 110-8951● RL	0.210	0.185	0.159	0.138
Red	HSMC-A431-X90M1	SMD 110-8952● RL	0.360	0.260	0.200	0.174
Red	HSMC-A431-Y80M1	NEW SMD 160-4618● RL	0.400	0.290	0.220	0.184
Red	HSMC-A460-U30M1	NEW SMD 160-4622● RL	0.280	0.192	0.149	0.121
Red	HSMC-A461-V00M1	NEW SMD 160-4623● RL	0.310	0.210	0.168	0.138
Red / Orange	HSMJ-A430-W50M1	SMD 110-8953● RL	0.210	0.148	0.124	0.107
Red / Orange	HSMJ-A431-X90M1	SMD 110-8954● RL	0.270	0.182	0.152	0.128
Red / Orange	HSMV-A430-Y90M1	SMD 110-8960● RL	0.580	0.410	0.350	0.300
Red / Orange	HSMJ-A461-W40M1	NEW SMD 160-4627● RL	0.310	0.210	0.168	0.138
Orange	HSML-A431-X90M1	SMD 110-8956● RL	0.210	0.148	0.124	0.107
Orange	HSML-A461-W40M1	NEW SMD 160-4628● RL	0.310	0.210	0.168	0.138
Green	HSMM-A430-W90M2	SMD 110-8957● RL	0.870	0.610	0.500	0.420
Cyan	HSMK-A430-W4PM2	NEW SMD 160-4619● RL	0.880	0.620	0.480	0.400
Blue	HSMN-A430-U50M2	SMD 110-8958● RL	0.680	0.470	0.400	0.340
Blue	HSMN-A431-T50M2	SMD 110-8959● RL	0.370	0.270	0.220	0.188

Surface Mount - 2 and 3 Colour

PLCC-4 Package

AVAGO TECHNOLOGIES



SMD

- Industry standard 1.9 x 2.8 x 3.2mm package
- High reliability LED package
- High optical efficiency
- Super wide 120° viewing angle
- Compatible with both IR and TTW soldering process

Colour	Lum. Intensity (mcd) @ 20mA min.	Typ.	Peak Wavelength (nm)	Forward Voltage Typ. (V)	Max. (V)	Order Code (V)
Bi - Colour						
Red	8	16	626	2.2	2.6	105-8420
Green/Yellow	10	20	569	2.2	2.6	
Red	8	16	626	2.2	2.6	105-8421
Yellow	6.3	12	585	2.2	2.6	
Red	8	16	626	2.2	2.6	105-8422
Green/Emerald	4	8	569	2.2	2.6	
Orange	8	16	602	2.2	2.6	105-8424

RL Re-reeling available

Farnell

Avago Technologies Light Emitting Diodes (LEDs) - continued

Surface Mount - 2 and 3 Colour - continued

PLCC-4 Package - continued

Colour	Lum. Intensity (mcd) @ 20mA min.	Lum. Intensity (mcd) @ 20mA Typ.	Peak Wavelength (nm)	Forward Voltage Typ. (V)	Forward Voltage Max. (V)	Order Code
Bi - Colour						
Green/Yellow	10	20	569	2.2	2.6	
Orange	8	16	602	2.2	2.6	105-8425
Green/Emerald	4	8	560	2.2	2.6	
Yellow	8	16	560	2.2	2.6	105-8426
Green/Yellow	10	20	569	2.2	2.6	
Tri - Colour						
Red	8	13	626	2.2	2.6	105-8427
Green	12.5	20	525	2.2	2.6	
Blue	8	10	462	3.4	4.05	
Red	25	80	525	2.2	2.6	105-8428
Green	25	160	525	3.4	4.05	
Blue	25	40	462	3.4	4.05	

Mftrs. List No. HSMF-A201-A00J1=105-8420, HSMF-A202-A00J1=105-8421, HSMF-A203-A00J1=105-8422, HSMF-A204-A00J1=105-8424
Mftrs. List No. HSMF-A205-A00J1=105-8425, HSMF-A206-A00J1=105-8426, HSMF-A301-A00J1=105-8427, HSMF-A341-A00J1=105-8428

422858

Order Multiple=5 Colour	Order Code	Price Each 5+	25+	100+	250+	500+
Bi - Colour						
Red and Green	SMD 105-8420● RL	0.280	0.210	0.176	0.151	0.138
Red and Yellow	SMD 105-8421● RL	0.198	0.161	0.140	0.127	0.124
Red and Green	SMD 105-8422● RL	0.280	0.210	0.176	0.151	0.138
Orange and Green	SMD 105-8424● RL	0.198	0.161	0.140	0.121	0.108
Orange and Green	SMD 105-8425● RL	0.330	0.250	0.200	0.171	0.156
Yellow and Green	SMD 105-8426● RL	0.270	0.200	0.171	0.147	0.134
Tri - Colour						
Red, Green and Blue	SMD 105-8427● RL	0.720	0.570	0.450	0.390	0.360
Red, Green and Blue	SMD 105-8428● RL	1.650	1.300	1.060	0.910	0.830

Surface Mount - Subminiature



H=2.9 (overall), W=2.2, D=2.2
Leads=0.51 x 0.20,
Overall width across leads = 3.8 Overall width across leads=3.8

Cathode lead identified by colour stripe.
Supplied on 12mm tape (reel=1500 pcs).

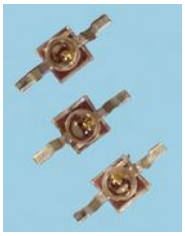
Colour	View Angle	Typ Lum Intensity (mcd)	I_F (mA) (max.)	PIV (max.)	Mftrs. List No.	Order Code
Tinted Diffused Lens						
AlGaAs Red	90°	1 @ 10mA	50	3	HLMP-6000-E0011	100-3354
HE Red	90°	3 @ 10mA	30	5	HLMP-6300-F0011	100-3357
Yellow	90°	3 @ 10mA	20	5	HLMP-6400-F0011	100-3358
Green	90°	3 @ 10mA	30	5	HLMP-6500-F0011	100-3359
Amber	28°	500 @ 20mA	50	5	HLMA-QL00	100-3388

206276

Order Multiple=5 Colour	Order Code	Price Each 5+	25+	100+	250+	1K+
AlGaAs Red	SMD 100-3354● RL	0.420	0.370	0.320	0.260	0.240
HE Red	SMD 100-3357● RL	0.320	0.310	0.290	0.230	0.199
Yellow	SMD 100-3358● RL	0.290	0.280	0.260	0.200	0.178
Green	SMD 100-3359● RL	0.320	0.310	0.290	0.230	0.199
Amber	SMD 100-3388●	0.350	0.340	0.270	0.189	0.167

Subminiature LED Lamps

Dome Packages



HLMA



HLMP

Operating Temperature -40°C to +100°C
Reverse Voltage 5V

- Subminiature dome package
- Diffused for wide viewing angle
- Nondiffused for high brightness
- TTL and LSTTL compatible 5 volt resistor lamps
- Wide range of drive currents
- Ideal for space limited applications

Diffused and Tinted

Angle	Viewing	Luminous Intensity Typ.	Wavelength Peak	Wavelength Dominant	Forward Current	Forward Voltage Max.	Order Code
TS Red							
	35°	100mcd	654nm	644nm	50mA	2.4V	160-3913
High Efficiency Red							
	90°	10mcd	635nm	626nm	10mA	1.8V	160-3897
	90°	10mcd	635nm	626nm	30mA	6V	160-3898
	90°	2μcd	635nm	626nm	30mA	1.8V	160-3902
	90°	1mcd	635nm	626nm	30mA	6V	160-3904
Red							
	90°	1.8mcd	645nm	637nm	20mA	1.6V	160-3918
DH Red							
	90°	1.8mcd	645nm	637nm	30mA	6V	160-3919
Yellow							
	90°	9mcd	583nm	585nm	10mA	2V	160-3900
High Performance Green							
	90°	7mcd	583nm	585nm	10mA	2.1V	160-3901

Order Multiple=5 Mftrs. List No.	Order Code	Price Each 5+	25+	100+	250+	1K+
TS Red						
HLMP-Q102-N0011	SMD 160-3913● RL	0.690	0.550	0.500	0.410	0.380
High Efficiency Red						
HLMP-6300-F0021	SMD 160-3897● RL	0.340	0.270	0.250	0.199	0.184
HLMP-6300-F0031	SMD 160-3898● RL	0.410	0.320	0.300	0.240	0.220
HLMP-6620-F0010	SMD 160-3902● RL	1.010	0.790	0.730	0.590	0.550
HLMP-7000-D0021	SMD 160-3904● RL	0.650	0.500	0.470	0.380	0.350
Red						
HLMP-Q150-F0011	SMD 160-3918● RL	0.430	0.340	0.320	0.260	0.240
DH Red						
HLMP-Q150-F001L	SMD 160-3919● RL	0.410	0.320	0.300	0.240	0.220
Yellow						
HLMP-6400-F0021	SMD 160-3900● RL	0.410	0.320	0.300	0.240	0.220
High Performance Green						
HLMP-6500-F0021	SMD 160-3901● RL	0.410	0.320	0.300	0.240	0.220

Nondiffused and Untinted

Angle	Viewing	Luminous Intensity Typ.	Wavelength Peak	Wavelength Dominant	Forward Current	Forward Voltage Max.	Order Code
Red							
	15°	400mcd	654nm	644nm	20mA	1.9V	160-3916
	28°	200mcd	645nm	637nm	20mA	1.8V	160-3915
	28°	4mcd	645nm	637nm	20mA	1.6V	160-3920
DH Red							
	28°	200mcd	645nm	637nm	30mA	6V	160-3914
	15°	7mcd	654nm	644nm	50mA	1.9V	160-3923
	15°	7mcd	654nm	644nm	50mA	1.9V	160-3924
	28°	4mcd	645nm	637nm	30mA	6V	160-3921
Red / Orange							
	15°	500μcd	-	615nm	50mA	1.9V	160-3893
	15°	500mcd	-	615nm	50mA	2.4V	160-3894
Yellow							
	15°	500mcd	-	585nm	50mA	2.4V	160-3895
	15°	500mcd	-	585nm	50mA	2.4V	160-3896
Green							
	20°	690mcd	523nm	525nm	90mA	4.1V	160-3926
Blue							
	20°	290mcd	470nm	468nm	90mA	4.1V	160-3925

512324

Order Multiple=5 Mftrs. List No.	Order Code	Price Each 5+	25+	100+	250+	1K+
Red						
HLMP-Q106-R0011	SMD 160-3916● RL	0.450	0.360	0.340	0.270	0.250
HLMP-Q105-P0031	SMD 160-3915● RL	0.480	0.380	0.350	0.290	0.260
HLMP-Q155-F0011	SMD 160-3920● RL	0.650	0.500	0.470	0.380	0.350
DH Red						
HLMP-Q105-P0011	SMD 160-3914● RL	0.480	0.380	0.350	0.290	0.260
HLMP-Q156-H0021	SMD 160-3923● RL	0.290	0.220	0.210	0.168	0.155
HLMP-Q156-H0031	SMD 160-3924● RL	0.290	0.220	0.210	0.168	0.155
HLMP-Q155-F0031	SMD 160-3921● RL	0.650	0.500	0.470	0.380	0.350
Red / Orange						
HLMA-QH00	SMD 160-3893● RL	0.183	0.142	0.134	0.106	0.099
HLMA-QH00-S0021	SMD 160-3894● RL	0.210	0.166	0.155	0.125	0.115

RL Re-reeling available

Order Multiple=5 Mftrs. List No.	Order Code	Price Each 5+	25+	100+	250+	1K+
Yellow						
HLMA-QL00-S0031	SMD 160-3895● RL	0.320	0.250	0.220	0.182	0.168
HLMA-QL00-TVB11	SMD 160-3896● RL	0.320	0.250	0.220	0.182	0.168
Green						
HLMP-QM00-S0000	SMD 160-3926● RL	1.100	0.870	0.810	0.640	0.600
Blue						
HLMP-QB00-S0000	SMD 160-3925● RL	0.600	0.460	0.440	0.350	0.330

Subminiature LED Lamps

Flat Top Packages





- Subminiature flat top package
- Ideal for backlighting and light piping applications
- TTL and LSTTL compatible 5 volt resistor lamps
- Wide range of drive currents
- Ideal for space limited applications

Operating Temperature -40°C to +100°C
Reverse Voltage 5V

Colour	Viewing Angle	Luminous Intensity Typ. (mcd)	Wavelength Peak (nm)	Wavelength Dominant (nm)	Forward Current (mA)	Forward Voltage Max. (V)	Order Code
HE Red	125°	8	635	626	30	6	160-3907
Red	125°		645	637	30	6	160-3906
Amber	125°	75		590	50	1.9	160-3889
Yellow	125°	75		590	50	2.4	160-3890
Yellow	125°	75		590	50	2.4	160-3891
Yellow	125°	75		590	50	2.4	160-3892
Yellow	125°	4	583	585	10	2	160-3908
Green	125°	6.3			30	6	160-3909
Green	125°	1.5	558	560	30	6	160-3910
Green	85°	200	523	525	90	4.1	160-3912
Blue	85°	60	470	468	90	4.1	160-3911

512337

Order Multiple=5 Colour	Mftrs. List No.	Order Code	Price Each 5+	25+	100+	250+	1K+
HE Red	HLMP-P205-F0031	SMD 160-3907● RL	0.410	0.320	0.300	0.240	0.220
Red	HLMP-P105-NP000	SMD 160-3906● RL	0.360	0.290	0.270	0.210	0.195
Amber	HLMA-PL00	SMD 160-3889● RL	0.250	0.187	0.175	0.140	0.130
Yellow	HLMA-PL00-N0021	SMD 160-3890● RL	0.300	0.220	0.210	0.171	0.158
Yellow	HLMA-PL00-N0031	SMD 160-3891● RL	0.300	0.220	0.210	0.171	0.158
Yellow	HLMA-PL00-QRR11	SMD 160-3892● RL	0.370	0.290	0.270	0.210	0.196
Yellow	HLMP-P305-F0031	SMD 160-3908● RL	0.410	0.320	0.300	0.240	0.220
Green	HLMP-P505	SMD 160-3909● RL	0.290	0.220	0.210	0.168	0.155
Green	HLMP-P605-F0011	SMD 160-3910● RL	0.600	0.460	0.440	0.350	0.330
Green	HLMP-PM00-N0000	SMD 160-3912● RL	1.100	0.870	0.810	0.640	0.600
Blue	HLMP-PB00-N0000	SMD 160-3911● RL	0.600	0.460	0.440	0.350	0.330

Subminiature



W=2.2, D= 2.2

Leads: L=11.4, 0.5 x 0.2
Cathode identified by metallic strip on body.
H=2.90 (domed, overall), 2.15 (flat top, overall),

Colour	View Angle	Typ Lum Intensity (mcd)	I_F (mA) (max.)	PIV (max.)	Mftrs. List No.	Order Code
Tinted Diffused Lens						
Red	90°	1.2 @ 10mA	50	3	HLMP-6000	100-3184
Deep Red	35°	160 @ 20mA	30	5	HLMP-Q102◆	100-3370
HE Red	90°	3 @ 10mA	30	5	HLMP-6300	100-3186
Yellow	90°	3 @ 10mA	20	5	HLMP-6400	100-3187
Green	90°	3 @ 10mA	30	5	HLMP-6500	100-3188
Untinted Non-Diffused						
Deep Red	15°	530 @ 20mA	30	5	HLMP-Q106◆	100-3371
Low Current - Tinted Diffused Lens						
Red	90°	1.8 @ 1mA	20	5	HLMP-Q150	100-3189
Red	90°	0.8 @ 2mA	7	5	HLMP-7000	100-3190
Green	90°	0.6 @ 2mA	30	5	HLMP-7040	100-3360
Resistored, 5 Volt - Untinted Diffused						
HE Red	90°	2 @ 5V	5	5	HLMP-6620	100-3386
Yellow	90°	2 @ 5V	5	5	HLMP-6720	100-3387

◆ High Brightness

206702

Order Multiple=5 Colour	Order Code	Price Each 5+	25+	100+	250+	1K+
Red	100-3184●	0.350	0.300	0.270	0.220	0.210
Deep Red	100-3370●	0.480	0.430	0.360	0.310	0.270
HE Red	100-3186●	0.240	0.220	0.197	0.175	0.162
Yellow	100-3187●	0.240	0.220	0.197	0.175	0.162
Green	100-3188●	0.240	0.220	0.210	0.187	0.175

Order Multiple=5 Colour	Order Code	Price Each 5+	25+	100+	250+	1K+
Deep Red	100-3371●	0.500	0.490	0.350	0.300	0.270
Red	100-3189●	0.290	0.270	0.260	0.210	0.162
Red	100-3190●	0.480	0.450	0.410	0.320	0.260
Green	100-3360●	0.480	0.450	0.410	0.290	0.260
HE Red	100-3386●	0.690	0.640	0.590	0.400	0.340
Yellow	100-3387●	0.550	0.500	0.470	0.320	0.300

5mm, Standard Oval - Tinted



- Well defined spatial radiation pattern
- High brightness material
- Superior resistance to moisture
- 2.74 mm standoffs

Colour	λ_D typ. (nm)	Luminance Intensity @ 20mA min. (mcd)	max. (mcd)	I_F (mA)@ (max)	V_F (V) (max)	Viewing Angle	Mftrs. List No.	Order Code
Red	630	1660	3500	20	2.6	90° x 30°	HLMP-AD61-X1TZZ	124-1259
Green	525	2400	5040	20	2.6	90° x 30°	HLMP-AM61-Z30ZZ	124-1260
Blue	470	550	1150	20	2.6	90° x 30°	HLMP-AB61-RU0ZZ	124-1261

475631

Colour	Order Code	Price Each 5+	100+	250+	500+	1K+
Red	124-1259●	0.210	0.187	0.170	0.148	0.134
Green	124-1260●	0.480	0.440	0.400	0.340	0.310
Blue	124-1261●	0.480	0.440	0.400	0.340	0.320

3mm/T1, Ultra Bright/High Intensity



HLMP-Nxxx Series:
L=5.35, Dia=3.10
Lead pitch=2.54,
Leads=23 x 0.65 x 0.40

HLMP Series:
L=4.7, Dia=3.18
Lead pitch=2.54,
Leads=24 x 0.45sq

Colour	View Angle	Typ. Lum Intensity (mcd)	I_F (mA) (max)	PIV (max)	Mftrs. List No.	Order Code
Untinted Clear Lens						
Red	45°	65 @ 20mA	20	5	HLMP-K105	100-3200
HE Red	45°	45 @ 20mA	25	5	HLMP-1340	100-3201
Yellow	45°	45 @ 20mA	20	5	HLMP-1440	100-3202
Orange	60°	5.5 @ 10mA	30	5	HLMP-K401	100-3389
Green	45°	45 @ 20mA	25	5	HLMP-1540	100-3204
Tinted Diffused Lens						
Red	60°	45 @ 20mA	20	5	HLMP-K101	100-3205
Narrow Angle Tinted Clear Lens						
Green	45°	12 @ 20mA	25		HLMP-1521◆	100-3375
Untinted Clear Lens - SunPower Series AlInGaP						
Red	60°	180	30	626nm	HLMP-NG07	100-3134
Amber	60°	220	30	590nm	HLMP-NL06	100-3135

◆ High Intensity

221740

Order Multiple=5 Colour	Order Code	Price Each 5+	1K+	5K+
Red	100-3200●	0.210	0.158	0.105
HE Red	100-3201●	0.170	0.119	0.093
Yellow	100-3202●	0.147	0.119	0.093
Green	100-3204●	0.170	0.119	0.093
Red	100-3205●	0.187	0.152	0.094
Green	100-3375●	0.171	0.158	0.147

		5+	100+	250+	500+	1K+
Red	100-3134●	0.184	0.170	0.147	0.113	0.101
Amber	100-3135●	0.164	0.152	0.131	0.101	0.090
Orange	100-3389●	0.117	0.106	0.083	0.067	0.055

3mm/T1, Low Current



L=4.7, Dia=3.18
Lead pitch=2.54, Leads=24 x 0.45sq
Cathode identified by shorter lead.

Colour	View Angle	Typ Lum Intensity (mcd)	I_F (mA) (max)	PIV (max)	Mftrs. List No.	Order Code
Tinted Diffused Lens						
Red	60°	2 @ 1mA	20	5	HLMP-K150	100-3206
Red	50°	2.1 @ 2mA	7	5	HLMP-1700	100-3207
Yellow	50°	1.6 @ 2mA	7	5	HLMP-1719	100-3208
Green	50°	2.3 @ 2mA	7	5	HLMP-1790	100-3209
Untinted Clear Lens						
Red	45nm	3 @ 1mA	20	5	HLMP-K155	100-3210

RL Re-reeling available

Avago Technologies Light Emitting Diodes (LEDs) - continued

3mm/T1, Low Current - continued

221741

Order Multiple=5		Price Each			
Colour	Order Code	5+	100+	500+	1K+
Red	100-3206●	0.170	0.146	0.119	0.105
Red	100-3207●	0.106	0.105	0.083	0.067
Yellow	100-3208●	0.131	0.106	0.095	0.067
Green	100-3209●	0.106	0.105	0.083	0.067
Red	100-3210●	0.390	0.340	0.310	0.270

Blue, 3mm/T1 & 5mm/T¾



5mm - L=8.71, Dia.=5.0, Leads=22.89 x 0.5sq. Lead Pitch=2.54

3mm - L=4.7, Dia.=3.18, Leads=23 x 0.45sq. Lead Pitch=2.54

Colour	View Angle	Typ Lum Intensity @ 20mA (mcd) min.	Typ.	Peak Wave length	Forward Voltage Typ.	PIV	Mftrs. List No.	Order Code
3mm/T1 Untinted Clear Lens								
Blue	40°	25	45	426nm	4 - 5	5	HLMP-KB45-A0000	100-3308
5mm/T1 Untinted Clear Lens								
Blue	25°	40	100	426nm	4 - 5	5	HLMP-DB25-B0000	100-3309

206676

Colour	Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	1K+
3mm/T1 Untinted Clear Lens							
Blue	HLMP-KB45-A0000	100-3308●	0.46	0.40	0.37	0.29	0.27
5mm/T1¾ Untinted Clear Lens							
Blue	HLMP-DB25-B0000	100-3309●	0.46	0.40	0.37	0.29	0.27

3mm/T1, Standard and with Resistor



L=4.7, Dia=3.18
Lead pitch=2.54,
Leads=24 x 0.45sq

Cathode identified by shorter lead

Colour	View Angle	Typ Lum. Intensity (mcd)	I_F (mA) (max.)	PIV (max.)	Mftrs. List No.	Order Code
Tinted Diffused Lens						
HE Red	60°	5.5 @ 10mA	25	5	HLMP-1301	100-3196
Yellow	60°	6 @ 10mA	20	5	HLMP-1401	100-3198
Green	60°	1 @ 10mA	25	5	HLMP-1503	100-3199
With Resistor, 5V - Tinted Diffused Lens						
HE Red	60°	8 @ 5V	15	5	HLMP-1600	100-3390
Green	60°	8 @ 5V	15	5	HLMP-1640	100-3391
With Resistor, 12V - Tinted Diffused Lens						
HE Red	60°	8 @ 12V	20	5	HLMP-1601	100-3393

Note: 1 suffix denotes bent right angle legs.

221738

Order Multiple=5		Price Each				
Colour	Order Code	5+	100+	500+	1K+	2K5+
HE Red	100-3196●	0.106	0.095	0.085	0.073	0.069
Yellow	100-3198●	0.117	0.116	0.095	0.079	0.055
Green	100-3199●	0.095	0.083	0.082	0.067	0.055
With Resistor						
HE Red 5Vdc	100-3390●	0.310	0.270	0.240	0.187	0.175
Green 5Vdc	100-3391●	0.310	0.270	0.240	0.187	0.175
HE Red 12Vdc	100-3393●	0.320	0.270	0.240	0.187	0.175

5mm/T1¾, Standard



L=9.19, Dia.=5.08
Lead pitch=2.54, Leads=25 x 0.64sq
Cathode identified by flat on body and shorter lead.
LEDs have no stand-offs, except 322-763 and 322-775

Colour	View Angle	Typ. Luminous Intensity (mcd)	I_F (mA) (max)	PIV (max)	Mftrs. List No.	Order Code
Wide Angle Tinted Diffused Lens						
HE Red	60°	5.4 @ 10mA	25	5	HLMP-3301	100-3211
HE Red	60°	12 @ 10mA	25	5	HLMP-3762	100-3376
Red	60°	—	90	—	HLMP-3301-D0000	166-0489
Orange	60°	7 @ 10mA	25	5	HLMP-D401	100-3212
Yellow	60°	8 @ 10mA	20	5	HLMP-3401	100-3213
Yellow	60°	—	60	—	HLMP-3862	166-0490
Green	60°	5.2 @ 10mA	30	5	HLMP-3507	100-3214
Narrow Angle Tinted Clear Lens						
HE Red	35°	60 @ 10mA	20	5	HLMP-3316	100-3216
Yellow	35°	50 @ 10mA	20	5	HLMP-3416	100-3217
Green	24°	70 @ 20mA	30	5	HLMP-3519	100-3218

FOR SUITABLE MOUNTING CLIP AND RING SEE ORDER CODE 110-5125

221720

Order Multiple=5		Price Each				
Colour	Order Code	5+	100+	500+	1K+	2K5+
Wide Angle Tinted Diffused Lens						
HE Red	100-3211●	0.210	0.119	0.106	0.088	0.075
HE Red	100-3376●	0.300	0.230	0.197	0.164	0.151
Red	166-0489●	0.104	0.095	0.085	0.075	0.070
Orange	100-3212●	0.171	0.147	0.131	0.101	0.088
Yellow	100-3213●	0.095	0.083	0.082	0.067	0.055
Yellow	166-0490●	0.210	0.196	0.175	0.154	0.146
Green	100-3214●	0.095	0.083	0.082	0.067	0.055
Narrow Angle Tinted Diffused Lens						
HE Red	100-3216●	0.171	0.131	0.119	0.088	0.075
Yellow	100-3217●	0.138	0.123	0.111	0.096	0.085
Green	100-3218●	0.171	0.147	0.119	0.101	0.075

4mm, Standard Oval - Tinted





- Well defined spatial radiation pattern
- High brightness material
- Superior resistance to moisture
- 2.74 mm standoffs

Colour	λ_D typ. (nm)	Luminance Intensity @ 20mA min. (mcd)	max. (mcd)	Viewing Angle	I_F (mA) (max)	V_F (mA) (max)	Mftrs. List No.	Order Code
Red	630	800	1990	40° x 100°	50	2.6	HLMP-HD61-TXTZZ	133-9020
Red	630	660	1660	50° x 100°	50	2.6	HLMP-LD63-SWTZZ	133-9016
Green	525	1990	5040	40° x 100°	30	3.8	HLMP-HM61-Y30ZZ	133-9021
Green	525	1660	4200	50° x 100°	30	3.7	HLMP-LM63-X20ZZ	133-9017
Blue	470	380	960	50° x 100°	30	3.7	HLMP-LB63-PT0ZZ	133-9018
Blue	470	460	1150	40° x 100°	30	3.8	HLMP-HB61-QU0ZZ	133-9019

466799

Colour	Order Code	5+	100+	Price Each 250+	500+	1K+
Red	133-9016●	0.270	0.210	0.186	0.162	0.148
Red	133-9020●	0.210	0.163	0.147	0.128	0.116
Green	133-9017●	0.550	0.430	0.380	0.330	0.310
Green	133-9021●	0.520	0.410	0.360	0.310	0.290
Blue	133-9018●	0.500	0.390	0.350	0.310	0.280
Blue	133-9019●	0.520	0.410	0.360	0.310	0.290

4mm & 5mm - InGaN Extra Bright

Round and Oval



Reverse Voltage = 5V for all items

Colour	View Angle	Luminous Intensity @ 20mA Min (mcd)	Max (mcd)	I_F (mA) (max)	Standoff	Mftrs. List No.	Order Code
5mm - Untinted Non-diffused Lens							
Blue	23°	1900	—	30mA	No	HLMP-CB26-SV000	857-6700
Blue	30°	1150	3200	30mA	No	HLMP-CB36-QT000	857-6777
Cyan	15°	7200	21000	30mA	No	HLMP-CE11-X1000	857-6807
Cyan	15°	7200	21000	30mA	Yes	HLMP-CE12-X1000	857-6815
Cyan	23°	5500	16000	30mA	No	HLMP-CE26-WZ000	857-6840
Cyan	30°	5500	16000	30mA	No	HLMP-CE36-WZ000	857-6912
Cyan	30°	5500	16000	30mA	Yes	HLMP-CE37-WZ000	857-6920
Green	15°	9300	27000	30mA	No	HLMP-CM11-Z1C00	879-2798
Green	23°	7200	21000	30mA	No	HLMP-CM26-X1000	857-6998
Green	23°	9300	16000	30mA	No	HLMP-CM26-YZC00	857-7005
Green	30°	7200	—	30mA	No	HLMP-CM36-X1000	857-7072
Green	30°	7200	—	30mA	Yes	HLMP-CM37-X1000	857-7099
5mm Oval - Tinted Non-diffused Lens							
Blue	40 x 100°	400	1150	30mA	Yes	HLMP-HB57-LP000	857-7382
4mm Oval - Tinted Non-diffused Lens							
Blue	50 x 100°	400	1150	30mA	Yes	HLMP-LB17-LP000	879-2836

382896

Order Code	5+	100+	Price Each 250+	500+	1K+
5mm - Untinted Non-diffused Lens					
879-2771●	0.48	0.44	0.40	0.36	0.34
857-6700●	0.48	0.45	0.41	0.36	0.34
857-6777●	0.51	0.47	0.43	0.38	0.35
857-6807●	0.48	0.45	0.41	0.36	0.34
857-6815●	0.48	0.45	0.41	0.36	0.34
857-6840●	0.48	0.45	0.41	0.36	0.34
857-6912●	0.49	0.46	0.42	0.37	0.35
857-6920●	0.48	0.45	0.41	0.36	0.34
879-2798●	0.52	0.47	0.43	0.38	0.36
857-6998●	0.55	0.51	0.47	0.41	0.39

RL Re-reeling available

Order Code	Price Each 5+	100+	250+	500+	1K+
5mm - Untinted Non-diffused Lens					
857-7005●	0.52	0.47	0.43	0.38	0.36
857-7072●	0.52	0.48	0.44	0.39	0.36
857-7099●	0.51	0.47	0.43	0.38	0.35
5mm Oval - Tinted Non-diffused Lens					
857-7382●	0.51	0.46	0.42	0.37	0.35
4mm Oval - Tinted Non-diffused Lens					
879-2836●	0.49	0.45	0.41	0.37	0.35

5mm/T1¾ - Superbright InGAN

Untinted - Non-Diffused



- High luminous output
- Max V_f = 4V
- Standoff or non-standoff leads
- Superior resistance to moisture
- New InGAN flip chip die technology with protective diode
- ESD Class 3

L=8.7, Dia=5.0, Lead Pitch=2.54, Leads=27.2 x 0.5sq
Cathode identified by shorter lead.

These Super Bright Precision Optical Performance LED lamps are based on "flip chip" InGAN material, which is the brightest and most efficient technology for LED's in the blue, green and white region of the spectrum.
The high maximum LED junction temperature limit of +130°C enables high temperature operation in bright sunlight conditions.
Applications include Traffic Signals, Commercial outdoor advertising, Front panel backlighting and Front panel indicators

Colour	Viewing Angle	Luminous Intensity (min)	I_f (max)	PIV (max)	Lead Type	Mftrs. List No.	Order Code
White	23°	1900mcd	30mA	5V	Solder	HLMP-CW24-SV000	100-3363
White	15°	2500mcd	30mA	5V	No stand-offs	HLMP-CW15-TW000	100-3361
White	30°	880mcd	30mA	5V	No stand-offs	HLMP-CW30-PS000	100-3364

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Viewing Angle	Lead Type	Order Code	Price Each 1+	50+	100+	1K+
High Intensity - WHITE						
23°	Solder	**100-3363●**	1.12	0.85	0.77	0.55
15°	No stand-offs	**100-3361●**	1.12	0.85	0.77	0.55
30°	No stand-offs	**100-3364●**	1.26	0.95	0.86	0.62

Electronic Signs and Signals is a fast moving and expanding market where Customers are requiring narrower colour and intensity selections. In order to meet these needs Agilent have created a new numbering system to enable a more effective selection of their LED's for this large and varied market.

Here are some examples of the Applications that these LED's may be used in:

Variable Message Systems including lane signs, urban message signals, fixed and portable message signs.

Traffic Signals including traffic lights, railway crossing signals, pedestrian signals.

Traffic Signs including blink/barricade lamps, beacons, lane arrows, lane indicators/markers, toll signs, pictograms, speed limit signs, parking signs.

Commercial signs including advertising signs, entertainment signs, general information/ health and safety signs, passenger information signs, full colour video panels, stadium signs.

The Agilent Ultra High Bright LED's used in this market area are the Precision Optical Performance (POP) light emitting diodes. The AlInGap and InGaN LED's provide superior light output for excellent readability in sunlight and are extremely reliable. The lamps have untinted, non-diffused lenses and offer well defined spatial radiation patterns. They have advanced optical grade epoxy offering superior high temperature and high moisture resistance performance in outdoor signal and sign applications.

206589

5mm LED's Precision Optical Performance (POP)

Including High Brightness White, Blue and Green



Dia=5.0, L=8.71, Leads=22.89x0.5sq
Lead Pitch=2.54
Cathode identified by flat on body and shorter lead

- Designed for the Electronic Signs & Signalling market
- Superior performance in outdoor environments
- Viewing angles match Traffic Sign Management requirements
- Well defined spatial radiation patterns
- Red, Green and Blue radiation patterns matched for full colour signs (Oval LED's)
- High luminous output including White
- Colours meet automotive and pedestrian signal specifications

I_F max.=30mA - P.I.V.=5V

Colour	View Angle	Typ Lum Intensity @ 20mA min	max (typ)	Peak Wavelength (nm)	Stand-offs	Mftrs. List No.	Order Code
Red Untinted Clear Lens							
Red	6°	4700	18400	626	No	HLMP-EG08-WZ000	100-3319
Red	6°	4700	18400	626	No	HLMP-EG10-WZ000	100-3321
Red	15°	2170	8300	630	Yes	HLMP-ED16-TW000	100-3153
Red	15°	2170	8300	630	Yes	HLMP-ED18-TW000	100-3175
Red	23°	2170	8300	630	No	HLMP-ED25-TW000	100-3324
Red	23°	2170	8300	630	Yes	HLMP-ED27-TW000	100-3325
Red	23°	765	2900	626	No	HLMP-EG24-PS000	100-3151
Red	23°	765	2900	626	Yes	HLMP-EG26-PS000	100-3172
Red	30°	1650	6300	626	No	HLMP-ED31-SV000	100-3322
Red	30°	1650	6300	626	Yes	HLMP-ED33-SV000	100-3323
Red	30°	590	2200	626	No	HLMP-EG30-NR000	100-3152
Red	30°	590	2200	626	Yes	HLMP-EG32-NR000	100-3174
Red	15°	3200	(9300)	639	No	HLMP-ED18-UX000	166-0504
Red	30°	1900	(5500)	639	No	HLMP-ED31-SV0DD	166-0505
Red	8°	9300	(12000)	635	No	HLMP-EG08-Y2000	166-0506
Red	15°	880	(2500)	635	No	HLMP-EG15-PS000	166-0507
Red-Orange Untinted Clear Lens							
Red / Orange	6°	4700	18400	615	No	HLMP-EH08-Y2000.	100-3326
Red / Orange	6°	4700	18400	615	Yes	HLMP-EH10-WZ000	100-3327
Red / Orange	15°	2750	10700	615	No	HLMP-EH16-UX000	100-3154
Red / Orange	15°	2750	10700	615	Yes	HLMP-EH18-UX000	100-3176
Red / Orange	23°	1650	6300	615	No	HLMP-EH25-SV000	100-3155
Red / Orange	30°	1650	6300	615	No	HLMP-EH31-SV000	100-3328
Red / Orange	30°	1650	6300	615	Yes	HLMP-EH33-SV000	100-3329
Amber Untinted Clear Lens							
Amber	6°	3600	13800	590	No	HLMP-EL08-VY000	100-3142
Amber	6°	1650	6300	590	Yes	HLMP-EL10-VY000	100-3165
Amber	15°	2750	10700	592	No	HLMP-EL16-UX000	100-3146
Amber	15°	2750	10700	592	Yes	HLMP-EL18-UX000	100-3169
Amber	15°	1650	6300	590	No	HLMP-EL15-SV000	100-3143
Amber	23°	1650	6300	592	No	HLMP-EL25-SV000	100-3147
Amber	23°	1650	6300	592	Yes	HLMP-EL27-SV000	100-3170
Amber	23°	765	2900	590	No	HLMP-EL24-PS000	100-3144
Amber	23°	765	2900	590	Yes	HLMP-EL26-PS000	100-3167
Amber	30°	1650	6300	592	No	HLMP-EL31-SV000	100-3330
Amber	30°	1650	6300	592	Yes	HLMP-EL33-SV000	100-3332
Amber	30°	765	2900	590	No	HLMP-EL30-PS000	100-3145
Amber	30°	765	2900	590	Yes	HLMP-EL32-PS000	100-3168
Amber	15°	4200	(12000)	592	No	HLMP-EL16-VY000	166-0508
White Untinted Clear Lens							
White	15°	1500	—	—	Yes	HLMP-CW16-R0000	166-0502
Blue Untinted Clear Lens							
Blue	15°	765	1575*	470	No	HLMP-CB15-P0000	100-3156
Blue	30°	270	560*	470	No	HLMP-CB30-K0000	100-3157
Blue	30°	270	560*	470	Yes	HLMP-CB31-M0000	100-3177
Blue	30°	680	1900	464	No	HLMP-CB30-NRG00	166-0497
Blue	30°	1150	3200	464	No	HLMP-CB36-QT000	857-6777
Blue	23°	1900	(4200)	516	No	HLMP-CB26-SV000	857-6700
Blue	30°	1150	3200	464	No	HLMP-CB36-QT000	857-6777
Blue	15°	1150	3200	470	No	HLMP-CB15-RSC00	166-0493
Cyan Untinted Clear Lens							
Cyan	15°	7200	21000*	501	No	HLMP-CE11-X1000	857-6807
Cyan	15°	7200	21000*	501	Yes	HLMP-CE12-X1000	857-6815
Cyan	23°	5500	16000*	501	No	HLMP-CE26-WZ000	857-6840
Cyan	30°	5500	16000*	501	No	HLMP-CE36-WZ000	857-6912
Cyan	30°	5500	16000*	501	Yes	HLMP-CE37-WZ000	857-6920
Green Untinted Clear Lens							
Green	15°	1650	4700*	524	No	HLMP-CM15-S0000	100-3158
Green	15°	1650	4700*	524	Yes	HLMP-CM16	100-3178
Green	30°	765	1750*	524	No	HLMP-CM30-M0000	100-3159
Green	30°	765	1750*	524	Yes	HLMP-CM31-M00DD	100-3179
Green	15°	1650	4700*	524	Yes	HLMP-CM15-VY000..	857-6963
Green	15°	1650	4700*	524	No	HLMP-CM15-VY000	166-0499
Green	30°	765	1750*	524	No	HLMP-CM30-S0000	166-0501
4mm, Oval 60° x 120° Tinted Clear Lens							
Red	60° x 120°	345	1330	630	Yes	HLMP-RD11-LP000	100-3333
Amber	60° x 120°	345	1330	592	Yes	HLMP-RL11-LP000	100-3334
Oval 70° x 35° Untinted Clear Lens							
Red	70° x 35°	345	600	630	No	HLMP-BD06-P0000	100-3183
Amber	70° x 35°	345	500	592	No	HLMP-BL06-N0000	100-3182
Amber	70° x 35°		680	592	Yes	HLMP-BL16-N0000	100-3163

* Typical values

206587

Order Multiple=5 Colour	Colour	Order Code	Price Each 5+	100+	250+	500+	1K+
Red Untinted Clear Lens							
Red	HLMP-EG08-WZ000	**100-3319●**	0.200	0.185	0.166	0.143	0.134
Red	HLMP-EG10-WZ000	**100-3321●**	0.200	0.185	0.166	0.143	0.129
Red	HLMP-ED16-TW000	**100-3153●**	0.420	0.340	0.290	0.240	0.200
Red	HLMP-ED18-TW000	**100-3175●**	0.420	0.320	0.290	0.240	0.200
Red	HLMP-ED25-TW000	**100-3324●**	0.490	0.440	0.400	0.300	0.290
Red	HLMP-ED27-TW000	**100-3325●**	0.490	0.440	0.400	0.300	0.290
Red	HLMP-EG24-PS000	**100-3151●**	0.230	0.210	0.186	0.160	0.144
Red	HLMP-EG26-PS000	**100-3172●**	0.200	0.180	0.162	0.139	0.125
Red	HLMP-ED31-SV000	**100-3322●**	0.420	0.370	0.320	0.260	0.250
Red	HLMP-ED33-SV000	**100-3323●**	0.410	0.340	0.310	0.230	0.220
Red	HLMP-EG30-NR000	**100-3152●**	0.310	0.187	0.185	0.146	0.144
Red	HLMP-EG32-NR000	**100-3174●**	0.310	0.210	0.187	0.146	0.144
Red	HLMP-ED18-UX000	**166-0504●**	0.340	0.310	0.270	0.250	0.220
Red	HLMP-ED31-SV0DD	**166-0505●**	0.300	0.280	0.250	0.210	0.200
Red	HLMP-EG08-Y2000	**166-0506●**	0.270	0.240	0.200	0.182	0.172
Red	HLMP-EG15-PS000	**166-0507●**	0.164	0.149	0.135	0.119	0.112
Red-Orange Untinted Clear Lens							
Red / Orange	HLMP-EH08-Y2000.	**100-3326●**	0.300	0.260	0.240	0.167	0.150
Red / Orange	HLMP-EH10-WZ000	**100-3327●**	0.260	0.240	0.210	0.183	0.167
Red / Orange	HLMP-EH16-UX000	**100-3154●**	0.470	0.370	0.310	0.260	0.240
Red / Orange	HLMP-EH18-UX000	**100-3176●**	0.470	0.360	0.310	0.260	0.240

Avago Technologies Light Emitting Diodes (LEDs) - continued

5mm LED's Precision Optical Performance (POP) - continued

Including High Brightness White, Blue and Green - continued

Order Multiple=5			Price Each				
Red-Orange Untinted Clear Lens							
Red / Orange	HLMP-EH25-SV000	**100-3155●**	0.410	0.330	0.280	0.220	0.196
Red / Orange	HLMP-EH31-SV000	**100-3328●**	0.480	0.440	0.350	0.290	0.270
Red / Orange	HLMP-EH33-SV000	**100-3329●**	0.430	0.390	0.320	0.260	0.250
Amber Untinted Clear Lens							
Amber	HLMP-EL08-VY000	**100-3142●**	0.230	0.210	0.178	0.153	0.138
Amber	HLMP-EL10-VY000	**100-3165●**	0.160	0.149	0.140	0.131	0.123
Amber	HLMP-EL16-UX000	**100-3146●**	0.410	0.320	0.290	0.240	0.200
Amber	HLMP-EL18-UX000	**100-3169●**	0.410	0.320	0.290	0.240	0.200
Amber	HLMP-EL15-SV000	**100-3143●**	0.340	0.270	0.240	0.167	0.166
Amber	HLMP-EL25-SV000	**100-3147●**	0.460	0.350	0.320	0.260	0.230
Amber	HLMP-EL27-SV000	**100-3170●**	0.410	0.320	0.290	0.240	0.200
Amber	HLMP-EL24-PS000	**100-3144●**	0.330	0.250	0.200	0.152	0.142
Amber	HLMP-EL26-PS000	**100-3167●**	0.300	0.200	0.182	0.152	0.142
Amber	HLMP-EL31-SV000	**100-3330●**	0.410	0.340	0.310	0.240	0.230
Amber	HLMP-EL33-SV000	**100-3332●**	0.410	0.340	0.310	0.240	0.230
Amber	HLMP-EL30-PS000	**100-3145●**	0.350	0.290	0.240	0.187	0.186
Amber	HLMP-EL32-PS000	**100-3168●**	0.310	0.260	0.240	0.173	0.163
Amber	HLMP-EL16-VY000	**166-0508●**	0.230	0.210	0.185	0.163	0.151
Order Multiple=5			**5+**	**100+**	**250+**	**500+**	**1K+**
White Untinted Clear Lens							
White	HLMP-CW16-R0000	**166-0502●**	0.490	0.460	0.420	0.370	0.350
Blue Untinted Clear Lens							
Blue	HLMP-CB15-P0000	**100-3156●**	1.680	1.380	1.170	0.870	0.810
Blue	HLMP-CB30-K0000	**100-3157●**	1.680	1.380	1.170	0.870	0.810
Blue	HLMP-CB31-M0000	**100-3177●**	1.680	1.380	1.170	0.870	0.810
Blue	HLMP-CB30-NRG00	**166-0497●**	0.440	0.410	0.370	0.330	0.310
Blue	HLMP-CB36-QT000	**857-6777●**	0.510	0.470	0.430	0.380	0.350
Blue	HLMP-CB26-SV000	**857-6700●**	0.480	0.450	0.410	0.360	0.340
Blue	HLMP-CB36-QT000	**857-6777●**	0.510	0.470	0.430	0.380	0.350
Blue	HLMP-CB15-RSC00	**166-0493●**	0.480	0.450	0.410	0.360	0.340
Cyan Untinted Clear Lens							
Order Multiple=5			**5+**	**100+**	**250+**	**500+**	**1K+**
Cyan	HLMP-CE11-X1000	**857-6807●**	0.480	0.450	0.410	0.360	0.340
Cyan	HLMP-CE12-X1000	**857-6815●**	0.480	0.450	0.410	0.360	0.340
Cyan	HLMP-CE26-WZ000	**857-6840●**	0.480	0.450	0.410	0.360	0.340
Cyan	HLMP-CE36-WZ000	**857-6912●**	0.490	0.460	0.420	0.370	0.350
Cyan	HLMP-CE37-WZ000	**857-6920●**	0.480	0.450	0.410	0.360	0.340
Green Untinted Clear Lens							
Order Multiple=1			**1+**	**100+**	**250+**	**500+**	**1K+**
Green	HLMP-CM15-S0000	**100-3158●**	1.890	1.540	1.310	0.970	0.900
Green	HLMP-CM16	**100-3178●**	1.230	1.000	0.870	0.630	0.590
Green	HLMP-CM30-M0000	**100-3159●**	1.890	1.540	1.310	0.970	0.900
Green	HLMP-CM31-M00DD	**100-3179●**	1.350	1.100	0.940	0.690	0.640
Green	HLMP-CM15-VY000..	**857-6963**	0.580	0.520	0.460	0.410	0.390
Green	HLMP-CM15-VY000	**166-0499●**	0.580	0.520	0.460	0.410	0.390
Green	HLMP-CM30-S0000	**166-0501●**	0.570	0.500	0.450	0.400	0.380
4mm Oval 60° x 120° Tinted Clear Lens							
Order Multiple=5			**5+**	**100+**	**250+**	**500+**	**1K+**
Red	HLMP-RD11-LP000	**100-3333●**	0.470	0.390	0.310	0.250	0.210
Amber	HLMP-RL11-LP000	**100-3334●**	0.380	0.310	0.250	0.196	0.171
Oval 70° x 35° Untinted Clear Lens							
Red	HLMP-BD06-P0000	**100-3183●**	0.320	0.250	0.200	0.156	0.146
Amber	HLMP-BL06-N0000	**100-3182●**	0.310	0.240	0.195	0.152	0.142
Amber	HLMP-BL16-N0000	**100-3163●**	0.320	0.270	0.210	0.167	0.145

5mm, Flat-Top and Oval Ultra Bright



Dia=5.0, L=8.71, Leads=23 x 0.5sq
Lead Pitch=2.54
Cathode identified by flat on body and shorter lead
Peak inverse voltage=5V
LEDs that have stand-offs are indicated with*

Colour	Peak Wavelength (nm)	Typ. Lum Intensity @ 20mA (mcd)	I_F (max) (mA)	Viewing Angle	Mftrs. List No.	Order Code
4mm Oval Package - Untinted Non-diffused Lens						
Green	524	520	100	60° x 120°	HLMP-RM11-M0000	857-7463
5mm Oval Package - Untinted Non-diffused Lens						
Blue	470	1150*	100	40° x 100°	HLMP-HB57-LP000	857-7382
5mm Oval Package - Tinted Clear Lens						
Amber	590	300	30	35° x 70°	HLMP-BL01-NR000	100-3133
Red	626	400	30	35° x 70°	HLMP-BG01-MN000	100-3132
5mm Tinted - Diffused Lens						
Red DH Al-GaAS	637	70	30	65°	HLMP-D101	100-3228
5mm Untinted Non-diffused Lens						
Yellow DH AlGaAS	585	140	20	24°	HLMP-3850	100-3225
Green DH Al-GaAS	569	120	25	24°	HLMP-3950	100-3226
HE Red DH AS AlGaAS	626	125	25	24°	HLMP-3750	100-3224
Red DH AS AlGaAS	637	240	20	24°	HLMP-D105	100-3223
5mm Tinted Non-diffused Lens						
Cyan	502	5500*	30	30°	HLMP-CE31-SVC00	122-3766
Green	524	520	30	30°	HLMP-CM31-M0000	122-3767
Green	568	170	30	25°	HLMP-C523	100-3421
5mm Tinted Non-diffused Lens						
Green	568	300	30	15°	HLMP-C515	100-3420
Yellow	583	300	20	15°	HLMP-C315	100-3423
Yellow	583	170	20	25°	HLMP-C323	100-3417
Orange	600	300	30	15°	HLMP-C415	100-3424
Orange	600	170	30	25°	HLMP-C423	100-3419
HE Red	635	300	30	15°	HLMP-C215	100-3415
HE Red	635	170	30	25°	HLMP-C223	100-3416
Red	645	600	30	15°	HLMP-C115	100-3414
Red	630	9300*	50	15°	HLMP-ED16-UX000	122-3797
Red	639	1150	50	55°	HLMP-ED57-LP000	122-3798
Red	635	3200	50	15°	HLMP-EG15-UX000	122-3799
Red	635	4200	50	23°	HLMP-EG24-RU000	122-3801
Red	635	3200	50	30°	HLMP-EG30-QT000	122-3802
Red	635	310	50	55°	HLMP-EG55-HJ0DD	122-3803
Red / Orange	615	7200	50	23°	HLMP-EH27-TW000	122-3804
Amber	592	12000	50	15°	HLMP-EL18-VY000	122-3805
Amber	592	7200	50	23°	HLMP-EL25-TW000	122-3806
Amber	594	1150	50	55°	HLMP-EL57-LP000	122-3807
Red	638	3309	70	100°(x), 40°(y),	HLMP-HD30-SV000	122-3810
Red	639	1900	50	100°(x), 40°(y),	HLMP-HD57-NR000	122-3813
Amber	595	2521	70	100°(x), 40°(y),	HLMP-HL30-RU000	122-3814
Amber	595	2521	70	100°(x), 40°(y),	HLMP-HL31-RU000	122-3815
Red	639	1900*	50	100°(x), 50°(y),	HLMP-LD15-NRT00	122-3816
5mm, White						
White	—	—	20	30°	HLMP-CW37-UX000	122-3785
White	—	1150	30	70°	HLMP-CW72-LP000	122-3791
White	—	2500	30	70°	HLMP-CW77-RS000	122-3796
White	—	2500	30	70°	HLMP-CW76-RS000	122-3794
White	—	3200	30	70°	HLMP-CW77-QT000	122-3795
White	—	3200	30	50°	HLMP-CW46-ST000	122-3788
White	—	3200	30	70°	HLMP-CW76-QT000	122-3792
White	—	3200	30	50°	HLMP-CW47-ST000	122-3790
White	—	4200	30	50°	HLMP-CW47-RU000	122-3789
White	—	4200	30	50°	HLMP-CW46-RU000	122-3787
White	—	5500	30	30°	HLMP-CW31-SV000	122-3782
White	—	5500	20	30°	HLMP-CW36-UX000	122-3783
White	—	7200	30	30°	HLMP-CW36-VW000	122-3784
White	—	7200	30	30°	HLMP-CW37-VW000	122-3786
White	—	7200	30	23°	HLMP-CW23-TW000	122-3775
White	—	7200	30	70°	HLMP-CW24-TW000	122-3776
White	—	9300	30	23°	HLMP-CW26-WX000	122-3778
White	—	9300	30	23°	HLMP-CW27-WX000	122-3780
White	—	12000	30	23°	HLMP-CW27-VY000	122-3779
White	—	12000	30	23°	HLMP-CW26-VY000	122-3777
White	—	12000	30	15°	HLMP-CW16-VY000	122-3774
White	—	16000	30	15°	HLMP-CW11-YZ000	122-3771
White	—	16000	30	15°	HLMP-CW12-YZ000	122-3773
White	—	21000	30	15°	HLMP-CW11-X1000	122-3769
White	—	21000	30	15°	HLMP-CW12-X1000	122-3772
5mm, Flat-Top White						
White	—	1150*	30	85°	HLMP-FW67-NP000	122-3809
White	—	1500	30	85°	HLMP-FW67-MQ000	122-3808

Note: * max Luminous Intensity, min Luminous Intensity

443114

Order Multiple=5			Price Each				
Colour	Order Code		5+	100+	250+	500+	1K+
5mm							
5mm Oval Package - Untinted Non-diffused Lens							
Blue	**857-7382●**		0.510	0.460	0.420	0.370	0.350
5mm Oval Package - Tinted Clear Lens							
Amber	**100-3133●**		0.200	0.185	0.167	0.143	0.139
Red	**100-3132●**		0.220	0.198	0.181	0.159	0.146
5mm Tinted - Diffused Lens							
Red DH AlGaAS	**100-3228●**		0.196	0.170	0.158	0.138	0.113
5mm Untinted Non-diffused Lens							
Yellow DH AlGaAS *	**100-3225●**		0.330	0.290	0.240	0.210	0.164
Green DH AlGaAS *	**100-3226●**		0.270	0.260	0.220	0.199	0.164
HE Red DH AS AlGaAS *	**100-3224●**		0.270	0.260	0.220	0.199	0.175
Red DH AS AlGaAS *	**100-3223●**		0.250	0.240	0.210	0.189	0.178
5mm Tinted Non-diffused Lens							
Cyan	**122-3766●**	RL	0.780	0.590	0.470	0.420	0.390
Green	**122-3767●**	RL	0.660	0.490	0.410	0.360	0.340
Green	**100-3421●**		0.250	0.240	0.210	0.167	0.156
Green	**100-3420●**		0.240	0.220	0.200	0.131	0.114
Yellow	**100-3423●**		0.182	0.173	0.158	0.125	0.117
Yellow	**100-3417●**		0.270	0.260	0.250	0.170	0.128
Orange	**100-3424●**		0.300	0.270	0.260	0.163	0.142
Orange	**100-3419●**		0.250	0.240	0.210	0.150	0.112
HE Red	**100-3415●**		0.260	0.250	0.230	0.147	0.123
HE Red	**100-3416●**		0.270	0.260	0.240	0.168	0.125
Red	**100-3414●**		0.260	0.240	0.199	0.145	0.134
Red	**122-3797●**	RL	0.420	0.340	0.270	0.240	0.220
Red	**122-3798●**	RL	0.380	0.300	0.250	0.210	0.195
Red	**122-3799●**	RL	0.370	0.290	0.240	0.200	0.188
Red	**122-3801●**	RL	0.340	0.260	0.210	0.185	0.171
Red	**122-3802●**	RL	0.310	0.250	0.199	0.173	0.161
Red	**122-3803●**	RL	0.270	0.200	0.171	0.148	0.137
Red / Orange	**122-3804●**	RL	0.420	0.340	0.270	0.240	0.220
Amber	**122-3805●**	RL	0.390	0.300	0.250	0.220	0.200
Amber	**122-3806●**	RL	0.400	0.310	0.260	0.220	0.200
Amber	**122-3807●**	RL	0.380	0.300	0.250	0.210	0.195
Red	**122-3810●**	RL	0.290	0.220	0.184	0.161	0.149
Red	**122-3813●**	RL	0.310	0.240	0.200	0.187	0.166
Amber	**122-3814●**	RL	0.290	0.220	0.184	0.161	0.149
Amber	**122-3815●**	RL	0.290	0.220	0.184	0.161	0.149
Red	**122-3816●**	RL	0.270	0.200	0.170	0.149	0.137
5mm, White							
White	**122-3785●**	RL	0.720	0.560	0.450	0.400	0.370
White	**122-3791●**	RL	0.720	0.560	0.450	0.400	0.370
White	**122-3796●**	RL	0.800	0.610	0.480	0.430	0.400
White	**122-3794●**	RL	0.780	0.590	0.470	0.420	0.390
White	**122-3795●**	RL	0.750	0.580	0.460	0.410	0.380

RL Re-reeling available

Farnell

Order Multiple=5		Price Each				
Colour	Order Code	5+	100+	250+	500+	1K+
5mm						
White	**122-3788●** RL	0.800	0.610	0.480	0.430	0.400
White	**122-3792●** RL	0.730	0.570	0.450	0.400	0.370
White	**122-3790●** RL	0.780	0.590	0.470	0.420	0.390
White	**122-3789●** RL	0.720	0.560	0.450	0.400	0.370
White	**122-3787●** RL	0.750	0.580	0.460	0.410	0.380
White	**122-3782●** RL	0.750	0.570	0.460	0.410	0.380
White	**122-3783●** RL	0.750	0.580	0.460	0.410	0.380
White	**122-3784●** RL	0.800	0.610	0.480	0.430	0.400
White	**122-3786●** RL	0.800	0.610	0.480	0.430	0.400
White	**122-3775●** RL	0.720	0.560	0.450	0.400	0.370
White	**122-3776●** RL	0.750	0.580	0.460	0.410	0.380
White	**122-3778●** RL	0.800	0.610	0.480	0.430	0.400
White	**122-3780●** RL	0.780	0.590	0.470	0.420	0.390
White	**122-3779●** RL	0.750	0.580	0.460	0.410	0.380
White	**122-3777●** RL	0.750	0.580	0.460	0.410	0.380
White	**122-3774●** RL	0.830	0.650	0.510	0.460	0.420
White	**122-3771●** RL	0.800	0.610	0.480	0.430	0.400
White	**122-3773●** RL	0.780	0.590	0.470	0.420	0.390
White	**122-3769●** RL	0.750	0.580	0.460	0.410	0.380
White	**122-3772●** RL	0.750	0.580	0.460	0.410	0.380
5mm, Flat-Top White						
White	**122-3809●** RL	0.780	0.590	0.470	0.420	0.390
White	**122-3808●** RL	0.720	0.560	0.450	0.400	0.370

*LEDs **with** stand-offs

5mm/T1¾, Standard – With Integral Resistor



L=9.19, Dia=5.08,
Lead pitch=2.54, Leads=23 x 0.64sq
Cathode indentified by flat on body and shorter lead.
LEDs have stand-offs.

Colour	View Angle	Typ. Lum Intensity(mcd)	I_F (mA) (max)	PIV (max.)	Mftrs. List No.	Order Code
Tinted Diffused Lens						
HE Red	60°	8 @ 15mA	15	5	HLMP-3600	100-3219
HE Red	60°	8 @ 20mA	20	5	HLMP-3601	100-3220
Yellow	60°	8 @ 15mA	15	5	HLMP-3650	100-3221
Green	60°	8 @ 15mA	15	5	HLMP-3680	100-3222

FOR SUITABLE MOUNTING CLIP AND RING SEE ORDER CODE 110-5125

221722

Order Multiple=5			Price Each				
Colour	Voltage	Order Code	5+	25+	100+	250+	500+
HE Red	5V	**100-3219●**	0.310	0.290	0.240	0.187	0.175
HE Red	12V	**100-3220●**	0.340	0.310	0.240	0.187	0.175
Yellow	5V	**100-3221●**	0.280	0.260	0.210	0.167	0.156
Green	5V	**100-3222●**	0.280	0.260	0.210	0.167	0.156

5mm, Standard Oval - Tinted



- Well defined spatial radiation pattern
- High brightness material
- Superior resistance to moisture
- 2.74 mm standoffs

Colour	λ_D typ. (nm)	Luminance Intensity @ 20mA min. (mcd)	max. (mcd)	I_F (mA)@ (max)	V_F (V) (max)	Viewing Angle	Mftrs. List No.	Order Code
Red	630	1660	3500	20	2.6	90° x 30°	HLMP-AD61-X1TZZ	124-1259
Green	525	2400	5040	20	2.6	90° x 30°	HLMP-AM61-Z30ZZ	124-1260
Blue	470	550	1150	20	2.6	90° x 30°	HLMP-AB61-RU0ZZ	124-1261

491638

		Price Each				
Colour	Order Code	5+	100+	250+	500+	1K+
Red	**124-1259●**	0.210	0.187	0.170	0.148	0.134
Green	**124-1260●**	0.480	0.440	0.400	0.340	0.310
Blue	**124-1261●**	0.480	0.440	0.400	0.340	0.320

5mm/T1¾, Ultra Bright, Tapered



L=8.6, Dia=5.08
Lead pitch=2.54, Leads=23 x 0.64sq

Cathode identified by flat on body and shorter lead.
HLMP4101 has stand-offs.

Colour	Viewing Angle	Luminous Intensity (typ)	I_F (max)	PIV (max)	Mftrs. List No.	Order Code
Red	8	1000mcd	2020	5	HLMP-4101	100-3229

206694

		Price Each			
Colour	Order Code	1+	100+	1K+	5K+
Red	**100-3229●**	0.260	0.250	0.210	0.134

5mm/T1¾, Low Profile



23 x 0.64sq (ultra bright).

Lead pitch=2.54

L=6.35, Dia=5.08

Cathode identified by flat on body and shorter lead.
Ultra bright LED has stand-offs.

Colour	View Angle	Typ Lum. Intensity (mcd)	I_F (mA) (max.)	PIV (max.)	Mftrs. List No.	Order Code
Ultra Bright — Untinted Clear Lens						
HE Red	32°	55 @ 20mA	25	5	HLMP-3390	100-3230

206693

Order Multiple = 5		Price Each				
Colour	Order Code	5+	25+	100+	250+	500+
HE Red	**100-3230●**	0.210	0.194	0.187	0.150	0.112

5mm/T1¾, Low Current



L=9.19, Dia=5.08
Lead pitch=2.54
Leads=25 x 0.45sq (tinted), 23 x 0.64sq (untinted)
Cathode identified by flat on body and shorter lead.
HLMP/D155 has stand-offs.

Colour	View Angle	Typ Lum. Intensity (mcd)	I_F (mA) (max.)	PIV (max.)	Mftrs. List No.	Order Code
Tinted Diffused Lens						
Red	65°	3 @ 1mA	20	5	HLMP-D150	100-3231
Red	50°	2 @ 2mA	7	5	HLMP-4700	100-3232
Yellow	50°	1.8 @ 2mA	7	5	HLMP-4719	100-3233
Green	50°	1.8 @ 2mA	7	5	HLMP-4740	100-3234
Untinted Clear Lens						
Red	24°	10 @ 1mA	20	5	HLMP-D155	100-3235

221737

Order Multiple=5		Price Each		
Colour	Order Code	5+	1K+	5K+
Red	**100-3231●**	0.400	0.270	0.240
Red	**100-3232●**	0.117	0.106	0.083
Yellow	**100-3233●**	0.117	0.106	0.083
Green	**100-3234●**	0.117	0.106	0.083
Red	**100-3235●**	0.195	0.175	0.158

Tricolour, 5mm/T1¾





Two colour LEDs connected common cathode. Both diodes connected gives third intermediate colour.

L=8.6, Dia=5.0
Leads spacing 1.27
(leads in line), no stand-offs
Leads L=25 x 0.51sq

Colours	View Angle	Luminous Intensity (mcd)	Current, I_F (max)	Mftrs. List No.	Order Code
Ultra Bright - Untinted Clear Lens					
HE Red, Green	65°	2.1 / 4.2 @ 10mA	30mA	HLMP-4000	100-3244
Red / Green	60°	2.5 / 2.5 @ 20mA	30mA	TLUV5300	104-5375

FOR SUITABLE MOUNTING CLIP AND RING FOR HLMP4000 SEE ORDER CODE 233-547

221744

		Price Each			
Colour	Order Code	1+	25+	100+	1K+
HE Red, Green	**100-3244●**	0.270	0.210	0.187	0.144
Red / Green	**104-5375●**	0.540	0.330	0.270	0.153

5mm - Flat Top, White

High Intensity - InGaN, 85 ° Viewing Angle



These high intensity white LED lamps are based on InGaN material technology. A blue LED die is coated by phosphor to produce white.

- High luminous white emission
- Superior resistance to moisture
- Reduced power consumption
- High reliability
- Increased optical/mechanical design
- Flexibility compared to incandescent bulbs

Applications include

- Electronic signs and signals
- Small area illumination
- Legend backlighting
- General purpose indicators

Luminous Intensity @ 20mA Min. (mcd)	Max. (mcd)	Forward Voltage Typical	Maximum	I_F (max)	PIV (max)	Standoff	Mftrs. List No.	Order Code
400	1150	3.2V	4.0V	30mA	5V	No	HLMP-FW66-LP000..	857-7340
400	1150	3.2V	4.0V	30mA	5V	Yes	HLMP-FW67-LP000	807-6844
520	1500	3.2V	4V	30mA	5V	No	HLMP-FW67-MQ000	122-3808
680	1150	3.2V	4V	30mA	5V	No	HLMP-FW67-NP000	122-3809

RL Re-reeling available

Farnell

Avago Technologies Light Emitting Diodes (LEDs) - continued

5mm - Flat Top, White - continued

High Intensity - InGaN, 85 ° Viewing Angle - continued

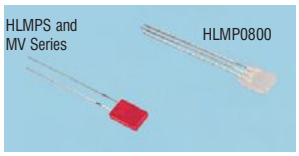
382870

Order Code	Price Each 5+	99+	249+	499+	999+
857-7340	0.53	0.48	0.43	0.38	0.36
807-6844●	0.54	0.49	0.44	0.39	0.37
122-3808● RL	0.72	0.56	0.45	0.40	0.37
122-3809● RL	0.78	0.59	0.47	0.42	0.39

Rectangular

2mm x 5mm

H=1.98, W=5.00, D=7.5
Leads=25 x 0.51sq
Short lead cathode.



Tri-colour common cathode, short lead red anode.
Lead pitch=2.54 except tri-colour = 1.27

Colour	View Angle	Typ. Lum. Intensity (mcd)	I_F (mA) (max)	PIV (max)	Mftr.	Mftrs. List No.	Order Code
Tinted Diffused Lens - DH AlGaAs							
Red	110°	7.5 @ 20mA	20	5	AV	HLMP-S100	100-3137
Tinted Diffused Lens							
HE Red	110°	4.8 @ 20mA	25	5	AV	HLMP-S201	100-3236
Yellow	110°	3.5 @ 20mA	20	5	AV	HLMP-S301	100-3237
Green	110°	5.8 @ 20mA	25	5	AV	HLMP-S501	100-3238
HE Red	100°	4 @ 20mA	35	5	CML	MV57123-17	113-9584
Green	100°	4 @ 20mA	30	5	CML	CMD54123-17	113-9583
Yellow	100°	4 @ 20mA	35	5	CML	CMD53123-17	113-9589
Tri-colour - Untinted Diffused Lens							
HE Red, Green	100°	3.5 / 4 @ 20mA	25 / 25	5	AV	HLMP-0800	100-3138

206232

Order Multiple=1 Colour	Order Code	Price Each 1+	1K+	5K+
Red	**100-3137**●	0.750	0.580	0.440
HE Red	**100-3236**●	0.240	0.170	0.131
Yellow	**100-3237**●	0.240	0.170	0.131
Green	**100-3238**●	0.240	0.170	0.131
Order Multiple=5		**5+**	**100+**	**1K+**
HE Red	**113-9584**●	0.460	0.380	0.290
Green	**113-9583**●	0.460	0.380	0.290
Yellow	**113-9589**●	0.240	0.190	0.144
HE Red, Green	**100-3138**●	0.480	0.440	0.260

Rectangular, 7.5mm x 2.5mm



H=2.54, W=7.49, D=8.0
Lead pitch=2.54, Leads=29 x 0.45sq
Short lead cathode.

Colour	View Angle	Typ. Lum. Intensity (mcd)	I_F (mA) (max.)	PIV (max.)	Mftrs. List No.	Order Code
Tinted Diffused Lens						
HE Red	100°	5 @ 20mA	25	5	HLMP-0301	100-3241
Yellow	100°	5 @ 20mA	20	5	HLMP-0401	100-3242
Green	100°	5 @ 20mA	25	5	HLMP-0504	100-3243

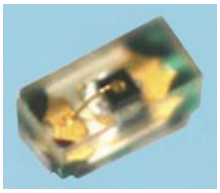
206188

Colour	Order Code	Price Each 1+	1K+	5K+
HE Red	**100-3241**●	0.46	0.31	0.24
Yellow	**100-3242**●	0.46	0.31	0.24
Green	**100-3243**●	0.41	0.28	0.21

Surface Mount Light Emitting Diodes (LEDs)

Surface Mount - 0402

Water Clear Lens



Viewing angle 120°
Reverse voltage 5V
Storage temperature -40°C to +85°C
Operating temperature -40°C to +85°C

Colour	Forward Current (mA)	Peak Wavelength (nm)	Forward Voltage (Vf) typ (V)	max (V)	Power Dissipation (mW)	Order Code Code
Orange	195	610	2	2.5	75	161-4112
Super Yellow	160	590	2	2.5	125	161-4114
Red	160	636	2	2.6	170	161-4115
Green	160	574	2.2	2.6	100	161-4116

517644

Colour	Mftrs. List No.	Order Code	Price Each 1+	10+	100+	500+
Orange	SML-LX0402SOC-TR	SMD **161-4112**● RL	0.230	0.200	0.169	0.135
Super Yellow	SML-LX0402SYC-TR	SMD **161-4114**● RL	0.240	0.210	0.181	0.147
Red	SML-LX0402SIC-TR	SMD **161-4115**● RL	0.240	0.210	0.181	0.147
Green	SML-LX0402SUGC-TR	SMD **161-4116**● RL	0.500	0.440	0.370	0.320

0603 LEDs



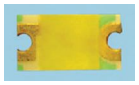
Viewing Angle 140°
Current Rating 20mA
Power Dissipation 85mW
Operating Temperature -40°C to +85°C
Reverse Voltage 5V

Colour	Wavelength Peak (nm)	Dominant (nm)	Luminous Intensity typ. (mcd)	Current, If max. (mA)	Voltage, Vf typ. (V)	Mftrs. List No.	Order Code
Super Red	600	643	15	100	1.85	MCL-S290SRC	158-1244
Orange	635	627	11	100	2	MCL-S290AC	158-1245
Yellow	587	590	10	100	2.1	MCL-S290YC	158-1246
Super Blue	470	472	50	100	3.4	MCL-S291SBLC	158-1248

509974

Colour	Mftrs. List No.	Order Code	Price Each 5+	25+	100+
Super Red	MCL-S290SRC	SMC **158-1244**● RL	0.112	0.090	0.074
Orange	MCL-S290AC	SMC **158-1245**● RL	0.112	0.090	0.074
Yellow	MCL-S290YC	SMC **158-1246**● RL	0.118	0.094	0.079
Super Blue	MCL-S291SBLC	SMC **158-1248**● RL	0.370	0.290	0.250

598 Series SMT


0603


0805


1206


1206


1208


1210


0606

- All LEDs: IF=20mA
- Viewing Angle: 140°
- Forward Voltage, VF=2 to 2.2V (LED specific)

497117

Mftrs. List No.	Luminous Int (mcd)	Colour	Order Code	Price 10+	100+	250+	500+
0603 Package							
5988010107F	40	Red	SMD **146-5988**● RL	0.088	0.070	0.057	0.045
5988040107F	130	Yellow	SMD **146-5989**● RL	0.113	0.085	0.069	0.065
5988060107F	40	Yellow-Green	SMD **146-5990**● RL	0.101	0.076	0.062	0.058
5988070107F	20	Green	SMD **146-5991**● RL	0.101	0.076	0.062	0.058
0805 Package							
5988110107F	40	Red	SMD **146-5992**● RL	0.096	0.072	0.058	0.054
5988140107F	130	Yellow	SMD **146-5993**● RL	0.088	0.070	0.057	0.045
5988160107F	40	Yellow-Green	SMD **146-5994**● RL	0.096	0.072	0.058	0.054
5988170107F	20	Green	SMD **146-5996**● RL	0.088	0.070	0.057	0.045
1206 Package							
5988210107F	55	Red	SMD **146-5997**● RL	0.088	0.062	0.059	0.045
5988240107F	130	Yellow	SMD **146-5998**● RL	0.105	0.078	0.063	0.059
5988260107F	40	Yellow-Green	SMD **146-5999**● RL	0.105	0.078	0.063	0.059
5988270107F	20	Green	SMD **146-6000**● RL	0.105	0.078	0.063	0.059
1208 Package							
5988310107F	55	Red	SMD **146-6004**● RL	0.127	0.095	0.077	0.073
5988370107F	28	Green	SMD **146-6007**● RL	0.108	0.080	0.065	0.062
1210 Package							
5988610207F	40	Red/Green	SMD **146-6009**● RL	0.210	0.190	0.174	0.159
5988640207F	40	Yellow/Green	SMD **146-6011**● RL	0.210	0.190	0.174	0.159
0606 Package							
5988410207F	40	Red/Green	SMD **146-6012**● RL	0.210	0.190	0.174	0.159

Surface Mount LED Lamp


OVSRWAC1R6


OVSRRGBCC3

The OVSRWAC1R6 is ideal for backlighting LCD screens and for coupling with light guides. This design combines high optical efficiency with wide

RL Re-reeling available

viewing angles (x = 120°, y = 110°) and low power consumption.
The OVSRRGBCC3 is a compact full-color (RGB) in a miniature surface mount package with a 150° viewing angle. This 1204 package provides the option to mount it as a top-emitting or side-emitting (right angle) device. The device can be used on smaller boards with a higher packing density and is ideal for handheld applications.

Colour	Viewing Angle	Luminous Intensity (typ)	Forward Current	Violtage Vf Vf (max)	Operating Temperature	Mftrs. List No.	Order Code
White	120°	2000mcd	20mA	3.4V	-30°C to +85°C	OVSRWAC1R6	167-8706
Red / Green / Blue	150°	300mcd	20mA	3.6V	-40°C to +85°C	OVSRRGBCC3	167-8707

528471

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
OVSRWAC1R6	167-8706● RL	0.66	0.58	0.38	0.35	0.34
OVSRRGBCC3	167-8707● RL	0.73	0.65	0.42	0.40	0.38

SMD LED's

PLCC-2 Package

VISHAY

SMD



These devices have been designed to meet the increasing demand for high efficiency LED's. The package consists of a lead frame, which is embedded, in a white thermoplast. The reflector inside the package is filled with clear epoxy.

H = 1.65, W = 3.5, D = 2.8mm

Features:
- Exceptional brightness
- EIA and ICE standard package
- Low Profile
- Non-diffused lens ideally suited to light pipes
- Compatible with infared, vapour phase and wave soldering processes
- ESD-withstand voltage: upto 2kV according to JESD22-A114-B

Applications:
- Backlighting in automotive dashboards and switches
- Indicator and backlighting in telephones and fax
- Audio, video and battery driven equipment
- Flat backlight for LCD's, switches and symbols

Colour	λ_{peak}(nm) or Colour Temp (K)	Luminous Flux (mcd) @ min.	max.	I_F Test (mA)	V_F max. (V)	I_F max. (mA)	V_R max. (V)	Mftrs. List No.	Order Code
White	5500	112	355	10	4.2	20	—	VLMW41R1T1-5K8L-18	164-8559
White	5500	140	280	10	4.2	20	—	VLMW41R2S2-5K8L-18	164-8560
White	5500	180	355	10	4.2	20	—	VLMW41S1T1-5K8L-18	164-8562
White	5500	280	1120	20	4.2	30	5	VLMW33S2V1	132-8356
White	5500	450	710	20	4.2	30	5	VLMW33T2U2	132-8357
White	5500	560	1400	20	4.2	30	5	VLMW33U2AA	132-8358
Red	643	4.5	11.2	2	2.2	15	6	VLMS30J1K2	132-8346
Red	643	4.5	18	2	2.2	15	6	VLMS30J1L2	132-8348
Red	643	7.1	18	2	2.2	15	6	VLMS30K1L2	132-8349
Red	641	180	560	30	2	50	—	VLMS33S1U1	132-8354
Orange-Soft	610	90	355	20	2.6	30	5	VLMF31Q2T1	132-8327
Orange	610	7.1	18	2	2.2	15	6	VLMO30K1L2	132-8330
Orange	610	11.2	28	2	2.2	15	6	VLMO30L1M2	132-8332
Yellow	635	5.6	11.2	2	2.2	15	6	VLMY30J2L1	132-8364
Yellow	635	5.6	18	2	2.2	15	6	VLMY30J2M1	132-8365
Yellow	635	9	22.4	2	2.2	15	6	VLMY30K2M1	132-8366
Green	522	35.5	224	10	4.2	20	5	VLMTG31N2S1	132-8325
Green	565	7.1	18	10	2.8	30	15	VLMG31K1L2	132-8317
Green	565	11.2	28	10	2.8	30	15	VLMG31L1M2	132-8319
Green	565	28	71	30	2.5	50	5	VLMPG33N1P2	132-8324
Blue	464	45	90	10	4.2	20	—	VLMB41P1Q1-GS18	164-8563
Blue	464	45	112	10	4.2	20	—	VLMB41P1Q2-GS18	164-8564
Blue	464	56	112	10	4.2	20	—	VLMB41P2Q2-GS18	164-8565

457724

Colour	Mftrs. List No.	Order Code	Price Each 5+	50+	100+
White	VLMW41R1T1-5K8L-18	NEW 164-8559● RL	0.510	0.400	0.320
White	VLMW41R2S2-5K8L-18	NEW 164-8560● RL	0.510	0.400	0.320
White	VLMW41S1T1-5K8L-18	NEW 164-8562● RL	0.510	0.400	0.320
White	VLMW33S2V1	132-8356● RL	0.590	0.440	0.400
White	VLMW33T2U2	132-8357● RL	0.790	0.590	0.530
White	VLMW33U2AA	132-8358● RL	0.630	0.470	0.430
Red	VLMS30J1K2	132-8346● RL	0.094	0.070	0.062
Red	VLMS30J1L2	132-8348● RL	0.094	0.070	0.062
Red	VLMS30K1L2	132-8349● RL	0.094	0.070	0.062
Red	VLMS33S1U1	132-8354● RL	0.145	0.108	0.096
Orange-Soft	VLMF31Q2T1	132-8327● RL	0.109	0.082	0.073
Orange	VLMO30K1L2	132-8330● RL	0.090	0.067	0.060
Orange	VLMO30L1M2	132-8332● RL	0.090	0.067	0.060
Yellow	VLMY30J2L1	132-8364● RL	0.087	0.065	0.059
Yellow	VLMY30J2M1	132-8365● RL	0.087	0.065	0.059
Yellow	VLMY30K2M1	132-8366● RL	0.116	0.087	0.078
Green	VLMTG31N2S1	132-8325● RL	0.500	0.380	0.340
Green	VLMG31K1L2	132-8317● RL	0.094	0.070	0.062
Green	VLMG31L1M2	132-8319● RL	0.100	0.075	0.066
Green	VLMPG33N1P2	132-8324● RL	0.135	0.101	0.090
Blue	VLMB41P1Q1-GS18	NEW 164-8563● RL	0.510	0.400	0.320
Blue	VLMB41P1Q2-GS18	NEW 164-8564● RL	0.510	0.400	0.320
Blue	VLMB41P2Q2-GS18	NEW 164-8565● RL	0.510	0.400	0.320

Ultra-Miniature Flat-Top

InGaN I_F = 30 mA

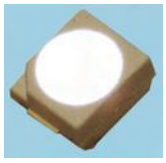
TOSHIBA



1.6 x 0.8 x 0.45, package: 4-1A1(1608)



2.2 x 1.4 x 1.3 package: 4-2F1(PLCC-2)(package colour may be different then one shown)



4-3R1

- High Luminous Intensity
- Highly compact surface mount footprint
- Low drive current
- Pb free reflow soldering is possible

SMD

Colour	Dominant Wavelength Typ (nm)	Luminous Intensity (mcd) @ min.	typ.	max.	I_F (mA)	Viewing Angle (°)	Mftrs List No.
Blue	470	40	70	200	20	120	TLBD1100B(T11)
Blue	470	63	100	320	20	140	TLBE1100B(T11)
Blue / Green	505	160	300	800	20	140	TLGTE1100B(T11)
Blue	528	100	200	500	20	120	TLEGD1100B(T11)
Green	558	10	25	50	20	120	TLPGE1100B(T11)
Green	561	1.53	3.5	12.9	5	140	TLPGV1022(T14)
Green	571	100	200	500	50	120	TLGH1106(T11)
Green	571	4.76	14	41.4	5	140	TLGV1022(T14)
Yellow	587	8.5	25	73.6	5	140	TLYV1022(T14)
Yellow	587	250	450	1250	50	120	TLYH1106(T11)
Orange	605	8.5	38	73.6	5	140	TLOV1022(T14)
Orange	605	250	600	1250	50	120	TLOH1106(T11)
Red	613	8.5	30	73.6	5	140	TLSV1022(T14)
Red	613	250	500	1250	50	120	TLSH1106(T11)
Red	626	4.76	20	41.4	5	140	TLRMV1022(T14)
Red	626	160	380	800	50	120	TLRMH1106(T11)
Red	630	4.76	15	41.4	5	140	TLRV1022(T14)
Red	630	40	100	320	20	120	TLRE1100B(T11)
White	N/A	63	180	320	20	120	TLWD1100(T11)
White	N/A	250	450	1250	20	120	TLWH1100(T11)
White	N/A	450	750	1250	20	120	TLWJ1100(T11)

Case Style	Forward Voltage @ min.	typ.	max.	I_F (mA)	Reverse Voltage (V_F)	Mftrs List No.
4-1A1	1.5	1.8	2.1	5	4	TLRV1022(T14)
4-1A1	1.5	1.8	2.1	5	4	TLRMV1022(T14)
4-1A1	1.6	2	2.3	5	4	TLSV1022(T14)
4-1A1	1.7	2	2.3	5	4	TLGV1022(T14)
4-1A1	1.7	2	2.3	5	4	TLOV1022(T14)
4-1A1	1.7	2	2.3	5	4	TLPGV1022(T14)
4-1A1	1.7	2	2.3	5	4	TLYV1022(T14)
4-2F1	1.7	2.1	2.5	20	15	TLPYF1060(T18)
4-2F1	1.7	2.2	2.5	20	15	TLGF1060(T18)
4-2F1	2.7	3.3	4	20	4	TLBD1060(T18)
4-3R1	1.6	2.1	2.4	20	4	TLPGE1100B(T11)
4-3R1	1.6	2.1	2.4	20	4	TLRE1100B(T11)
4-3R1	2.7	3.3	4	20	4	TLBD1100B(T11)
4-3R1	2.7	3.3	4	20	4	TLEGD1100B(T11)
4-3R1	2.7	3.3	4	20	4	TLWD1100(T11)
4-3R1	2.8	3.2	4.3	20	4	TLBE1100B(T11)
4-3R1	2.8	3.3	4	20	0.75	TLWJ1100(T11)
4-3R1	4.5	3.3	3	20	4	TLGTE1100B(T11)
4-3R1		3.5	4.2	20	0.75	TLWH1100(T11)
4-3T1	1.8	2.2	2.5	50	4	TLGH1106(T11)
4-3T1	1.8	2.2	2.5	50	4	TLOH1106(T11)
4-3T1	1.8	2.2	2.5	50	4	TLSH1106(T11)
4-3T1	1.8	2.2	2.5	50	4	TLYH1106(T11)
4-3T1	1.8	2.2	2.5	50	4	TLYH1106(T11)

For those with a max reverse voltage of 0.75V, a reverse protection diode is integrated.

440424

Mftrs. List No.	Order Code	Price Each 5+	100+	250+	500+
TLGV1022(T14)	122-5788● RL	0.173	0.152	0.135	0.120
TLOV1022(T14)	122-5791● RL	0.104	0.091	0.081	0.072
TLPGV1022(T14)	122-5792● RL	0.131	0.114	0.101	0.091
TLRV1022(T14)	122-5793● RL	0.130	0.113	0.101	0.091
TLRMV1022(T14)	122-5794● RL	0.097	0.085	0.075	0.068
TLSV1022(T14)	122-5795● RL	0.130	0.113	0.101	0.091
TLYV1022(T14)	122-5796● RL	0.097	0.085	0.075	0.068
TLGH1106(T11)	122-5802● RL	0.550	0.470	0.430	0.390
TLOH1106(T11)	122-5803● RL	0.550	0.470	0.430	0.390
TLSH1106(T11)	122-5808● RL	0.410	0.360	0.330	0.300
TLYH1106(T11)	122-5813● RL	0.410	0.360	0.330	0.300
TLBD1100B(T11)	122-5798● RL	0.600	0.530	0.460	0.420
TLBE1100B(T11)	122-5799● RL	0.970	0.850	0.760	0.680
TLEGD1100B(T11)	122-5800● RL	0.600	0.530	0.460	0.420
TLGTE1100B(T11)	122-5797● RL	1.150	1.010	0.900	0.810
TLPGE1100B(T11)	122-5804● RL	0.280	0.250	0.210	0.191
TLRE1100B(T11)	122-5805● RL	0.198	0.173	0.151	0.137
TLBD1060(T18)	122-5780● RL	0.600	0.530	0.460	0.420
TLGF1060(T18)	122-5782● RL	0.330	0.290	0.260	0.220
TLPYF1060(T18)	122-5787● RL	0.250	0.210	0.184	0.166
TLWD1100(T11)	SMD 122-5810● RL	0.600	0.530	0.460	0.420
TLWH1100(T11)	122-5811● RL	1.410	1.230	1.090	0.990
TLWJ1100(T11)	122-5812● RL	1.490	1.320	1.160	1.050
TLYH1106(T11)	122-5813● RL	0.410	0.360	0.330	0.300

£ € 40,000 PRICES REDUCED

RL Re-reeling available

Farnell

Surface Mount Light Emitting Diodes (LEDs) - continued

Leadframe-Based Surface Mount ChipLED

AVAGO TECHNOLOGIES

New

SMD



L=1.6, W=0.8, H=0.45



L=1.6, W=0.8, H=0.25

Viewing Angle	Colour	Luminous Intensity (typ)	Peak Wavelength	Forward Current	Voltage Vf (max)	Mftrs. List No.	Order Code
0.25mm							
120°	Blue	18mcd	469nm	10mA	3.15V	HSMR-CL25	165-2110
120°	White	70mcd	–	10mA	3.15V	HSMW-CL25	165-2117
0.45mm							
145°	Red	120mcd	636nm	20mA	2.4V	ASMT-RR45-AQ902	165-2080
145°	Red / Orange	130mcd	612nm	20mA	2.4V	ASMT-RH45-AQ502	165-2079
145°	Amber	90mcd	593nm	20mA	2.4V	ASMT-RA45-AP932	165-2077
145°	Yellow / Green	60mcd	574nm	20mA	2.4V	ASMT-RF45-AN002	165-2078

528176

Order Multiple=1		Price Each				
Colour	Order Code	1+	25+	100+	250+	500+
0.25mm						
Blue	**165-2110** ● RL	0.280	0.196	0.163	0.137	0.124
White	**165-2117** ● RL	0.300	0.210	0.177	0.150	0.136
0.45mm						
Red	**165-2080** ● RL	0.099	0.070	0.059	0.049	0.045
Red / Orange	**165-2079** ● RL	0.099	0.070	0.059	0.049	0.045
Amber	**165-2077** ● RL	0.099	0.070	0.059	0.049	0.045
Yellow / Green	**165-2078** ● RL	0.099	0.070	0.059	0.049	0.045

0603, 0805 and 1206

OSRAM



- SMD packages, colourless diffused resin
- Viewing angle: extremely wide (160°)
- Technology: InGaAlP
- Suitable for all SMT assembly methods
- Soldering methods: IR reflow soldering and TTW soldering
- Preconditioning: acc. to JEDEC Level 2 or better

Colour	Luminous Intensity typ / (max) (mcd)	V_F typ (V)	I_F max (mA)	Wavelength typ (nm)	Mftrs. List No.	Order Code
0603						
Red	70	2	25	633	LSQ976-Z	122-6390
Red	85	2	60	633	LSL296-P2Q2-1-Z	122-6389
Yellow	110	2	25	587	LYQ976-Z	122-6419
Yellow	(180)	2	30	591	LYL296-Q2R2-26-Z	122-6427
Green	10	2.2	25	570	LGQ971	122-6372
Green	65	3.4	15	528	LTL29S-N2Q1-25-Z	122-6397
Blue	12.5	3.4	15	470	LBL29S-K1L2-35-Z	122-6366
Blue	40	3.1	20	470	LBL293-M2P1-36-Z	122-6359
Blue	(310)	3	20	465	LBL29G-P2R1-35	157-3458
White	125	3.1	20	—	LWL283-Q1R2-3K8L-1-Z	122-6405
0805						
Red	105	2	25	633	LSR976	122-6392
Yellow	7	2.2	20	587	LYR971-Z	122-6420
Green	18	2.2	25	570	LGR971-Z	122-6373
1206						
Yellow	10	2.2	25	587	LYN971-Z	122-6417
Green	26	2.2	25	570	LGN971	122-6371

493032

Colour	Mftrs. List No.	Order Code	Price Each 1+	25+	100+
0603					
Red	LSQ976-Z	SMD **122-6390** ● RL	0.152	0.127	0.109
Red	LSL296-P2Q2-1-Z	SMD **122-6389** ● RL	0.121	0.102	0.085
Yellow	LYQ976-Z	SMD **122-6419** ● RL	0.151	0.126	0.108
Yellow	LYL296-Q2R2-26-Z	SMD **122-6427** ● RL	0.210	0.178	0.152
Green	LGQ971	SMD **122-6372** ● RL	0.061	0.051	0.043
Green	LTL29S-N2Q1-25-Z	SMD **122-6397** ● RL	0.860	0.710	0.610
Blue	LBL29S-K1L2-35-Z	SMD **122-6366** ● RL	1.060	0.870	0.740
Blue	LBL293-M2P1-36-Z	SMD **122-6359** ● RL	1.260	1.060	0.880
Blue	LBL29G-P2R1-35	NEW SMD **157-3458** ● RL	0.570	0.440	0.390
White	LWL283-Q1R2-3K8L-1-Z	SMD **122-6405** ● RL	1.260	1.060	0.880
0805					
Red	LSR976	SMD **122-6392** ● RL	0.152	0.127	0.109
Yellow	LYR971-Z	SMD **122-6420** ● RL	0.061	0.051	0.043
Green	LGR971-Z	SMD **122-6373** ● RL	0.110	0.091	0.077
1206					
Yellow	LYN971-Z	SMD **122-6417** ● RL	0.061	0.051	0.043
Green	LGN971	SMD **122-6371** ● RL	0.061	0.051	0.043

RL Re-reeling available

Over 480,000 products online QGO

ChipLED's - SMD

VISHAY

New

SMD

0603 Package



H = 0.6, W = 1.6, D = 0.8mm

Features:
- Very small SMD package
- Exceptional Brightness
- High reliability lead frame based
- AlInGaP and InGaN technology
- 160° viewing angle

Applications:
- Backlight keypads
- Navigation systems
- Cellular phone displays
- Displays for industrial control systems
- Automotive features
- Miniature colour effects
- Traffic displays

Parameter	Ultra Bright - Blue	Ultra Bright - Green & Red	Low Current
DC Forward Current (mA)	15mA	30mA	15mA
Power Dissipation (mW)	68mW	90mW	40mW
Operating Temp. Range	-40 to 100°C	-40 to 100°C	-40 to 100°C
Storage Temp. Range	-40 to 100°C	-40 to 100°C	-40 to 100°C
LED Junction Temp.	120°C	120°C	120°C
Solder Temperature	260°C	260°C	260°C

Colour	Vf (V)	Vr (V)	Peak Wavelength λ_p	Luminous Flux (mcd)	Angle of Half Intensity	Order Code	Mftrs. List No.
Blue	4.5	5	428	5	80°	132-8305	TLMB1100
Green	3	6	555	15	80°	132-8306	TLMP1100
Orange	2.6	12	610	7.5	80°	132-8307	TLMO1000
Red	2.6	5	640	4	80°	132-8308	TLMS1000
Red	3.0	5	645	63	80°	132-8309	TLMS1100
Yellow	2.6	5	591	7.5	80°	132-8310	TLMY1000

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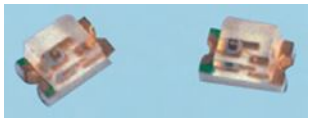
Colour	Order Code	Price Each 5+	50+	100+	250+	500+
Ultrabright						
Blue	SMD **132-8305** ● RL	0.500	0.380	0.340	0.310	0.300
Green	SMD **132-8306** ● RL	0.135	0.101	0.090	0.081	0.078
Red	SMD **132-8309** ● RL	0.093	0.069	0.061	0.056	0.054
Low Current						
Orange	SMD **132-8307** ● RL	0.093	0.069	0.061	0.056	0.054
Red	SMD **132-8308** ● RL	0.093	0.069	0.061	0.056	0.054
Yellow	SMD **132-8310** ● RL	0.093	0.069	0.061	0.056	0.054

0805 LEDs

multicomp

New

SMD



Viewing Angle	140°	Operating Temperature	-40°C to +85°C
Current Rating	20mA	Reverse Voltage	5V
Power Dissipation	100mW		

Colour	Wavelength Peak (nm)	Wavelength Dominant (nm)	Luminous Intensity typ. (mcd)	Current, If max. (mA)	Voltage, Vf typ. (V)	Mftrs. List No.	Order Code
Super Red	660	643	17	120	1.85	MCL-S270SRC	158-1239
Oranage	635	627	11	100	2.1	MCL-S270AC	158-1240
Yellow	587	590	10	100	2.1	MCL-S270YC	158-1241
Green	568	570	10	100	2.1	MCL-S270GC	158-1242
Super Blue	470	472	55	100	3.5	MCL-S270SBLC	158-1243

512125

Colour	Mftrs. List No.	Order Code	Price Each 5+	25+	100+
Super Red	MCL-S270SRC	SMC **158-1239** ● RL	0.112	0.090	0.074
Oranage	MCL-S270AC	SMC **158-1240** ● RL	0.112	0.090	0.074
Yellow	MCL-S270YC	SMC **158-1241** ● RL	0.112	0.090	0.074
Green	MCL-S270GC	SMC **158-1242** ● RL	0.107	0.086	0.071
Super Blue	MCL-S270SBLC	SMC **158-1243** ● RL	0.340	0.270	0.220

Surface Mount — 0805 Chip LEDs

Kingbright

SMD

140 ° Viewing Angle, Untinted Clear



L = 1.25, W = 2, H = 1.12

Colour	Wavelength	Luminous Intensity (mcd) min. @ 20mA	(mcd) typ. @ 20mA	I_f (mA) max	PIV max	Mftrs. List No.	Order Code
Untinted Diffused Lens							
Yellow	585	5	15	20	V5	KP-2012YC	131-8247
Green	565	7	20	30	V5	KP-2012SGC	131-8243
Red	660	10	20	30	V5	KP-2012SRC-PRV	131-8244
Superbright, Untinted Clear Lens							
Hyper Red	630	15	150	30	V5	KP-2012SURCK	131-8245
Yellow	590	25	120	20	V5	KP-2012SYCK	131-8246

454353

Colours	Order Code	Price Each 10+	50+	100+	250+	500+
Untinted Diffused Lens						
Yellow	SMD 131-8247● RL	0.270	0.240	0.200	0.161	0.153
Green	SMD 131-8243● RL	0.124	0.103	0.097	0.081	0.066
Red	SMD 131-8244● RL	0.124	0.104	0.098	0.081	0.067
Superbright, Untinted Clear Lens						
Hyper Red	SMD 131-8245● RL	0.155	0.136	0.112	0.099	0.090
Yellow	SMD 131-8246● RL	0.155	0.136	0.112	0.099	0.090

1206 LEDs

multicomp New SMD



Viewing Angle 140°
Current Rating 20mA
Power Dissipation 85mW
Operating Temperature -40°C to +85°C
Reverse Voltage 5V

Colour	Wavelength Peak (nm)	Wavelength Dominant (nm)	Luminous Intensity typ. (mcd)	Current, If max. (mA)	Voltage, Vf typ. (V)	Mftrs. List No.	Order Code
Super Red	660	643	17	100	1.85	MCL-S250SRC	158-1229
Orange	635	627	11	100	2	MCL-S250AC	158-1230
Yellow	587	590	11	100	2.1	MCL-S250YC	158-1231
Green	568	570	10	100	2.1	MCL-S250GC	158-1232
Super Blue	470	472	65	100	3.4	MCL-S250SBLC	158-1233

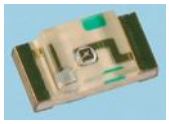
512126

Colour	Mftrs. List No.	Order Code	Price Each 5+	25+	100+
Super Red	MCL-S250SRC	SMD 158-1229● RL	0.112	0.090	0.074
Orange	MCL-S250AC	SMD 158-1230● RL	0.129	0.103	0.086
Yellow	MCL-S250YC	SMD 158-1231● RL	0.129	0.103	0.086
Green	MCL-S250GC	SMD 158-1232● RL	0.118	0.094	0.079
Super Blue	MCL-S250SBLC	SMD 158-1233● RL	0.340	0.270	0.220

Surface Mount - 1206

Water Clear Lens

Kingbright SMD



Standard lens
H = 1.1, W = 3.6, D = 1.6mm



Dome lens
H = 1.8, W = 3.6, D = 1.6mm

Viewing angle (Standard 1206) 120°
Viewing angle (Dome lens 1206) 50°
Viewing angle (Dome lens 1206 - Blue and Super Bright Green) 40°
Reverse voltage 5V
Reverse current 10μA
DC Forward current 30mA
Storage temperature -40 to 85°C
Operating temperature -40 to 80°C

Colour	Material	Wavelength Typical (nm)	Intensity (mcd) @ 20mA Min.	Typ.	Forward Volts. Typ.	Order Code
Standard 1206 package						
Blue	GaN	430	2	8	4.0	852-9957
Blue	InGaN	470	30	45		852-9965
Green	InGaN	525	50	90	4.0	852-9973
Green	InGaAlP	574	20	50	2.1	852-9981
Yellow	InGaAlP	590	40	80	2.0	852-9990
Orange	InGaAlP	610	40	200	2.0	853-0009
Red	InGaAlP	640	70	180	1.9	853-0017
Red	GaAsP/GaP	627	5	12	2.0	853-0025
Green	GaP	565	3	12	2.2	853-0033
Yellow	GaAsP/GaP	590	2	8	2.1	853-0041
Dome lens 1206 package						
Blue	GaN	468	280	600	3.5	853-0050
Green	InGaAlP	574	110	350	2.1	853-0068
Super Bright Green	GaP	565	5	20	2.2	853-0076
Yellow	InGaAlP	590	100	300	2.0	853-0084
Orange	InGaAlP	610	400	1200	2.0	853-0092
Red	InGaAlP	640	300	600	1.9	853-0106
Ultra Red	InGaAlP	640	200	500	1.95	853-0114
Ultra Green	InGaAlP	574	70	200	2.1	853-0130
Ultra Yellow	InGaAlP	590	80	250	2.0	853-0149
Ultra Orange	InGaAlP	610	300	700	2.1	853-0157

381953/405974

Mftrs. List No.	Order Code	Price Each 10+	50+	100+	250+	500+
Standard 1206 package						
KP-3216MBC	SMD 852-9957● RL	0.470	0.350	0.280	0.270	0.260
KP-3216PBC	SMD 852-9965● RL	0.840	0.630	0.510	0.420	0.360
KP-3216VGC	SMD 852-9973● RL	0.840	0.630	0.510	0.420	0.360
KP-3216MGC	SMD 852-9981● RL	0.310	0.230	0.190	0.160	0.140
KP-3216SYC	SMD 852-9990● RL	0.183	0.151	0.124	0.111	0.100
KP-3216SEC	SMD 853-0009● RL	0.183	0.151	0.124	0.111	0.100
KP-3216SURC	SMD 853-0017● RL	0.183	0.151	0.124	0.111	0.100
KP-3216EC	SMD 853-0025● RL	0.104	0.081	0.066	0.060	0.053
KP-3216SGC	SMD 853-0033● RL	0.115	0.095	0.078	0.069	0.059
KP-3216YC	SMD 853-0041● RL	0.104	0.081	0.066	0.060	0.053
Dome lens 1206 package						
KPTD-3216QBC-D	SMD 853-0050● RL	0.630	0.530	0.430	0.370	0.330
KPTD-3216MGC	SMD 853-0068● RL	0.310	0.230	0.190	0.160	0.140
KPTD-3216SGC	SMD 853-0076● RL	0.130	0.107	0.084	0.074	0.061
KPTD-3216SYC	SMD 853-0084● RL	0.186	0.156	0.129	0.115	0.103
KPTD-3216SEC	SMD 853-0092● RL	0.195	0.163	0.135	0.120	0.108

Mftrs. List No.	Order Code	Price Each 10+	50+	100+	250+	500+
Dome lens 1206 package						
KPTD-3216SURC	SMD 853-0106● RL	0.186	0.156	0.129	0.115	0.103
KPTD-3216SURCK	SMD 853-0114● RL	0.138	0.109	0.093	0.084	0.074
KPTD-3216CGCK	SMD 853-0130● RL	0.182	0.153	0.129	0.115	0.104
KPTD-3216SYCK	SMD 853-0149● RL	0.138	0.109	0.093	0.084	0.074
KPTD-3216SECK	SMD 853-0157● RL	0.147	0.117	0.099	0.090	0.079

Bi-Colour LEDs

multicomp New



Viewing Angle 140° *
Current Rating 20mA
Power Dissipation 85mW
Operating Temperature -40°C to +85°C
Reverse Voltage 5V
* Red = 130°

1206

Colour	Wavelength (nm)	Luminous Intensity typ. (mcd)	Current, If max. (mA)	Voltage, Vf typ. (V)	Mftrs. List No.	Order Code
Red / Red	660 / 660	28 / 28	100	1.85 / 1.85	MCL-S255SR2C	158-1237
Green / Green	568 / 568	18 / 18	100	2.1 / 2.1	MCL-S255G2C	158-1238

Colour	Mftrs. List No.	Order Code	Price Each 5+	25+	100+
Red / Red	MCL-S255SR2C	SMD 158-1237● RL	0.250	0.200	0.166
Green / Green	MCL-S255G2C	SMD 158-1238● RL	0.250	0.200	0.166

1210

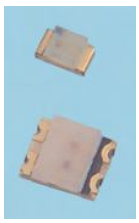
Colour	Wavelength (nm)	Luminous Intensity typ. (mcd)	Current, If max. (mA)	Voltage, Vf typ. (V)	Mftrs. List No.	Order Code
Orange / Green	635 / 568	10 / 9	100	2 / 2.1	MCL-S255AGC	158-1234
Yellow / Green	587 / 568	10 / 9	100	2.1 / 2.1	MCL-S255YGC	158-1236

513695

Colour	Mftrs. List No.	Order Code	Price Each 5+	25+	100+
Orange / Green	MCL-S255AGC	SMD 158-1234● RL	0.220	0.180	0.150
Yellow / Green	MCL-S255YGC	SMD 158-1236● RL	0.290	0.220	0.191

Surface Mount — 1206 Chip LED

Kingbright SMD



- 3.2mm x 1.6mm SMT, 1,1mm thickness
- Low power consumption
- Wide viewing angles
- Ideal for backlight and indicator applications

L=3.2, W=1.6, D=1.1

Colour	Viewing Angle	Luminous Intensity @ 20mA mcd (min)	(typ)	If mA (max)	PIV V (max)	Mftrs. List No.	Order Code
Untinted Clear Lens							
Red	140°	3.6	6	30	5	KPC-3216EC	131-8250
Yellow	140°	3.6	6	30	5	KPC-3216YC	131-8264
Green	140°	6	10	30	5	KPC-3216SGC	131-8254
Red	140°	9	15	30	5	KPC-3216SRC-PRV	131-8257
Untinted Diffused Lens							
Red	160°	2.4	4	30	5	KPC-3216ID	131-8252
Yellow	160°	2.4	4	20	5	KPC-3216YD	131-8265
Green	120°	4	6.5	30	5	KPC-3216SGD	131-8255
Red	160°	4	7	30	5	KPC-3216SRD-PRV	131-8258
Bicolour, Untinted Clear Lens							
Red, Yellow	140°	4 / 4	4 / 6.5	30 / 20	5	KPB-3025EYC	131-8248
Green, Yellow	140°	6.5 / 4	6.5 / 6.5	20 / 30	5	KPB-3025YSGC	131-8249
Superbright, Untinted Clear Lens							
Blue	140°	20	30	30	5	KPC-3216MBC	131-8253
Red	140°	15	30	30	5	KPC-3216SURCK	131-8261
Yellow	140°	15	35	20	5	KPC-3216SYCK	131-8262

454380

Order Multiple=10

Colour	Order Code	Price Each 10+	50+	100+	250+	500+
Untinted Clear Lens						
Red	SMD 131-8250● RL	0.157	0.135	0.118	0.106	0.095
Yellow	SMD 131-8264● RL	0.157	0.135	0.118	0.106	0.095
Green	SMD 131-8254● RL	0.149	0.130	0.113	0.100	0.091
Red	SMD 131-8257● RL	0.164	0.141	0.124	0.110	0.099
Untinted Diffused Lens						
Red	SMD 131-8252● RL	0.220	0.186	0.163	0.145	0.131
Yellow	SMD 131-8265● RL	0.220	0.186	0.163	0.145	0.131
Green	SMD 131-8255● RL	0.220	0.186	0.163	0.145	0.131
Red	SMD 131-8258● RL	0.230	0.195	0.171	0.151	0.137

RL Re-reeling available

Farnell

Surface Mount Light Emitting Diodes (LEDs) - continued

Surface Mount — 1206 Chip LED - continued

Order Multiple=10

Colour	Order Code	Price Each 10+	50+	100+	250+	500+
Bicolour, Untinted Diffused Lens						
Red, Yellow	SMD 131-8248● RL	0.200	0.184	0.163	0.114	0.108
Green, Yellow	SMD 131-8249● RL	0.199	0.179	0.159	0.111	0.105
Superbright, Untinted Clear Lens						
Blue	SMD 131-8253● RL	1.140	0.980	0.870	0.760	0.690
Red	SMD 131-8261● RL	0.132	0.113	0.099	0.088	0.079
Yellow	SMD 131-8262● RL	0.167	0.143	0.126	0.112	0.100

Surface Mount - OLS 330 Series

1206 with lens



- Lens mounting from backside of PCB
- Glass laminated epoxy circuit substrate

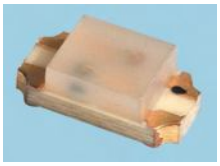
LED Size	1206
Viewing Angle	40°
Forward Current	20mA
Operating Temperature	-40°C to +85°C

Colour	Voltage Rating (V)	Luminous Intensity (mcd)	Mftrs. List No.	Order Code
Red	2.6	1400	OLS 330 MSD	165-5520
Yellow	2.6	1400	OLS 330 MY	165-5519
Green	3.8	1600	OLS 330 EG 525	165-5521
Green	3.8	650	OLS 330 MG 525	165-5513
Blue	3.8	400	OLS 330 EB 460	165-5522
Blue	3.8	140	OLS 330 MB 460	165-5491

525399

Colour	Voltage	Order Code	Price Each 1+	25+	100+	250+	500+
Red	2.6V	165-5520● RL	0.51	0.38	0.32	0.29	0.27
Yellow	2.6V	165-5519● RL	0.51	0.38	0.32	0.29	0.27
Green	3.8V	165-5521● RL	1.22	0.91	0.78	0.69	0.66
Green	3.8V	165-5513● RL	1.13	0.84	0.72	0.64	0.61
Blue	3.8V	165-5522● RL	1.08	0.81	0.69	0.61	0.58
Blue	3.8V	165-5491● RL	0.97	0.72	0.62	0.55	0.52

Surface Mount - 1206 - Bicolour



LED Size	1206
Viewing Angle	2.6V
Operating Temperature	-40°C to +85°C

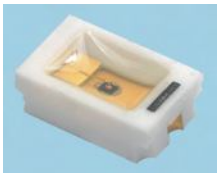
Colour	Forward Current (mA)	Luminous Intensity (mcd)	Mftrs. List No.	Order Code
Red / Yellow	20	12	OLS 130 HSD/ HY	165-5514
Yellow / Yellow	2.6	12	OLS 152 Y/Y	165-5515
Green / Green	2.6	20	OLS 152 SYG/SYG	165-5517
Red / Green	2.6	2	OLS 159 SR/G	165-5518

525400

Colour	Order Code	Price Each 1+	25+	100+	250+	500+
Red / Yellow	165-5514● RL	0.390	0.290	0.250	0.221	0.211
Yellow / Yellow	165-5515● RL	0.320	0.240	0.205	0.182	0.174
Green / Green	165-5517● RL	0.320	0.240	0.205	0.182	0.174
Red / Green	165-5518● RL	0.350	0.260	0.220	0.195	0.186

Surface Mount - OCL 400 Series

Ceramic Package



LED Size	3 x 2mm
Forward Current	20mA
Operating Temperature	-40°C to +85°C

Colour	Forward Voltage (V)	Luminous Intensity (mcd)	Mftrs. List No.	Order Code
Yellow	2.6	400	OCL 400 MY	165-5523
Red	2.6	400	OCL 400 MSD	165-5524
Green	3.8	450	OCL 400 EG 525	165-5525
Blue	3.8	120	OCL 400 EB 460	165-5526
White	3.8	500	OCL 400 EW	165-5527
Warm White	3.8	500	OCL 400 EWW	165-5529

525401

Colour	Order Code	Price Each 1+	25+	100+	250+	500+
Yellow	165-5523● RL	1.15	0.86	0.73	0.65	0.62
Red	165-5524● RL	1.15	0.86	0.73	0.65	0.62
Green	165-5525● RL	2.14	1.60	1.36	1.21	1.15
Blue	165-5526● RL	1.82	1.36	1.16	1.03	0.98
White	165-5527● RL	1.94	1.44	1.23	1.09	1.04
Warm White	165-5529● RL	2.07	1.54	1.32	1.17	1.12

Surface Mount - Chip LEDs

Case Style 0805



L=2.0, W=1.25, D=0.8

Colour	View Angle	Lum. Intensity (mcd) typ. @ 20mA	I_F (mA) (max)	Mftrs. List No.	Order Code
Untinted Clear Lens					
Red	160°	55	25	LSR976-Z	121-2729
Orange	160°	55	25	LOR976-Z	121-2731
Yellow	160°	55	25	LYR976-Z	121-2732

206544

Order Multiple=5

Colour	Order Code	Price Each 5+	25+	100+	250+	500+
Red	SMD 121-2729● RL	0.240	0.220	0.195	0.111	0.086
Orange	SMD 121-2731● RL	0.260	0.240	0.200	0.119	0.085
Yellow	SMD 121-2732● RL	0.200	0.195	0.158	0.096	0.074

E1S02 Series

Surface Mount



E1S02-3 flat type

Length (mm)	Width (mm)	Height (mm)
3	1.4	1.3

The E1S02 Series of high intensity surface mount LEDs exhibit the leading optical features associated with Toyoda Gosei, and are available with or without an incorporated lens, allowing the designer increased control over the light output.

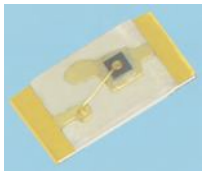
Colour	Dominant Wavelength Max (nm)	Luminous Intensity Typ (mcd)	Viewing Angle	Vf (V) Typ.	If (mA) Max.	Mftrs. List No.
Green	530	161	120°	3.3	30	E1S02-3G0A7-02

249862

Mftrs. List No.	Order Code	Price Each 1+	10+	25+	100+	250+
E1S02-3G0A7-02	SMD 105-7098●	1.19	1.10	1.05	0.95	0.88

Chip LED Lamp

0603



Viewing Angle	120°
LED / Lamp Size	1.6 x 0.8mm
Forward Current	20mA
Operating temperature	-40°C to +85°C

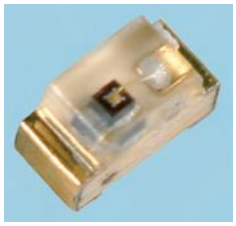
Colour	Luminous Intensity (typ)	Forward Voltage (max)	Mftrs. List No.	Order Code
Super Bright Orange	200mcd	2.5V	KPG-1608SEKC-T	168-6058
Super Bright Yellow	100mcd	2.5V	KPG-1608SYKC-T	168-6059
Green	200mcd	4V	KPG-1608VGC-A	168-6060
Green	420mcd	4.1V	KPG-1608ZGC	168-6061
Blue	35mcd	4V	KPG-1608PBC-A	168-6062
Blue	70mcd	4V	KPG-1608QBC-D	168-6063
Blue	95mcd	4V	KPG-1608QBC-E	168-6065

528812

Colour	Mftrs. List No.	Order Code	Price Each 5+	100+	250+	1K+
Super Bright Orange	KPG-1608SEKC-T	168-6058● RL	0.081	0.063	0.050	0.045
Super Bright Yellow	KPG-1608SYKC-T	168-6059● RL	0.085	0.066	0.053	0.047
Green	KPG-1608VGC-A	168-6060● RL	0.380	0.320	0.270	0.240
Green	KPG-1608ZGC	168-6061● RL	0.290	0.230	0.184	0.164
Blue	KPG-1608PBC-A	168-6062● RL	0.222	0.173	0.139	0.123
Blue	KPG-1608QBC-D	168-6063● RL	0.169	0.132	0.106	0.094
Blue	KPG-1608QBC-E	168-6065● RL	0.320	0.250	0.202	0.180

Surface Mount - 0603

Water Clear Lens



Viewing angle	120°
Reverse voltage	5V
Reverse current	10μA
DC Forward current	30mA
Storage temperature	-40 to 85°C
Operating temperature	-40 to 85°C

H = 1.1, W = 1.6, D = 0.8mm

RL Re-reeling available

Colour	Material	Wavelength Typical (nm)	Intensity (mcd) @ 20mA Min.	Typ.	Forward Volts. Typ.	Order Code
Blue	GaN	430	2	8	4.0	852-9795
Blue	InGaN	468	18	45	3.65	852-9809
Green	InGaN	525	80	120	4.0	852-9817
Green	InGaAlP	574	20	50	2.1	852-9825
Green	GaP	565	3	10	2.2	852-9833
Yellow	InGaAlP	590	40	80	2.0	852-9841
Orange	InGaAlP	610	80	200	2.0	852-9850
Red	InGaAlP	640	70	200	1.9	852-9868

381935/405975

Mftrs. List No.	Order Code	10+	50+	Price Each 100+	250+	500+
KP-1608MBC	SMD 852-9795 RL	0.430	0.390	0.350	0.310	0.270
KP-1608PBC	SMD 852-9809 RL	0.800	0.600	0.510	0.420	0.360
KP-1608VGC	SMD 852-9817 RL	0.840	0.630	0.510	0.420	0.360
KP-1608MGC	SMD 852-9825 RL	0.310	0.230	0.190	0.160	0.140
KP-1608SGC	SMD 852-9833 RL	0.103	0.094	0.070	0.059	0.053
KP-1608SYC	SMD 852-9841 RL	0.161	0.140	0.115	0.103	0.093
KP-1608SEC	SMD 852-9850 RL	0.161	0.140	0.115	0.103	0.093
KP-1608SURC	SMD 852-9868 RL	0.161	0.140	0.115	0.103	0.093

Chip LED Lamp

0805

Kingbright

New

SMD



Viewing Angle 110°
LED / Lamp Size 2 x 1.25mm
Forward Current 20mA
Operating temperature -40°C to +85°C

Colour	Luminous Intensity (typ)	Forward Voltage (max)	Mftrs. List No.	Order Code
HE Red	20mcd	2.5V	KPHCM-2012EC-T	168-6066
Hyper Red	150mcd	2.5V	KPHCM-2012SURCK	168-6067
Super Bright Orange	160mcd	2.5V	KPHCM-2012SECK	168-6068
Yellow	8mcd	2.5V	KPHCM-2012YC-T	168-6071
Super Bright Yellow	120mcd	2.5V	KPHCM-2012SYCK	168-6073
Super Bright Green	25mcd	2.5V	KPHCM-2012SGC-T	168-6074
Green	50mcd	2.5V	KPHCM-2012CGCK	168-6075
Blue	80mcd	3.8V	KPHCM-2012PBC-A	168-6076

528813

Colour	Mftrs. List No.	Order Code	5+	Price Each 100+	250+	1K+
HE Red	KPHCM-2012EC-T	168-6066 RL	0.077	0.060	0.048	0.043
Hyper Red	KPHCM-2012SURCK	168-6067 RL	0.079	0.062	0.049	0.044
Super Bright Orange	KPHCM-2012SECK	168-6068 RL	0.079	0.062	0.049	0.044
Yellow	KPHCM-2012YC-T	168-6071 RL	0.079	0.062	0.049	0.044
Super Bright Yellow	KPHCM-2012SYCK	168-6073 RL	0.079	0.062	0.049	0.044
Super Bright Green	KPHCM-2012SGC-T	168-6074 RL	0.077	0.060	0.048	0.043
Green	KPHCM-2012CGCK	168-6075 RL	0.086	0.067	0.054	0.048
Blue	KPHCM-2012PBC-A	168-6076 RL	0.241	0.188	0.151	0.134

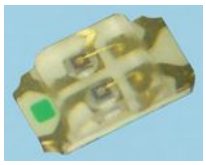
Chip LED Lamp - Bi-Colour

0805

Kingbright

New

SMD



Viewing Angle 120°
LED / Lamp Size 2 x 1.25mm
Forward Current 20mA
Operating temperature -40°C to +85°C

Colour	Luminous Intensity (typ)	Forward Voltage (max)	Mftrs. List No.	Order Code
HE Red / Super Bright Green	20mcd	2.5V	KPHBM-2012ETSGTC	168-6077
Hyper Red / Green	200mcd	2.5V	KPHBM-2012SURKCGKC	168-6079
Green / Super Bright Orange	250mcd	2.5V	KPHBM-2012CGKSEKC	168-6080
Green / Super Bright Yellow	150mcd	2.5V	KPHBM-2012CGKSYKC	168-6081
Blue / Hyper Red	200mcd	3.8V	KPHBM-2012PBASURKC	168-6083
Blue / Green	80mcd	3.8V	KPHBM-2012PBACGKC	168-6084

528818

Mftrs. List No.	Order Code	5+	25+	Price Each 100+	250+	1K+
KPHBM-2012ETSGTC	168-6077 RL	0.234	0.183	0.146	0.130	0.117
KPHBM-2012SURKCGKC	168-6079 RL	0.172	0.135	0.108	0.096	0.086
KPHBM-2012CGKSEKC	168-6080 RL	0.172	0.135	0.108	0.096	0.086
KPHBM-2012CGKSYKC	168-6081 RL	0.247	0.193	0.154	0.137	0.123
KPHBM-2012PBASURKC	168-6083 RL	0.320	0.270	0.220	0.200	0.190
KPHBM-2012PBACGKC	168-6084 RL	0.320	0.270	0.220	0.200	0.190

Surface Mount - 0805

Water Clear Lens

Kingbright

SMD



Viewing angle 120°
Reverse voltage 5V
Reverse current 10μA
DC Forward current 30mA
Storage temperature -30 to 85°C
Operating temperature -20 to 80°C

H = 1.1, W = 2.0, D = 1.25mm

Colour	Material	Wavelength Typical (nm)	Intensity (mcd) @ 20mA Min.	Typ.	Forward Volts. Typ.	Order Code
Blue	GaN	430	2	8	4.0	852-9876
Blue	InGaN	468	30	45	3.5	852-9884
Green	GaP	525	50	100	3.5	852-9892
Green	InGaAlP	574	20	50	2.1	852-9906
Yellow	InGaAlP	588	40	60	2.0	852-9914
Orange	InGaAlP	610	70	200	2.0	852-9922
Red	InGaAlP	640	70	200	2.0	852-9930
Red	GaAsP/GaP	625	5	12.5	2.0	852-9949

381949/405976

Mftrs. List No.	Order Code	10+	50+	Price Each 100+	250+	500+
KP-2012MBC	SMD 852-9876 RL	0.470	0.350	0.280	0.270	0.260
KP-2012PBC	SMD 852-9884 RL	0.840	0.630	0.510	0.420	0.360
KP-2012VGC	SMD 852-9892 RL	0.840	0.630	0.510	0.420	0.360
KP-2012MGC	SMD 852-9906 RL	0.310	0.230	0.190	0.160	0.140
KP-2012SYC	SMD 852-9914 RL	0.157	0.136	0.113	0.100	0.091
KP-2012SEC	SMD 852-9922 RL	0.161	0.140	0.115	0.103	0.093
KP-2012SURC	SMD 852-9930 RL	0.161	0.140	0.115	0.103	0.093
KP-2012EC	SMD 852-9949 RL	0.103	0.081	0.064	0.057	0.047

Surface Mount - Bi-colour and Tri-colour

Water Clear Lens

Kingbright



Bi-colour - Sideview
H = 2.0, W = 3.0, D = 1.0mm



Bi-colour - Topview
H = 1.1, W = 3.0, D = 2.5mm



Tri-colour - 4 pin PLCC4
H = 1.8, W = 5.0, D = 6.0mm

Viewing angle - Bi-colour 120°
Viewing angle - Tri-colour 120°
Reverse voltage (All) 5V
Reverse current (All) 10μA
Operating temperature -40 to 85°C

SMD

Colour	Material	Wavelength Typical (nm)	Intensity (mcd) @ 20mA Min.	Typ.	Forward Volts. Typ.	Order Code
Bi-colour - Sideview						
Red	GaAsP/GaP	627	4	12	2.0	853-0165
Green	GaP	565	2.6	12	2.2	
Bi-colour - Topview						
Red	GaAsP/GaP	627	4	12	2.0	853-0173
Green	GaP	565	4	12	2.2	
Tri-colour - 6 Pin DIL						
Red	InGaAlP	630	650	1000	2.0	853-0181
Green	InGaN	520	180	350	4.0	
Blue	InGaN	465	110	250	3.7	
Tri-colour - 6 Pin						
Red	InGaAlP	630	650	1000	2.0	853-0190
Green	InGaN	520	180	350	4.0	
Blue	InGaN	465	110	250	3.7	
Tri-colour - 4 Pin PLCC4						
Red	InGaAlP	627	12	30	2.0	853-0203
Green	InGaN	565	12	30	2.2	
Blue	GaN	430	5	20	4.0	

381963

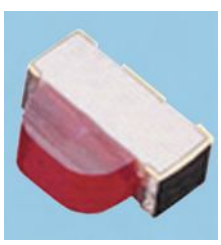
Mftrs. List No.	Order Code	10+	50+	Price Each 100+	250+	500+
Bi-colour - Sideview						
KPBA-3010ESGC-F01	SMD 853-0165 RL	0.200	0.163	0.140	0.124	0.113
Bi-colour - Topview						
KPB-3025ESGC-F01	SMD 853-0173 RL	0.210	0.176	0.143	0.130	0.116
Tri-colour - 6 Pin DIL						
KAF-5060PBESEEVGC	853-0181 RL	2.870	2.150	1.720	1.440	1.230
Tri-colour - 6 Pin						
KAAF-5060PBESEEVGC	SMD 853-0190	3.810	3.220	2.660	2.210	1.880
Tri-colour - 4 Pin PLCC4						
KAA-3528EMBSGC	SMD 853-0203 RL	1.070	0.910	0.750	0.620	0.530

Surface Mount - Sideview

Water Clear Lens

Kingbright

SMD



H = 2.0, W = 3.0, D = 1.0mm

Viewing angle 120°
Reverse voltage 5V
Reverse current 10μA
DC Forward current (Red and Yellow) 30mA
DC Forward current (Green) 25mA
Storage temperature -40 to 85°C
Operating temperature -40 to 85°C

Colour	Material	Wavelength Typical (nm)	Intensity (mcd) @ 20mA Min.	Typ.	Forward Volts. Typ.	Order Code
Red	GaAsP/GaP	627	5	12	2.0	853-0327
Green	GaP	565	3	12	2.2	853-0335
Yellow	GaAsP/GaP	590	3	5	2.1	853-0343

4

RL Re-reeling available

Farnell

RoHS Compliant Non-compliant

Surface Mount Light Emitting Diodes (LEDs) - continued

Surface Mount - Sideview - continued

Water Clear Lens - continued

381959

Mftrs. List No.	Order Code	10+	50+	Price Each 100+	250+	500+
KPA-3010EC	SMD 853-0327● RL	0.103	0.081	0.064	0.053	0.046
KPA-3010SGC	SMD 853-0335● RL	0.103	0.081	0.064	0.053	0.046
KPA-3010YC	SMD 853-0343● RL	0.103	0.081	0.064	0.053	0.046

Surface Mount - Miniature Flat-Top

InGaN I_F = 30 mA

TOSHIBA

SMD



- Flat-top type
- High Luminous Intensity
- Low drive current, high-intensity light emission
- Pb free reflow soldering is possible

2.2 x 1.4 x 1.3 package: 4-2F1(PLCC-2)(package colour may be different then one shown)

Colour	Dominant Wavelength Typ (nm)	Luminous Intensity (mcd) min.	typ.	max.	@ IF mA	Viewing Angle (°)	Mftrs List No.
Blue	470	25	60	125	20	120	TLBD1060(T18)
Green	571	40	80	320	20	100	TLGF1060(T18)
Yellow	580	40	100	320	20	100	TLPYF1060(T18)

Forward Voltage min.	typ.	max.	@ IF mA	Reverse Voltage (V_F)	Mftrs List No.
2.7	3.3	4	20	4	TLBD1060(T18)
1.7	2.2	2.5	20	15	TLGF1060(T18)
1.7	2.1	2.5	20	15	TLPYF1060(T18)

440417

Mftrs. List No.	Order Code	5+	Price Each 100+	250+	500+
TLBD1060(T18)	122-5780● RL	0.600	0.530	0.460	0.420
TLGF1060(T18)	122-5782● RL	0.330	0.290	0.260	0.220
TLPYF1060(T18)	122-5787● RL	0.250	0.210	0.184	0.166

SMD MiniLED

2.3 x 1.3 x 1.4mm Package

VISHAY

SMD



The MiniLED Series has been designed in a small white SMT package. This very small package is ideally suited for small scale, high-power products that are expected to work reliably in harsh environments such as automotive and industrial applications.

H = 1.3, W = 2.3, D = 1.4mm

Features:
- High Brightness
- Low power consumption
- Low Profile
- Non-diffused lens ideally suited to light pipes
- Compatible with IR reflow soldering

Applications:
- Backlighting in automotive dashboards and switches
- Indicator and backlighting in telephones and fax
- Audio, video and battery driven equipment
- Flat backlight for LCD's, switches and symbols

Parameter		Parameter	
DC Forward Current (mA)	30mA	Storage Temp. Range	-40 to 100°C
Half Angle	60°	LED Junction Temp.	110°C
Operating Temp. Range	-40 to 100°C	Solder Temperature	260°C (for 5 seconds)

Colour	Vf (V)	Vr (V)	Peak Wavelength λ_p	Luminous Flux (mcd)	Power Dissipation (mW)	Order Code	Mftrs. List No.
Orange-Soft	3.0	6	605	7.5	95	831-1382	TLMO2100-GS08.
Yellow	3.0	6	585	7.5	95	831-1544	TLMY2100-GS08.
Green	3.0	6	565	10	95	831-1331	TLMG2100-GS08.
Red	2.6	5	643	80	80	831-1340	TLMK2300-GS08.
Orange	2.6	5	610	120	80	831-1323	TLMF2300-GS08.

380978

Colour	Order Code	5+	25+	Price Each 100+	250+	1K+
120° Viewing Angle						
Orange-Soft	SMD 831-1382● RL	0.059	0.055	0.051	0.047	0.043
Yellow	SMD 831-1544● RL	0.127	0.100	0.080	0.068	0.062
Green	SMD 831-1331● RL	0.131	0.096	0.076	0.065	0.062
Red	SMD 831-1340● RL	0.200	0.165	0.132	0.090	0.080
Orange	SMD 831-1323● RL	0.195	0.156	0.123	0.085	0.075

£ € 40,000 PRICES REDUCED

Surface Mount - Ultra Bright White (200mcd), Blue (90mcd) & Green (400mcd)

MARL



- Very high intensity white, blue and green LEDs
- Wide viewing angle
- Supplied on 8mm tape
- Cathode identified by mark on body

SMD

H = 1.7, W = 3.0, D = 2.0

Colour	View Angle	Lum. Intensity (mcd) @ 20mA	$V_{F(typ.)}$	$I_{F\ mA}$(max.)	PIV	Order Code
White	120°	320	3.6	25	5	105-7081
Blue	120°	90	3.6	25	5	105-7082
Green	120°	400	3.5	25	5	105-7083

227176

Colour	Order Code	1+	10+	Price Each 25+	100+	250+
White	SMD 105-7081●	1.42	1.26	1.15	1.09	1.06
Blue	SMD 105-7082●	1.04	0.93	0.85	0.81	0.79
Green	SMD 105-7083●	1.39	1.23	1.13	1.07	1.04

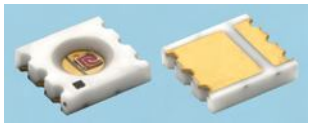
SMD LED's

CLCC2 Package

VISHAY

SMD

New



Colour	λ_{peak} (nm)	Luminous Flux (mcd) @ min.	max.	I_F Test (mA)	V_F max. (V)	I_F max. (mA)	Mftrs. List No.	Order Code
White	—	9000	18000	500	4.3	500	VLMW82EBFB-08	164-8552
White	—	9000	18000	500	4.3	500	VLMW82EBFB-18	164-8553
Amber	623	7100	14000	400	3.4	400	VLMK82EAFA-08	164-8554
Amber	623	7100	14000	400	3.4	400	VLMK82EAFA-18	164-8555
Yellow	594	5600	11200	400	3.4	400	VLMY82DBEB-08	164-8556
Yellow	594	5600	11200	400	3.4	400	VLMY82DBEB-18	164-8558

528289

Colour	Mftrs. List No.	Order Code	1+	25+	Price Each 100+	250+	500+
White	VLMW82EBFB-08	164-8552● RL	3.51	2.81	2.34	2.08	1.94
White	VLMW82EBFB-18	164-8553● RL	3.51	2.81	2.34	2.08	1.94
Amber	VLMK82EAFA-08	164-8554● RL	1.28	1.02	0.85	0.76	0.70
Amber	VLMK82EAFA-18	164-8555● RL	1.28	1.02	0.85	0.76	0.70
Yellow	VLMY82DBEB-08	164-8556● RL	1.28	1.02	0.85	0.76	0.70
Yellow	VLMY82DBEB-18	164-8558● RL	1.28	1.02	0.85	0.76	0.70

SMD LED's

CLCC6 Package

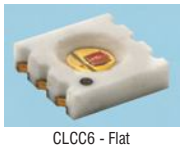
VISHAY

New

SMD



CLCC6



CLCC6 - Flat

Colour	λ_{peak} (nm)	Luminous Flux (mcd) @ min.	max.	I_F Test (mA)	V_F max. (V)	I_F max. (mA)	Mftrs. List No.	Order Code
CLCC6								
Warm White	—	1800	5600	140	4.3	150	VLMW611BADAK3L5-18	164-8567
Warm White	—	2800	7100	140	4.3	150	VLMW611CADBK3L5-18	164-8568
Amber	611	2800	5600	140	3	150	VLMK61CADA-GS18	164-8566
Yellow	591	2800	5600	140	3	150	VLMY61CADA-GS18	164-8569
CLCC6 - Flat								
Warm White	—	1800	5600	140	4.3	150	VLMW621BADAK3L5-18	164-8571
Warm White	—	2800	7100	140	4.3	150	VLMW621CADBK3L5-18	164-8572
Amber	611	2800	5600	140	3	150	VLMK62CADA-GS18	164-8570
Yellow	591	2800	5600	140	3	150	VLMY62CADA-GS18	164-8574

528282

Colour	Mftrs. List No.	Order Code	1+	25+	Price Each 100+	250+	500+
CLCC6							
Warm White	VLMW611BADAK3L5-18	164-8567● RL	2.02	1.61	1.35	1.19	1.11
Warm White	VLMW611CADBK3L5-18	164-8568● RL	3.17	2.54	2.12	1.89	1.75
Amber	VLMK61CADA-GS18	164-8566● RL	1.29	1.03	0.86	0.77	0.70
Yellow	VLMY61CADA-GS18	164-8569● RL	1.29	1.03	0.86	0.77	0.70
CLCC6 - Flat							
Warm White	VLMW621BADAK3L5-18	164-8571● RL	1.96	1.56	1.31	1.16	1.08
Warm White	VLMW621CADBK3L5-18	164-8572● RL	3.11	2.49	2.08	1.85	1.72
Amber	VLMK62CADA-GS18	164-8570● RL	1.22	0.98	0.82	0.72	0.67
Yellow	VLMY62CADA-GS18	164-8574● RL	1.22	0.98	0.82	0.72	0.67

Over 480,000 products online QGO

RL Re-reeling available

Farnell

Surface Mount LED Lamp

PLCC-2

Kingbright



New

SMD

Viewing Angle 120°
LED / Lamp Size 3.5 x 2.8mm
Forward Current 20mA
Operating temperature -40°C to +85°C

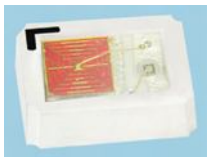
Colour	Luminous Intensity (typ)	Forward Voltage (max)	Mftrs. List No.	Order Code
HE Red	30mcd	2.5V	KA-3528AECT	168-6085
Super Bright Red	150mcd	2.5V	KA-3528ASRCT	168-6087
Hyper Red	230mcd	2.5V	KA-3528ASURCT	168-6088
Hyper Red	200mcd	2.5V	KA-3528ASURCKT	168-6089
Super Bright Orange	350mcd	2.5V	KA-3528ASECT	168-6090
Super Bright Orange	300mcd	2.5V	KA-3528ASECKT	168-6091
Yellow	15mcd	2.5V	KA-3528AYCT	168-6092
Super Bright Yellow	180mcd	2.5V	KA-3528ASYCT	168-6093
Super Bright Yellow	150mcd	2.5V	KA-3528ASYCKT	168-6095
Super Bright Green	25mcd	2.5V	KA-3528ASGCT	168-6096
Green	150mcd	2.5V	KA-3528AMGCT	168-6097
Green	60mcd	2.5V	KA-3528ACGCKT	168-6099
Green	250mcd	4.1V	KA-3528AZGCT	168-6101
Green	220mcd	4V	KA-3528AVGCT-A	168-6102
Green	280mcd	4V	KA-3528AVGCT-E	168-6103
Green	950mcd	3.7V	KA-3528AVGCT-Z	168-6104
Blue	60mcd	4V	KA-3528APBCT-A	168-6105
Blue	350mcd	3.7V	KA-3528APBS-Z	168-6106

528821

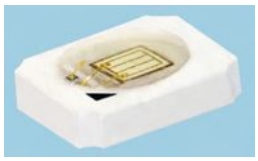
Mftrs. List No.	Order Code	Price Each 5+	25+	100+	250+	1K+
KA-3528AECT	168-6085 RL	0.114	0.089	0.071	0.063	0.057
KA-3528ASRCT	168-6087 RL	0.127	0.099	0.079	0.071	0.063
KA-3528ASURCT	168-6088 RL	0.174	0.136	0.109	0.097	0.087
KA-3528ASURCKT	168-6089 RL	0.131	0.102	0.082	0.073	0.066
KA-3528ASECT	168-6090 RL	0.174	0.136	0.109	0.097	0.087
KA-3528ASECKT	168-6091 RL	0.131	0.102	0.082	0.073	0.066
KA-3528AYCT	168-6092 RL	0.114	0.089	0.071	0.063	0.057
KA-3528ASYCT	168-6093 RL	0.174	0.136	0.109	0.097	0.087
KA-3528ASYCKT	168-6095 RL	0.131	0.102	0.082	0.073	0.066
KA-3528ASGCT	168-6096 RL	0.114	0.089	0.071	0.063	0.057
KA-3528AMGCT	168-6097 RL	0.241	0.188	0.151	0.134	0.121
KA-3528ACGCKT	168-6099 RL	0.138	0.108	0.086	0.077	0.069
KA-3528AZGCT	168-6101 RL	0.340	0.270	0.213	0.189	0.170
KA-3528AVGCT-A	168-6102 RL	0.620	0.480	0.390	0.340	0.310
KA-3528AVGCT-E	168-6103 RL	0.760	0.590	0.470	0.420	0.380
KA-3528AVGCT-Z	168-6104 RL	0.970	0.750	0.600	0.540	0.480
KA-3528APBCT-A	168-6105 RL	0.260	0.200	0.160	0.142	0.128
KA-3528APBS-Z	168-6106 RL	0.720	0.570	0.450	0.400	0.360

LED with Ceramic Substrate

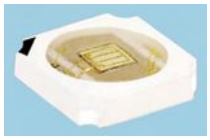
Kingbright



KT-2520



KT-3228



KT-3535

New

SMD

Forward Current 350mA
Operating temperature -40°C to +100°C

Colour	Viewing Angle	Luminous Intensity (typ)	Forward Voltage (max)	Mftrs. List No.	Order Code
Reddish Orange	130°	6500mcd	3V	KT-2520SE9ZS	168-6113
Reddish Orange	120°	18lm	3V	KT-3228SE9ZS	168-6117
Reddish Orange	120°	16lm	3V	KT-3535SE9ZS	168-6121
Super Bright Yellow	130°	7000mcd	2.8V	KT-2520SY9ZS	168-6115
Super Bright Yellow	120°	14lm	2.8V	KT-3228SY9ZS	168-6119
Super Bright Yellow	120°	13lm	2.8V	KT-3535SY9ZS	168-6123
Green	120°	11000mcd	3.8V	KT-2520ZG10ZS	168-6114
Green	120°	50lm	3.8V	KT-3228ZG10ZS	168-6118
Green	120°	55lm	3.8V	KT-3535ZG10ZS	168-6122
Blue	120°	3000mcd	3.6V	KT-2520QB10ZS	168-6116
Blue	120°	13lm	3.6V	KT-3228QB10ZS	168-6120
Blue	120°	13lm	3.6V	KT-3535QB10ZS	168-6125

528826

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	1K+
KT-2520SE9ZS	168-6113 RL	3.16	2.63	2.21	2.01	1.84
KT-3228SE9ZS	168-6117 RL	4.01	3.34	2.81	2.55	2.34
KT-3535SE9ZS	168-6121 RL	4.01	3.34	2.81	2.55	2.34
KT-2520SY9ZS	168-6115 RL	3.16	2.63	2.21	2.01	1.84
KT-3228SY9ZS	168-6119 RL	4.01	3.34	2.81	2.55	2.34
KT-3535SY9ZS	168-6123 RL	4.01	3.34	2.81	2.55	2.34
KT-2520ZG10ZS	168-6114 RL	3.29	2.74	2.30	2.10	1.92

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	1K+
KT-3228ZG10ZS	168-6118 RL	4.01	3.34	2.81	2.55	2.34
KT-3535ZG10ZS	168-6122 RL	4.13	3.45	2.89	2.63	2.41
KT-2520QB10ZS	168-6116 RL	2.69	2.24	1.88	1.71	1.57
KT-3228QB10ZS	168-6120 RL	3.65	3.04	2.55	2.32	2.13
KT-3535QB10ZS	168-6125 RL	3.65	3.04	2.55	2.32	2.13

Panel Circuit Indicators

PLCC-2

TOSHIBA



New

Operating Temperature -40°C to +100°C

Colour	Luminous Intensity (typ)	Forward Current	Forward Voltage	Mftrs. List No.	Order Code
Red	300mcd	20mA	2.5V	TLRK1100C(T11)	168-4613
Red	400mcd	20mA	2.5V	TLRMK1100C(T11)	168-4614
Red	500mcd	20mA	2.5V	TLSK1100C(T11)	168-4615
Orange	500mcd	20mA	2.5V	TLOK1100C(T11)	168-4612
Yellow	400mcd	20mA	2.5V	TLYK1100C(T11)	168-4617
White	1500mcd	20mA	3.8V	TLWK1100B(T11)	168-4616

528918

Colour	Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
Red	TLRK1100C(T11)	168-4613 RL	0.93	0.64	0.49	0.41	0.32
Red	TLRMK1100C(T11)	168-4614 RL	0.93	0.64	0.49	0.41	0.32
Red	TLSK1100C(T11)	168-4615 RL	0.93	0.64	0.49	0.41	0.32
Orange	TLOK1100C(T11)	168-4612 RL	0.93	0.64	0.49	0.41	0.32
Yellow	TLYK1100C(T11)	168-4617 RL	0.94	0.65	0.49	0.42	0.32
White	TLWK1100B(T11)	168-4616 RL	1.38	0.95	0.71	0.60	0.47

Surface Mount LED Lamp

Mid Power

Kingbright



New

SMD

Case Style PLCC-2
Viewing Angle 120°
LED / Lamp Size 3.5 x 2.8mm
Forward Current 150mA
Operating temperature -40°C to +85°C

Colour	Luminous Intensity (typ)	Forward Voltage (max)	Mftrs. List No.	Order Code
Reddish Orange	6000mcd	4.1V	KA-3529SES-L1	168-6107
Green	7500mcd	3.8V	KA-3529ZG24ZS	168-6108
Super Bright Yellow	3000mcd	4.1V	KA-3529SYS-L1	168-6109
Blue	1500mcd	3.9V	KA-3529QB24ZS	168-6111

528823

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	1K+
KA-3529SES-L1	168-6107 RL	0.79	0.62	0.49	0.44	0.39
KA-3529ZG24ZS	168-6108 RL	3.06	2.39	1.92	1.70	1.53
KA-3529SYS-L1	168-6109 RL	0.84	0.66	0.53	0.47	0.42
KA-3529QB24ZS	168-6111 RL	2.07	1.62	1.29	1.15	1.03

SMD LED Lamp

PLCC2, Water Clear Lens

TT electronics OPTEK Technology



Chip Colour	Luminous Intensity (Typ. mcd)	VF (Typ.) (V)	Viewing Angle	Mftrs List No.	Order Code
White	750	3.2	120°	OVS9WBCR4	149-7995

497738

Colour	Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+
White	OVS9WBCR4	SMD 149-7995 RL	0.68	0.45	0.37	0.33

SMD RGB LED Lamp

2.7 x 2.4 x 0.95mm

TT electronics OPTEK Technology

- Red - Green - Blue and White in a single surface mount package
- Compatible with automatic placement equipment
- Each chip individually addressable to provide colour on-demand

Colour	Chip λD Typ. (nm)	Lens Colour	Luminous Intensity (Typ. mcd)	VF (Typ.) (V)	Viewing Angle	Mftrs List No.	Order Code
Red	627.5	Water Clear	100	2.0	110°	OVSTRGBAC6	149-8007
Green	540	Water Clear	300	3.4	110°	OVSTRGBAC6	149-8007
Blue	480	Water Clear	80	3.4	110°	OVSTRGBAC6	149-8007

497748

Colour	Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+
R, G, B	OVSTRGBAC6	SMD 149-8007 RL	1.81	1.20	1.05	1.00

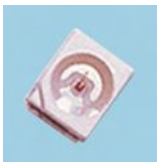
RL Re-reeling available

Farnell

Surface Mount Light Emitting Diodes (LEDs) - continued

Surface Mount - PLCC - 2

Water Clear Lens



Viewing angle	120°
Reverse voltage	5V
Reverse current	10µA
DC Forward current	30mA
Storage temperature	-40 to 85°C
Operating temperature	-40 to 85°C

H = 1.9, W = 3.5,D = 2.8mm

Colour	Material	Wavelength Typical (nm)	Intensity (mcd) @ 20mA Min.	Typ.	Forward Volts. Typ.	Order Code
Red	GaAsP/GaP	627	8	20	2.0	853-0211
Green	GaP	565	7	20	2.2	853-0220
Yellow	GaAsP/GaP	590	4	15	2.1	853-0238
Blue	GaN	430	5	15	4.0	853-0246
Yellow	InGaAlP	590	40	120	2.0	853-0262
Orange	InGaAlP	610	200	350	2.0	853-0270
Red	InGaAlP	640	80	250	1.9	853-0289
Green	InGaAlP	574	80	150	2.1	853-0297
Blue	GaN	464	110	200	3.5	853-0300

381958

Mftrs. List No.	Order Code	Price Each 10+	50+	100+	250+	500+
KA-3528EC	SMD 853-0211● RL	0.148	0.117	0.096	0.080	0.069
KA-3528SGC	SMD 853-0220● RL	0.148	0.117	0.096	0.080	0.069
KA-3528YC	SMD 853-0238● RL	0.148	0.117	0.096	0.080	0.069
KA-3528MBC	SMD 853-0246●	0.710	0.580	0.470	0.410	0.360
KA-3528SYC	SMD 853-0262● RL	0.128	0.109	0.085	0.072	0.065
KA-3528SEC	SMD 853-0270● RL	0.125	0.106	0.083	0.070	0.060
KA-3528SURC	SMD 853-0289● RL	0.200	0.176	0.139	0.116	0.100
KA-3528MGC	SMD 853-0297● RL	0.390	0.340	0.260	0.220	0.187
KA-3528QBC-D	SMD 853-0300● RL	0.710	0.610	0.470	0.420	0.360

PLCC LEDs

Viewing Angle 120°
Forward Voltage (max) 3.8V
Operating temperature -30°C to +85°C

Colour	Case Style	Luminous Intensity (typ)	Forward Current	Mftrs. List No.	Order Code
Cool White	PLCC-2	4.2lm	20mA	SLSNNWH802TS	168-6041
Cool White	PLCC-4	3cd	60mA	SLSNNWH822TS	168-6042
Cool White	PLCC-4	4cd	90mA	SLSNNWH812TS	168-6043
Red / Green / Blue	PLCC-4	650mcd	20mA	SLSRGBW812TS	168-6044

528863

Mftrs. List No.	Order Code	Price Each 1+	10+	25+	100+	250+
SLSNNWH802TS	168-6041● RL	0.54	0.45	0.38	0.34	0.32
SLSNNWH822TS	168-6042● RL	0.74	0.62	0.52	0.47	0.43
SLSNNWH812TS	168-6043● RL	0.94	0.78	0.66	0.60	0.55
SLSRGBW812TS	168-6044● RL	0.86	0.72	0.60	0.55	0.50

Surface Mount - PLCC-2

Standard and Superbright



- 120°C Viewing Angle
- Untinted Clear Lens
- Up to 40mcd Luminous Intensity

L=3.2, W=2.8, H=1.9

Colour	View Angle	Lum Intensity (mcd) @ I_F=10mA min.	typ.	I_F (mA) (max)	PIV (max)	Mftrs. List No.	Order Code
Standard							
Red	120°	25	40	30	5	KA-3528SRC	131-8235
Superbright							
Yellow	120°	40	70	30	5	KA-3528SYCK	131-8237
Orange	120°	40	70	30	5	KA-3528SURCK	131-8236
Blue	120°	20	30	30	5	KA-3528PBC	131-8232

454346

Colour	Order Code	Price Each 10+	50+	100+	250+	500+
Untinted Clear Lens						
Red	SMD 131-8235● RL	0.270	0.240	0.200	0.179	0.161
Superbright, Untinted Clear Lens						
Yellow	SMD 131-8237● RL	0.320	0.270	0.240	0.210	0.188
Orange	SMD 131-8236● RL	0.240	0.200	0.178	0.155	0.139
Order Multiple=1		1+	25+	100+	250+	500+
Blue	SMD 131-8232● RL	1.720	1.520	1.250	0.770	0.640

SMD LED's - Low Current

PLCC-2 Package, 120 °



The LED package is specifically designed for low current applications. It consists of a lead frame, which is embedded, in a white thermoplast. The reflector inside the package is filled with clear epoxy.

H = 1.65, W = 3.5, D = 2.8mm

Features:
- High Brightness
- EIA and ICE standard package
- Low Profile
- Non-diffused lens ideally suited to light pipes
- Compatible with infared, vapour phase and wave soldering processes

Applications:
- Backlighting in automotive dashboards and switches
- Indicator and backlighting in telephones and fax machines
- Audio, video and battery driven equipment
- Flat backlight for LCD's, switches and symbols

Viewing Angle	120°	Operating Temp. Range	-40 to 100°C
Reverse Voltage	6V	Storage Temp. Range	-40 to 100°C
DC Forward Current	15mA	LED Junction Temp.	100°C
Power Dissipation	40mW	Solder Temperature	260°C (for 5 seconds)

Colour	Luminous Intensity (typ)	Forward Voltage, Vf (max)	Forward Current, If	Peak Wavelength λ_p	Order Code	Mftrs. List No.
Red	20mcd	2.2V	15mA	635	121-3161	TLMS3000-GS08
Orange	50mcd	2.2V	15mA	610	121-3160	TLMO3000-GS08
Low Current						
Green	1.6mcd	2.4V	7mA	565	165-9076	VLMC3100-GS08

380944

Colour	Order Code	Price Each 5+	25+	100+	250+	1K+
Red	SMD 121-3161● RL	0.134	0.103	0.080	0.060	0.047
Orange	SMD 121-3160● RL	0.161	0.128	0.101	0.076	0.068
Green	SMD 165-9076● RL	0.155	0.114	0.092	0.068	0.060

Bi-Directional LED

Forward Current 20mA
Operating temperature -30°C to +85°C

Colour	Luminous Intensity (typ)	Forward Voltage (max)	Mftrs. List No.	Order Code
0605				
Green / Red	63mcd	2.2V	SML-521MUWT86M	168-5080
Green / Yellow	63mcd	2.2V	SML-521MYWT86M	168-5081
1210				
HB Red / Green	20mcd	2.8V	SML-020MLTT86M	168-5049
HB Red / Green	20mcd	2.2V	SML-020MVTT86M	168-5050

528832

Mftrs. List No.	Order Code	Price Each 1+	10+	100+	250+	500+
0605						
SML-521MUWT86M	168-5080● RL	0.840	0.420	0.320	0.240	0.230
SML-521MYWT86M	168-5081● RL	0.840	0.420	0.320	0.240	0.230
1210						
SML-020MLTT86M	168-5049● RL	0.470	0.230	0.175	0.134	0.127
SML-020MVTT86M	168-5050● RL	0.470	0.230	0.175	0.134	0.127

Surface Mount LEDs

Colour	Luminous Intensity (typ)	Forward Current	Forward Voltage (max)	Mftrs. List No.	Order Code
0603					
Red	–	–	–	SML-310LTT86	168-5062
Red	4mcd	20mA	2V	SML-310VTT86	168-5064
Red	2.5mcd	2mA	1.8V	SML-311UTT86	168-5068
Red	63mcd	20mA	2.2V	SML-D12U8WT86	168-5094
HB Red	63mcd	20mA	2V	SML-512UWT86	168-5078
HB Red	56mcd	20mA	2V	SML-512VWT86AA	168-5079
HB Red	40mcd	20mA	2V	SML-511UWT86	168-5073
Orange	6.3mcd	20mA	2V	SML-310DTT86	168-5061
Orange	2.5mcd	2mA	1.8V	SML-311DTT86	168-5067
HB Orange	40mcd	20mA	2V	SML-511DWT86	168-5072
HB Orange	100mcd	20mA	2V	SML-512DWT86	168-5075
Yellow	6.3mcd	20mA	2.1V	SML-310YTT86	168-5066
Yellow	2.5mcd	2mA	1.8V	SML-311YTT86	168-5069
Yellow	63mcd	20mA	2.2V	SML-D12Y8WT86	168-5095
HB Yellow	40mcd	20mA	2V	SML-511WWT86	168-5074
Green	200mcd	20mA	3.3V	SML312ECTT86	168-5070
Green	16mcd	20mA	2.8V	SML-510MWT86	168-5071
Green	25mcd	20mA	2.2V	SML-D12M8WT86	168-5093
HB Green	40mcd	20mA	2.1V	SML-512MWT86	168-5076
Pure Green	4mcd	20mA	2.2V	SML-310PTT86	168-5063
Blue	22mcd	5mA	2.9V	SMLE12BC7TT86	168-5096
0605 - Side Viewing					
HB Red	100mcd	20mA	2V	SML-A12UTT86	168-5091
HB Orange	100mcd	20mA	2V	SML-A12DTT86	168-5087
HB Yellow	63mcd	20mA	2V	SML-A12WTT86	168-5092
HB Green	40mcd	20mA	2.1V	SML-A12MTT86	168-5088
0805					
Red	4mcd	20mA	2V	SML-210VTT86	168-5054
Red	2.5mcd	2mA	1.8V	SML-211UTT86	168-5056
HB Red	63mcd	20mA	2.05V	SML-212VTT86	168-5059

RL Re-reeling available

Colour	Luminous Intensity (typ)	Forward Current	Forward Voltage (max)	Mftrs. List No.	Order Code
0805					
Orange	6.3mcd	20mA	2V	SML-210DTT86	168-5051
Orange	2.5mcd	2mA	1.8V	SML-211DTT86	168-5055
HB Orange	63mcd	20mA	2.05V	SML-212DTT86Q	168-5058
Yellow	4mcd	2mA	1.8V	SML-211YTT86	168-5057
HB Yellow	63mcd	20mA	2.05V	SML-212YTT86	168-5060
Pure Green	4mcd	20mA	2.2V	SML-210PTT86	168-5052
1208					
Red	16mcd	20mA	2.5V	SML-010LTT86	168-5035
Red	6.3mcd	20mA	2.8V	SML-010VTT86	168-5037
HB Red	100mcd	20mA	2V	SML-012UTT86	168-5047
Orange	10mcd	20mA	2.8V	SML-010DTT86	168-5034
HB Orange	63mcd	20mA	2V	SML-011DTT86AA	168-5039
HB Orange	100mcd	20mA	2V	SML-012DTT86AA	168-5044
Yellow	6.3mcd	20mA	2.8V	SML-010YTT86	168-5038
HB Yellow	63mcd	20mA	2V	SML-011YTT86AA	168-5040
HB Yellow	100mcd	20mA	2V	SML-012YTT86AA	168-5048
Green	6.3mcd	20mA	2.8V	SML-010PTT86	168-5036
HB Green	140mcd	20mA	3.2V	SML012EC4TT86	168-5045
HB Green	360mcd	20mA	3.3V	SML012ECTT86	168-5046
HB Blue	36mcd	20mA	3.2V	SML-012BC4TT86	168-5042
HB Blue	100mcd	20mA	3.3V	SML-012BCTT86	168-5043
1305					
Red	22.4mcd	10mA	1.95V	SML-811UTT86AA	168-5084
Orange	22.4mcd	10mA	1.95V	SML-811DTT86AA	168-5083
Yellow	28mcd	10mA	1.95V	SML-811WTT86AA	168-5085
Green	40mcd	20mA	2.1V	SML-812MTT86	168-5086
Green	16mcd	20mA	2.2V	SML-810MTT86	168-5082

528833

Mftrs. List No.	Order Code	Price Each 1+	10+	100+	250+	500+
0603						
SML-310LTT86	168-5062● RL	0.230	0.092	0.078	0.063	0.057
SML-310VTT86	168-5064● RL	0.230	0.092	0.078	0.063	0.057
SML-311UTT86	168-5068● RL	0.280	0.138	0.104	0.094	0.084
SML-D12U8WT86	168-5094● RL	0.230	0.101	0.078	0.067	0.063
SML-512UWT86	168-5078● RL	0.380	0.220	0.168	0.151	0.137
SML-512VWT86AA	168-5079● RL	0.380	0.187	0.141	0.128	0.115
SML-511UWT86	168-5073● RL	0.320	0.153	0.115	0.105	0.094
SML-310DTT86	168-5061● RL	0.230	0.092	0.078	0.063	0.057
SML-311DTT86	168-5067● RL	0.280	0.138	0.104	0.094	0.084
SML-511DWT86	168-5072● RL	0.320	0.153	0.115	0.105	0.094
SML-512DWT86	168-5075● RL	0.380	0.220	0.168	0.151	0.137
SML-310YTT86	168-5066● RL	0.230	0.092	0.078	0.063	0.057
SML-311YTT86	168-5069● RL	0.280	0.138	0.104	0.094	0.084
SML-D12Y8WT86	168-5095● RL	0.230	0.101	0.078	0.067	0.063
SML-511WWT86	168-5074● RL	0.320	0.153	0.115	0.105	0.094
SML312ECTT86	168-5070● RL	1.750	1.030	0.870	0.850	0.800
SML-510MWT86	168-5071● RL	0.175	0.080	0.057	0.052	0.047
SML-D12M8WT86	168-5093● RL	0.230	0.101	0.078	0.067	0.063
SML-512MWT86	168-5076● RL	0.380	0.220	0.168	0.151	0.137
SML-310PTT86	168-5063● RL	0.230	0.092	0.078	0.063	0.057
SMLE12BC7TT86	168-5096● RL	0.510	0.260	0.195	0.149	0.141
0605 - Side Viewing						
SML-A12UTT86	168-5091● RL	0.420	0.200	0.153	0.140	0.124
SML-A12DTT86	168-5087● RL	0.420	0.200	0.153	0.140	0.124
SML-A12WTT86	168-5092● RL	0.420	0.200	0.153	0.140	0.124
SML-A12MTT86	168-5088● RL	0.420	0.200	0.153	0.140	0.124
0805						
SML-210VTT86	168-5054● RL	0.230	0.095	0.081	0.065	0.058
SML-211UTT86	168-5056● RL	0.350	0.172	0.129	0.118	0.106
SML-212VTT86	168-5059● RL	0.380	0.220	0.168	0.151	0.137
SML-210DTT86	168-5051● RL	0.240	0.198	0.158	0.118	0.078
SML-211DTT86	168-5055● RL	0.350	0.172	0.129	0.118	0.106
SML-212DTT86Q	168-5058● RL	0.430	0.220	0.164	0.125	0.119
SML-211YTT86	168-5057● RL	0.350	0.172	0.129	0.118	0.106
SML-212YTT86	168-5060● RL	0.380	0.220	0.168	0.151	0.137
SML-210PTT86	168-5052● RL	0.240	0.198	0.158	0.118	0.078
1208						
SML-010LTT86	168-5035● RL	0.290	0.143	0.108	0.097	0.087
SML-010VTT86	168-5037● RL	0.280	0.138	0.104	0.094	0.084
SML-012UTT86	168-5047● RL	0.440	0.220	0.176	0.158	0.148
SML-010DTT86	168-5034● RL	0.290	0.143	0.108	0.097	0.087
SML-011DTT86AA	168-5039● RL	0.470	0.230	0.175	0.134	0.127
SML-012DTT86AA	168-5044● RL	0.500	0.250	0.188	0.144	0.138
SML-010YTT86	168-5038● RL	0.280	0.138	0.104	0.094	0.084
SML-011YTT86AA	168-5040● RL	0.470	0.230	0.175	0.134	0.127
SML-012YTT86AA	168-5048● RL	0.500	0.250	0.188	0.144	0.138
SML-010PTT86	168-5036● RL	0.290	0.143	0.108	0.097	0.087
SML012EC4TT86	168-5045● RL	1.700	0.850	0.760	0.680	0.630
SML012ECTT86	168-5046● RL	1.840	1.080	0.920	0.900	0.840
SML-012BC4TT86	168-5042● RL	1.450	0.720	0.650	0.570	0.540
SML-012BCTT86	168-5043● RL	2.440	1.210	0.910	0.700	0.660
1305						
SML-811UTT86AA	168-5084● RL	0.430	0.220	0.164	0.125	0.119
SML-811DTT86AA	168-5083● RL	0.430	0.220	0.164	0.125	0.119
SML-811WTT86AA	168-5085● RL	0.430	0.220	0.164	0.125	0.119
SML-812MTT86	168-5086● RL	0.540	0.260	0.210	0.188	0.177
SML-810MTT86	168-5082● RL	0.380	0.187	0.141	0.128	0.115

SMD LED's High Efficiency

PLCC-2 Package



These devices have been designed to meet the increasing demand for high efficiency LED's. The package consists of a lead frame, which is embedded, in a white thermoplast. The reflector inside the package is filled with clear epoxy.

H = 1.65, W = 3.5, D = 2.8mm

Features:
- High Brightness
- EIA and ICE standard package
- Low Profile
- Non-diffused lens ideally suited to light pipes
- Compatible with infared, vapour phase and wave soldering processes

Applications:
- Backlighting in automotive dashboards and switches
- Indicator and backlighting in telephones and fax
- Audio, video and battery driven equipment
- Flat backlight for LCD's, switches and symbols

Half Angle	60°	Storage Temperature	-40 to 100°C
Viewing Angle	120°	LED Junction Temperature	110°C
Power Dissipation	100mW	Solder Temperature	260°C (for 5 seconds)
Operating Temperature	-40 to 100°C		

Colour	Forward Voltage Vf	Reverse Voltage Vr	Peak Wavelength λ_d	Luminous Flux (mcd)	Forward Current (mA)	Mftrs. List No.	Order Code
Blue	4.5V	5V	428	8	20	TLMB3100-GS08.	831-1250
Orange	2.8V	6V	605	8	30	TLMO3100-GS08.	831-1404
Green	2.8V	6V	555	4	30	TLMP3100-GS08.	831-1447

380968

Colour	Order Code	Price Each 5+	25+	100+	250+	1K+
Blue	SMD 831-1250● RL	0.650	0.510	0.410	0.300	0.250
Orange	SMD 831-1404● RL	0.094	0.071	0.057	0.043	0.041
Green	SMD 831-1447● RL	0.200	0.166	0.134	0.089	0.078

SMD LED's - High Intensity

PLCC-2 Package



The LED package consists of a lead frame, which is embedded, in a white thermoplast. The reflector inside the package is filled with clear epoxy.

H = 1.65, W = 3.5, D = 2.8mm

Features:
- High Brightness
- EIA and ICE standard package
- Low Profile
- Non-diffused lens ideally suited to light pipes
- Compatible with infared, vapour phase and wave soldering processes

Applications:
- Backlighting in automotive dashboards and switches
- Indicator and backlighting in telephones and fax machines
- Audio, video and battery driven equipment
- Flat backlight for LCD's, switches and symbols

Parameter		Parameter	
DC Forward Current (mA)	20mA	Storage Temp. Range	-40 to 100°C
Half Angle	60°	LED Junction Temp.	110°C
Operating Temp. Range	-40 to 100°C	Solder Temperature	260°C (for 5 seconds)

Colour	Vf (V)	Vr (V)	Peak Wavelength λ_d	Luminous Flux (mcd)	Power Dissipation (mW)	Order Code	Mftrs. List No.
White	4.2	5		140	85	121-3162	TLMW3100-GS08

380947

Colour	Order Code	Price Each 5+	25+	100+	250+	1K+
120° Viewing Angle						
White	SMD 121-3162● RL	0.87	0.66	0.53	0.38	0.33

Surface Mount - SMT- TOPLED®

Case Style PLCC-2



Colour	View Angle	Lum. Intensity (mcd) typ.	I_F (mA) (max)	Mftrs. List No.	Order Code
Untinted Clear Lens					
Yellow	120°	18 @ 10mA	30mA	LYT676-R1S2-26-Z	121-2751
Ultra Bright-Untinted Clear Lens					
Red Ultra Bright	120°	28 @ 10mA	30mA	LHT674-L2N1-1-Z	121-2752
Hyper Bright-Untinted Clear Lens					
Red	120°	180 @ 20mA	30mA	LST676-Q1R2-1-1-Z	121-2753
Yellow	120°	280 @ 20mA	20mA	LYT676-R1S2-26.	881-648

221674

Order Multiple=5 Colour	Order Code	Price Each 5+	25+	100+	250+	500+
Yellow	SMD 121-2751● RL	0.320	0.280	0.250	0.220	0.192
Red Ultra Bright	SMD 121-2752● RL	0.950	0.810	0.700	0.410	0.360
Red	SMD 121-2753● RL	0.139	0.135	0.118	0.096	0.087
Yellow	SMD 881-648 RL	0.139	0.135	0.126	0.103	0.093

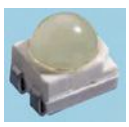
PLCC Packages



PLCC-2



PLCC-4



PLCC-4 Domed



PLCC-6

RL Re-reeling available

Surface Mount Light Emitting Diodes (LEDs) - continued

PLCC Packages - continued

- White PLCC package with colourless clear resin window
- Lambertian emitter 120° wide viewing angle
- Suitable for SMT assembly methods
- Jedec level 2 or better moisture sensitivity

Colour	Luminous Intensity typ / (max) (mcd)	Forward Voltage typ / (min) (V)	Forward Current I_F (mA)	Mftrs. List No.	Order Code
PLCC-2					
Red	170	2	30	LST776-R1S1-1-Z	122-6394
Super Red	(900)	(1.9)	50	LST67F-T1V1-1	157-3473
Red / Orange	(900)	(1.8)	50	LAT68B-T2V1-24-Z	122-6355
Yellow	16	1.8	20	LYT67K-K2M1-26-Z	122-6421
Yellow	270	2	30	LYT776-S1T1-26-Z	122-6424
Yellow	630	2	50	LYT68B-T2V1-26-Z	122-6422
Yellow	(1120)	2.2	50	LYT67F-T2V2-36	157-3488
Green	40	2	40	LPM675-M2P1-25-Z	122-6377
Green	125	3	20	LTT773-Q1R2-35-Z	122-6384
Green	6.3	1.8	20	LGT67K-H2K1-24-Z	122-6376
Green	20	2	30	LGT670-L1M2-1	122-6374
Green	80	2	30	LGT676-P1Q2-24-Z	122-6375
Blue	40	3.1	20	LBT673-M2P1-35-Z	122-6361
Blue	40	3.1	20	LBT673-M2P1-35-Z	122-6361
Blue	100	3.6	20	LBT67C-P2R1-35-Z	122-6362
Blue	100	3.6	20	LBT67C-P2R1-35-Z	122-6362
White	135	3.1	20	LWT773-Q2R2-5K8L-Z	122-6410
White	500	3.6	20	LWM67C-T1U2-5K8L-Z	122-6406
White	530	3.6	20	LWT67C-T2U2-5K8L-Z	122-6409
White	(1400)	3.2	50	LWT6SG-V1AA-5K8L	157-3479
PLCC-4					
Super Red	(2240)	2.15	70	LSE6SF-V2BA-1-1	157-3472
Red	(630)	2.2	70	LSE67B-T2V1-1-1-Z	122-6388
Red / Orange	(2240)	(2.05)	70	LAE67F-AABA-24-1-Z	122-6386
Orange	(4500)	(1.9)	70	LOE6SF-ABCB-24-1	124-2036
Yellow	980	2.2	70	LYE67B-U2AA-26-1-Z	122-6416
Yellow	2700	2.2	70	LYE65B-BACA-26-1-Z	122-6415
Yellow	6300	2.2	70	LYE63B-CBEA-26-1-Z	122-6414
Green	790	3.8	30	LTE67C-U1V2-35-Z	122-6380
Green	(1120)	(2.9)	50	LTE6SG-V2AB-36-1	124-2041
Green	5000	3.8	30	LTE63C-CADB-35-Z	122-6379
Blue	(280)	(3.3)	30	LBE67C-Q1S2-35-Z	122-6358
Blue	(1120)	(3.3)	30	LBE63C-T2V2-35-Z	122-6357
Blue	175	(3.3)	30	LBE67C-Q1S2-35-Z	122-6358
Blue	740	(3.3)	30	LBE63C-T2V2-35-Z	122-6357
White	840	3.9	30	LWE67C-U2V2-5K8L-1-Z	122-6404
Warm White	(1800)	(2.9)	50	LCWE6SG-U2AB-N3P5	157-3462
PLCC-4 Domed					
Super Red		(1.9)	70	LSE63F-DBFA-1-1	157-3468
Super Red	(5600)	(1.9)	70	LSE65F-BBDA-1-1	157-3471
Red / Orange	(3550)	(1.9)	70	LAE65F-CADA-24-1-Z	122-6385
Amber		(1.9)	70	LAE63F-EAFA-24-1	157-3453
Yellow		(2.05)	70	LYE63F-DBEB-35-1	157-3486
PLCC-6					
Red	(7100)	(1.9)	200	LRG6SP-CADB-1-1	124-2031
Red / Orange	(9000)	(1.9)	200	LAG6SP-CBEA-24-1	124-2030
Green	(11200)	(2.6)	250	LTG6SP-CBEB-36-1	124-2033
Blue	(2800)	(2.9)	250	LBG6SP-V2BB-35-1	124-2034
Warm White	(9000)	(2.9)	250	LCWG6SP-BBEA-N3P5	157-3463

492115

Mftrs. List No.	Colour	Order Code	Price Each 1+	25+	100+
PLCC-2					
LST776-R1S1-1-Z	Red	SMD 122-6394● RL	0.250	0.210	0.178
LST67F-T1V1-1	Super Red	NEW SMD 157-3473● RL	0.153	0.119	0.107
LAT68B-T2V1-24-Z	Red / Orange	SMD 122-6355● RL	0.320	0.260	0.220
LYT67K-K2M1-26-Z	Yellow	SMD 122-6421● RL	0.180	0.150	0.128
LYT776-S1T1-26-Z	Yellow	SMD 122-6424● RL	0.270	0.220	0.191
LYT68B-T2V1-26-Z	Yellow	SMD 122-6422● RL	0.330	0.270	0.230
LYT67F-T2V2-36	Yellow	NEW SMD 157-3488● RL	0.153	0.119	0.107
LPM675-M2P1-25-Z	Green	SMD 122-6377● RL	0.410	0.340	0.290
LTT773-Q1R2-35-Z	Green	SMD 122-6384● RL	1.130	0.930	0.790
LGT67K-H2K1-24-Z	Green	SMD 122-6376● RL	0.180	0.150	0.128
LGT670-L1M2-1	Green	SMD 122-6374● RL	0.220	0.185	0.157
LGT676-P1Q2-24-Z	Green	SMD 122-6375● RL	0.250	0.210	0.178
LBT673-M2P1-35-Z	Blue	SMD 122-6361● RL	0.790	0.650	0.560
LBT673-M2P1-35-Z	Blue	SMD 122-6361● RL	0.790	0.650	0.560
LBT67C-P2R1-35-Z	Blue	SMD 122-6362● RL	0.970	0.800	0.680
LBT67C-P2R1-35-Z	Blue	SMD 122-6362● RL	0.970	0.800	0.680
LWT773-Q2R2-5K8L-Z	White	SMD 122-6410● RL	1.270	1.070	0.900
LWM67C-T1U2-5K8L-Z	White	SMD 122-6406● RL	1.360	1.140	0.960
LWT67C-T2U2-5K8L-Z	White	SMD 122-6409● RL	1.290	1.090	0.910
LWT6SG-V1AA-5K8L	White	NEW SMD 157-3479● RL	0.510	0.400	0.360
PLCC-4					
LSE6SF-V2BA-1-1	Super Red	NEW SMD 157-3472● RL	0.290	0.230	0.200
LSE67B-T2V1-1-1-Z	Red	SMD 122-6388● RL	0.420	0.350	0.290
LAE67F-AABA-24-1-Z	Red / Orange	SMD 122-6386● RL	0.520	0.440	0.380
LOE6SF-ABCB-24-1	Orange	SMD 124-2036● RL	0.330	0.230	0.210
LYE67B-U2AA-26-1-Z	Yellow	SMD 122-6416● RL	0.400	0.340	0.280
LYE65B-BACA-26-1-Z	Yellow	SMD 122-6415● RL	0.370	0.310	0.260
LYE63B-CBEA-26-1-Z	Yellow	SMD 122-6414● RL	0.470	0.390	0.340
LTE67C-U1V2-35-Z	Green	SMD 122-6380● RL	1.470	1.230	1.050
LTE6SG-V2AB-36-1	Green	SMD 124-2041● RL	0.460	0.390	0.330
LTE63C-CADB-35-Z	Green	SMD 122-6379● RL	1.420	1.200	1.010
LBE67C-Q1S2-35-Z	Blue	SMD 122-6358● RL	1.420	1.200	1.010
LBE63C-T2V2-35-Z	Blue	SMD 122-6357● RL	1.390	1.170	0.990
LBE67C-Q1S2-35-Z	Blue	SMD 122-6358● RL	1.420	1.200	1.010

Mftrs. List No.	Colour	Order Code	Price Each 1+	25+	100+
PLCC-4					
LBE63C-T2V2-35-Z	Blue	SMD 122-6357● RL	1.390	1.170	0.990
LWE67C-U2V2-5K8L-1-Z	White	SMD 122-6404● RL	1.540	1.280	1.100
LCWE6SG-U2AB-N3P5	Warm White	NEW SMD 157-3462● RL	0.540	0.420	0.380
PLCC-4 Domed					
LSE63F-DBFA-1-1	Super Red	NEW SMD 157-3468● RL	0.320	0.250	0.220
LSE65F-BBDA-1-1	Super Red	NEW SMD 157-3471● RL	0.320	0.250	0.220
LAE65F-CADA-24-1-Z	Red / Orange	SMD 122-6385● RL	0.460	0.370	0.320
LAE63F-EAFA-24-1	Amber	NEW SMD 157-3453● RL	0.310	0.240	0.210
LYE63F-DBEB-35-1	Yellow	NEW SMD 157-3486● RL	0.310	0.240	0.210
PLCC-6					
LRG6SP-CADB-1-1	Red	SMD 124-2031● RL	0.540	0.450	0.390
LAG6SP-CBEA-24-1	Red / Orange	SMD 124-2030● RL	0.480	0.400	0.350
LTG6SP-CBEB-36-1	Green	SMD 124-2033● RL	1.170	1.040	1.010
LBG6SP-V2BB-35-1	Blue	SMD 124-2034● RL	1.260	1.230	1.200
LCWG6SP-BBEA-N3P5	Warm White	NEW SMD 157-3463● RL	1.580	1.230	1.100

SMD LED's High Heat Dissipation

VISHAY

PLCC-3 Package



SMD

The LED package is an advanced development in terms of heat dissipation. The lead frame profile of the PLCC-3 SMD package is optimized to reduce thermal resistance. This allows higher drive current and doubles the light output compared to the high intensity SMD LED in PLCC-2 package.

H = 1.65, W = 3.5, D = 2.8mm

Features:
- High Brightness
- EIA and ICE standard package
- Low Profile
- Non-diffused lens ideally suited to light pipes
- Compatible with infared, vapour phase and wave soldering processes

Applications:
- Backlighting in automotive dashboards and switches
- Indicator and backlighting in telephones and fax
- Audio, video and battery driven equipment
- Flat backlight for LCD's, switches and symbols

Parameter		Parameter	
DC Forward Current (mA)	70mA	Storage Temp. Range	-40 to 100°C
Half Angle	60°	LED Junction Temp.	110°C
Operating Temp. Range	-40 to 100°C	Solder Temperature	260°C (for 5 seconds)

Colour	Vf (V)	Vr (V)	Peak Wavelength λ_d	Luminous Flux (mcd)	Power Dissipation (mW)	Order Code	Mftrs. List No.
Red	2.55	2.55	624	500	180	831-1366	TLMK3200-GS18.
Yellow	2.55	2.55	590	450	180	831-1560	TLMY3200-GS18.

380966

Colour	Order Code	Price Each 5+	25+	100+	250+	1K+
120° Viewing Angle						
Red	SMD 831-1366● RL	0.200	0.156	0.123	0.096	0.075
Yellow	SMD 831-1560● RL	0.194	0.149	0.115	0.088	0.072

PLCC4 Series

CREE

New

SMD



Applications include:
- Indicators
- Illuminations
- LCD backlights
- Automobile applications

L=3.2, W=2.7

Colour	Viewing Angle	Luminous Intensity (typ)	Forward Voltage (max)	Forward Current	Mftrs. List No.	Order Code
HI Red	120°	650mcd	2.6V	50mA	LM1-UHR1-01-N1-00001	164-9010
Red	120°	1600mcd	3V	70mA	LM1-UHR1-11-N1-00001	164-9011
Amber	120°	600mcd	2.6V	50mA	LM1-UYL1-01-N1-00001	164-9013
Amber	120°	1500mcd	3V	70mA	LM1-UYL1-11-N1-00001	164-9014
Green	120°	900mcd	4V	25mA	LM1-EPG1-01-N2-00001	164-9006
Green	120°	1100mcd	4.2V	30mA	LM1-EPG1-11-N2-00001	164-9007
Blue	120°	320mcd	4V	25mA	LM1-EBL1-01-N2-00001	164-9004
Blue	120°	400mcd	4.2V	30mA	LM1-EBL1-11-N2-00001	164-9005
White	120°	1000mcd	4V	25mA	LM1-EWN1-01-N2-00001	164-9008
White	120°	1400mcd	4.2V	30mA	LM1-EWN1-11-N2-00001	164-9009

525316

Colour	Mftrs. List No.	Order Code	Price Each 5+	25+	100+
HI Red	LM1-UHR1-01-N1-00001	164-9010● RL	0.26	0.25	0.23
Red	LM1-UHR1-11-N1-00001	164-9011● RL	0.28	0.26	0.24
Amber	LM1-UYL1-01-N1-00001	164-9013● RL	0.26	0.25	0.23
Amber	LM1-UYL1-11-N1-00001	164-9014● RL	0.28	0.26	0.24
Green	LM1-EPG1-01-N2-00001	164-9006● RL	0.44	0.42	0.38
Green	LM1-EPG1-11-N2-00001	164-9007● RL	0.45	0.43	0.40
Blue	LM1-EBL1-01-N2-00001	164-9004● RL	0.42	0.38	0.36
Blue	LM1-EBL1-11-N2-00001	164-9005● RL	0.43	0.40	0.37
White	LM1-EWN1-01-N2-00001	164-9008● RL	0.55	0.52	0.49
White	LM1-EWN1-11-N2-00001	164-9009● RL	0.55	0.52	0.49

RL Re-reeling available

Farnell

PLCC4 Surface Mount LED



PLCC4



PLCC4 with domed lens

Designed for wide angle, uniform light output. Its internal reflector and colourless clear lens optimize luminous intensity and make it ideal for backlighting applications and for coupling with light guides.

Colour	Viewing Angle	Forward Current	Luminous Intensity (typ)	Forward Voltage (max)	Mftrs List No.	Order Code
Amber	120°	50mA	700mcd	3.2V	OVSAABC2R8	167-8697
Blue	120°	30mA	200mcd	4.6V	OVSABBC2R8	167-8699
Blue / Green	120°	30mA	560mcd	4.6V	OVSACBC2R8	167-8701
Green	120°	30mA	700mcd	4.6V	OVSAGBC2R8	167-8702
Red	120°	50mA	900mcd	3.2V	OVSASBC2R8	167-8704
With Domed Lens						
Amber	60°	50mA	1800mcd	3.2V	OVSAABLCR8	167-8698
Red / Orange	60°	50mA	2800mcd	3.2V	OVSAQBLCR8	167-8703
Red	60°	50mA	2200mcd	3.2V	OVSASBLCR8	167-8705

528778

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
OVSAABC2R8	167-8697● RL	0.51	0.45	0.39	0.33	0.27
OVSABBC2R8	167-8699● RL	0.64	0.57	0.37	0.34	0.33
OVSACBC2R8	167-8701● RL	0.83	0.74	0.48	0.46	0.44
OVSAGBC2R8	167-8702● RL	0.83	0.74	0.48	0.46	0.44
OVSASBC2R8	167-8704● RL	0.50	0.45	0.29	0.27	0.26
With Domed Lens						
OVSAABLCR8	167-8698● RL	0.51	0.45	0.39	0.33	0.27
OVSAQBLCR8	167-8703● RL	0.51	0.45	0.39	0.33	0.27
OVSASBLCR8	167-8705● RL	0.51	0.45	0.39	0.33	0.27

SMD LED Lamp

PLCC4, Water Clear 120°



White



RGB

Colour	Chip λD Typ. (nm)	Luminous Intensity (Typ. mcd)	VF (Typ.) (V)	Mftrs List No.	Order Code
White		1050	3.4	OVSAWBCR4	149-7997
Red	620	300	2.3	OVSARGB3R8	149-7980
Green	520	450	3.6	OVSARGB3R8	149-7980
Blue	465	110	3.6	OVSARGB3R8	149-7980

497728

Colour	Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+
White	OVSAWBCR4	SMD 149-7997● RL	0.60	0.39	0.35	0.33
R, G, B	OVSARGB3R8	SMD 149-7980● RL	1.82	1.20	0.99	0.88

Surface Mount - PLCC-4, Bicolour LED

Untinted Clear Lens



Viewing Angle 120°
Voltage (PIV max) 5V

L=3.2, W=2.8, H=1.9

Colour	Luminous Intensity @ 20mA mcd (min)	(typ)	Current, I_F mA (max)	Mftrs. List No.	Order Code
HE Red, Yellow	5 / 6	8 / 10	30 / 25	KAA-3528EYC	131-8241
HE Red, Green	5 / 9	8 / 15	30 / 30	KAA-3528ESGC	131-8239
Red, Green	18 / 9	30 / 15	40 / 30	KAA-3528SRSGC	131-8242

454375

Order Multiple=5 Colour	Order Code	Price Each 5+	25+	100+	250+	500+
HE Red, Yellow	SMD 131-8241● RL	0.260	0.250	0.210	0.167	0.138
HE Red, Green	SMD 131-8239● RL	0.240	0.210	0.190	0.142	0.121
Red, Green	SMD 131-8242● RL	0.290	0.270	0.260	0.220	0.173

SMD LED Lamp

PLCC6, Water Clear Lens



Colour	Chip λD Typ. (nm)	Luminous Intensity (Typ. mcd)	VF (Typ.) (V)	Viewing Angle	Mftrs List No.	Order Code
Red	620	1000	2.5	120°	OVSTRGBBCR8	149-8008
Green	521	900	4.5	120°	OVSTRGBBCR8	149-8008
Blue	468	280	4.5	120°	OVSTRGBBCR8	149-8008

497735

Colour	Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+
R, G, B	OVSTRGBBCR8	SMD 149-8008● RL	3.51	2.28	1.87	1.66

PLCC6 Series



Applications include:
- Indicators
- Illuminations
- LCD Backlights
- Automobile applications

L=6, W=5

Colour	Viewing Angle	Luminous Intensity (typ)	Forward Voltage (max)	Forward Current	Mftrs. List No.	Order Code
White	120°	11000mcd	4.8V	50mA	LP6-EWN1-03-N3-00001	164-9025

525320

Colour	Mftrs. List No.	Order Code	Price Each 1+	25+	100+
White	LP6-EWN1-03-N3-00001	164-9025● RL	0.91	0.80	0.71

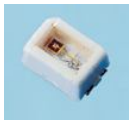
SideLED and TopLED



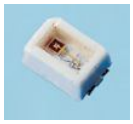
SideLED



Micro SideLED



Mini TopLED



Hyper Mini TopLED

- White SMT package, colorless clear resin
- Small packages with wide viewing angles
- Beam: Lambertian Emitter
- IR reflow soldering and TTW soldering compatable
- Technology: InGaAlP
- Suitable for all SMT assembly methods
- Preconditioning: acc. to JEDEC Level 2

Colour	Luminous Intensity typ / (min) (mcd)	V_F (typ) (V)	I_F (max) (mA)	Package	Mftrs. List No.	Order Code
White	530	3.6	20	SideLED	LWA67C-T2U2-5K8L-Z	122-6403
White	(710)	3.2	50	SideLED	LWA6SG-V1AA-5K8L	157-3476
Green	390	3.5	20	SideLED	LTA67C-S2U1-35-Z	122-6378
Yellow	(5.6)	1.8	20	SideLED	LYA67K-J2M1-26	157-3485
Amber	(900)	2	50	SideLED	LAA67F-V2BB-24	157-3452
Blue	(180)	3.2	50	SideLED	LBA6SG-S1T2-35	157-3456
White	420	3.6	20	Micro SideLED	LWY87C-T1U1-3K8L-Z	122-6413
Yellow	250	2	30	Micro SideLED	LYY876-R2T1-26-Z	122-6426
Green	80	3.4	15	Micro SideLED	LTY87S-P1Q2-35-Z	122-6399
Green	65	2	30	Mini TopLED	LGM676-N2Q1-24-Z	122-6369
Blue	28	3.1	20	Mini TopLED	LBM673-L1N2-35-Z	122-6360
Green	100	3	20	Hyper Mini TopLED	LTM673-P2R1-35-Z	122-6382

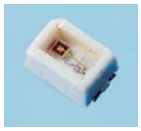
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Mftrs. List No.	Case Style	Order Code	Price Each 1+	25+	100+
LWY87C-T1U1-3K8L-Z	Micro SideLED	SMD 122-6413● RL	1.470	1.230	1.050
LYY876-R2T1-26-Z	Micro SideLED	SMD 122-6426● RL	0.250	0.210	0.178
LTY87S-P1Q2-35-Z	Micro SideLED	SMD 122-6399● RL	1.140	0.940	0.800
LWA67C-T2U2-5K8L-Z	SideLED	SMD 122-6403● RL	1.360	1.140	0.960
LWA6SG-V1AA-5K8L	SideLED	NEW SMD 157-3476● RL	0.630	0.490	0.440
LTA67C-S2U1-35-Z	SideLED	SMD 122-6378● RL	1.230	1.020	0.860
LYA67K-J2M1-26	SideLED	NEW SMD 157-3485● RL	0.094	0.073	0.066
LAA67F-V2BB-24	SideLED	NEW SMD 157-3452● RL	0.230	0.182	0.162
LBA6SG-S1T2-35	SideLED	NEW SMD 157-3456● RL	0.630	0.490	0.440
LGM676-N2Q1-24-Z	Mini TopLED	SMD 122-6369● RL	0.280	0.230	0.196
LBM673-L1N2-35-Z	Mini TopLED	SMD 122-6360● RL	1.040	0.850	0.730
LTM673-P2R1-35-Z	Mini TopLED	SMD 122-6382● RL	0.870	0.730	0.620

Surface Mount - Hyper Bright Blue

SIDELED®, Mini TOPLED®





Colour	View Angle	Lum. Intensity (mcd) typ.	I_F (mA) (max)	Mftrs. List No.	Order Code
SIDELED - Untinted Clear lens					
Blue Ultra Bright	120°	8 @10mA	20mA	LBA67C-P2R1-35-Z	121-2728
Mini TOPLED - Untinted Clear lens					
Blue Ultra Bright	60°	8 @10mA	20mA	LBM676-J1K2-1-Z	121-9680

RL Re-reeling available

Surface Mount Light Emitting Diodes (LEDs) - continued

Surface Mount - Hyper Bright Blue - continued

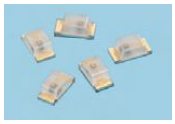
SIDELED®, Mini TOPLED® - continued

206556

Colour	Order Code	Price Each 1+	25+	100+	250+	500+
SIDELED - Untinted Clear Lens						
Blue Ultra Bright	SMD 121-2728● RL	0.73	0.56	0.43	0.36	0.29
Mini TOPLED - Untinted Clear Lens						
Blue Ultra Bright	SMD 121-9680● RL	1.12	0.80	0.69	0.40	0.32

Surface Mount -TLxx1008 Series

TOSHIBA



L = 1.6, W = 0.8, H = 0.6

Colour	View Angle	Typ Lum Intensity @ 20mA (mcd) Min.	Typ.	Peak Wave Length	Forward Voltage Typ.	PIV	Mftrs. List No.	Order Code
Untinted Diffused Lens								
Red	110°	15.3	55	636nm	2	4	TLSU1008A(T04)	114-1115
Orange	110°	27.2	78	612nm	2	4	TLOU1008A(T04)	114-1103
Yellow	110°	8.5	24	590nm	2.1	4	TLYU1008A(T04)	114-1118
Green	110°	8.5	29	574nm	2.4	4	TLGU1008A(T04)	114-1096
Green	110°	1.53	6	562nm	2.3	4	TLPGU1008A(T04)	114-1106

206672

Colour	Mftrs. List No.	Order Code	Price Each 5+	100+	250+	500+	1K+
Red	TLSU1008A(T04)	SMD 114-1115● RL	0.270	0.250	0.220	0.168	0.134
Orange	TLOU1008A(T04)	SMD 114-1103● RL	0.300	0.280	0.260	0.190	0.150
Yellow	TLYU1008A(T04)	SMD 114-1118● RL	0.260	0.240	0.210	0.158	0.134
Green	TLGU1008A(T04)	SMD 114-1096● RL	0.260	0.250	0.220	0.150	0.115
Green	TLPGU1008A(T04)	SMD 114-1106● RL	0.270	0.250	0.220	0.151	0.112

Surface Mount -TLxx1102 Series

TOSHIBA



L = 3.2,
W = 2.8,
H = 3.4

Colour	View Angle	Typ Lum Intensity (mcd) @ 20mA Min.	Typ.	Peak Wave length	Forward Voltage Typ.	PIV	Mftrs. List No.	Order Code
Untinted Diffused Lens								
Yellow	60°	47.6	130	590nm	2.1	4	TLYE1102B(T10)	114-1123
Green	60°	8.5	30	562nm	2.3	4	TLPGE1102B(T10)	114-1109

206670

Colour	List No.	Order Code	Price Each 5+	100+	250+	500+	1K+
Yellow	TLYE1102B(T10)	SMD 114-1123● RL	0.81	0.72	0.62	0.45	0.42
Green	TLPGE1102B(T10)	SMD 114-1109● RL	0.54	0.48	0.41	0.32	0.29

Surface Mount -TLxx1002 Series

TOSHIBA



L = 2.0, W = 1.25, H = 1.1

Colour	View Angle	Typ Lum Intensity (mcd) @ 20mA Min.	Typ.	Peak Wave length	Forward Voltage Typ.	PIV	Mftrs. List No.	Order Code
Untinted Clear Lens								
Red	125°	15.3	45	644nm	2.4	4	TLRU1002A(T02)	114-1110
Red	125°	27.2	60	636nm	2	4	TLSU1002A(T02)	120-1932
Orange	125°	27.2	60	612nm	2.4	4	TLOE1002A(T02)	114-1099
Orange	125°	15.3	40	612nm	2.4	4	TLOU1002A(T02)	114-1101
Yellow	125°	27.2	60	590nm	2.5	4	TLYE1002A(T02)	114-1116
Yellow	125°	8.5	30	590nm	2.1	4	TLYU1002A(T02)	120-1933
Green	125°	8.5	27	574nm	2.8	4	TLGU1002A(T02)	114-1095
Green	125°	1.53	6	562nm	2.8	4	TLPGU1002A(T02)	114-1105

206669

Mftrs. List No.	Order Code	Price Each 5+	100+	250+	500+	1K+
TLOE1002A(T02)	SMD 114-1099● RL	0.310	0.290	0.260	0.240	0.210
TLOU1002A(T02)	SMD 114-1101● RL	0.250	0.240	0.190	0.142	0.117
TLYE1002A(T02)	SMD 114-1116● RL	0.300	0.280	0.260	0.178	0.158
TLYU1002A(T02)	SMD 120-1933● RL	0.280	0.270	0.220	0.168	0.134
TLGU1002A(T02)	SMD 114-1095● RL	0.260	0.250	0.210	0.146	0.112
TLPGU1002A(T02)	SMD 114-1105● RL	0.270	0.260	0.220	0.153	0.113

Surface Mount -TLxx1100 Series

TOSHIBA



L = 3.2, W =2.8, H = 1.9

Colour	View Angle	Typ Lum Intensity (mcd) @ 20mA Min.	Typ.	Peak Wave length	Forward Voltage Typ.	PIV	Mftrs. List No.	Order Code
Untinted Clear Lens								
Red	120°	27.2	80	636nm	2	4	TLSE1100B(T11)	114-1111
Orange	120°	47.6	100	612nm	2	4	TLOE1100B(T11)	114-1100
Yellow	120°	15.3	50	590nm	2.1	4	TLYE1100B(T11)	114-1122
Green	120°	15.3	45	574nm	2.3	4	TLGE1100B(T11)	114-1097

206668

Mftrs. List No.	Order Code	Price Each 5+	100+	250+	500+	1K+
TLSE1100B(T11)	SMD 114-1111● RL	0.290	0.270	0.250	0.210	0.192
TLOE1100B(T11)	SMD 114-1100● RL	0.310	0.300	0.270	0.195	0.180
TLYE1100B(T11)	SMD 114-1122● RL	0.290	0.280	0.250	0.178	0.168
TLGE1100B(T11)	SMD 114-1097● RL	0.350	0.310	0.270	0.210	0.188

Surface Mount - Indicator Lamps

Kingbright



H = 1.5, W = 3.0, D = 2.2
Leads = 0.5 x 0.15
Overall width across leads = 4.5

Supplied on tape in multiples of 5 (reel=1500 pcs.)

Colour	View Angle	Lum. Intensity (mcd) @ I_F = 20mA Min.	Max.	F_C (mA) (max.)	PIV (max.)	Order Code
Water Clear Lens						
Red	90°	70	300	30	5	114-2617
Yellow	90°	8	40	30	5	114-2619
Green	90°	8	40	25	5	114-2615

206385

Order Multiple=5 Colour	Order Code	Price Each 5+	25+	50+	100+	250+
Red	SMD 114-2617● RL	0.240	0.220	0.190	0.142	0.082
Yellow	SMD 114-2619● RL	0.130	0.102	0.089	0.066	0.056
Green	SMD 114-2615● RL	0.175	0.165	0.143	0.112	0.067

Surface Mount, with Light Pipe

MENTOR



LED, H = 4.3, W = 2.5, D = 5.7

Light-pipe L = 7.2, Dia. = 3.0
overall dimensions with light pipe fitted
H = 5.1, W = 4.1, D = 14.1

This range of LEDs have a clip-on light-pipe. When the LEDs are fitted on a standard PCB matrix, the light pipes length is appropriate for front panels.

Colour	View Angle	Typ Lum Intensity (mcd)	I_F (mA) (max.)	PIV (max.)	Mftrs. List No.	Order Code
Tinted Diffused Lens						
7.2mm						
Red	30°	2.5	25	5	2637.2131	121-5775
Green	30°	4	25	5	2637.8131	121-5776

206392

Colour	Order Code	Price Each 1+	25+	50+	100+	250+
Red	SMD 121-5775●	1.13	0.92	0.88	0.78	0.75
Green	SMD 121-5776●	1.36	1.19	1.06	0.94	0.85

Surface Mount – SOT-23

Kingbright



Supplied on 8mm width tape in multiples of 5 (reel=2K pcs).
Note: Correct polarity MUST be observed.

Overall dimensions (max):
H=1.05, W=2.4 (1.3 body only), L=3.0

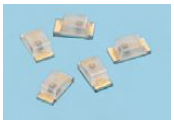
Colour	View Angle	Typ Lum Intensity (mcd) @ 20mA Min.	Typ.	I_F (mA) (max.)	PIV (max.)	Mftrs. List No.	Order Code
Tinted Diffused Lens							
HE Red	140°	8	32	30	5	KM-23ID	114-2612
Red	140°	50	90	30	5	KM-23SRD	114-2613
Green	140°	8	32	25	5	KM-23SGD	114-2611
Yellow	140°	5	12.5	30	5	KM-23YD	114-2618
White Diffused Lens - Bi Colour							
Red, Green	140°	8/8	32/32	30/25	5	KM-23ESGW	114-2614

231922

RL Re-reeling available

Order Multiple=5				Price Each		
Colour	Order Code	5+	100+	250+	500+	1K+
Tinted Diffused Lens						
HE Red	SMD 114-2612● RL	0.430	0.390	0.350	0.220	0.155
Red	SMD 114-2613● RL	0.460	0.410	0.370	0.240	0.175
Green	SMD 114-2611● RL	0.460	0.420	0.370	0.240	0.167
Yellow	SMD 114-2618● RL	0.410	0.380	0.330	0.210	0.156
White Diffused Lens - Bi Colour						
Red, Green	SMD 114-2614● RL	0.520	0.460	0.400	0.340	0.230

Surface Mount

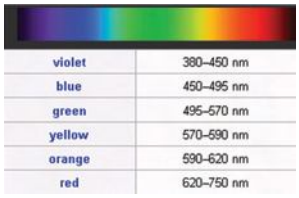


498359

Colour LED	I_F max (mA)	V_F typ (V)	Iv typ (mcd)	Mftrs. List No.	Order Code	Price Each 1+	25+
SMT 2 x 1.2mm							
Red	30	1.75	10	SML-210LTT86	152-5567● RL	0.094	0.080
Green	25	2.2	16	SML-210MTT86	152-5568● RL	0.087	0.074
Yellow	25	2.1	6.3	SML-210YTT86	152-5569● RL	0.105	0.087
SMT 1.6 x 0.8mm							
Green	20	2.2	16	SML-310MTT86	152-5570● RL	0.065	0.055
SMT 3.4x1.25mm							
Amber/Red	25	1.95	11.2	SML-811UTT86	152-5571● RL	0.181	0.151
Green	25	2.2	25	SML-010MTT86	152-5565● RL	0.108	0.088
						1+	25+
5mm							
Red	20	2	10	SLR-56VR3F	152-5564● RL	0.085	0.071

1.8mm - 2.0mm Light Emitting Diodes (LEDs)

Explanation of Wavelength and Colour



The visible colour spectrum approximation.

457793

How a person perceives colour, depends not only on that persons eye sensitivity(Which is effected by age and medical conditions), but also on that persons interpretation of colour, when mixtures of primary colours are shown to 2 people, each one may have a different opinion as to what the colour actually is. LED manufacturers therefore always state the 'dominant wavelength', for both maximum and minimum values. So it is always worth matching the LED to the chosen wavelength and account for tolerance differences.
The temperature of the LED also effects its wavelength, driving the LED too close to the forward current maximum, may result in overheating and possible wavelength shift. As would placing the LED in environments in where the temperature could fluctuate rapidly. It is also worthy to note that the eye is more sensitive to wavelengths around the green spectra, so a Green LED may appear to be brighter then another colour LED of the same intensity beside it.

£ € 40,000 PRICES REDUCED

See our range of **LED Drivers** page 441

For **Through Hole LED Accessories** see page 884

1.8mm LEDs

Diffused Lens



New

Viewing Angle	70°
Current Rating	20mA
Power Dissipation	85mW
Operating Temperature	-40°C to +85°C
Reverse Voltage	5V

Colour	Wavelength Peak (nm)	Wavelength Dominant (nm)	Luminous Intensity typ. (mcd)	Current, If max. (mA)	Voltage, Vf typ. (V)	Mftrs. List No.	Order Code
Super Red	660	643	45	100	1.85	MCL914SRD	158-1096
Hi Red	697	650	2.8	100	2.1	MCL914PD	158-1097
HE Red	635	627	6.5	100	2	MCL914MD	158-1098
Green	568	570	5.8	100	2.1	MCL914GD	158-1099
Yellow	587	590	6	100	2.1	MCL914YD	158-1100
Amber	610	606	6	100	2.1	MCL914BD	158-1101
Orange	635	627	6.5	100	2	MCL914AD	158-1102

512235

Colour	Mftrs. List No.	Order Code	Price Each 5+	50+	100+
Super Red	MCL914SRD	158-1096●	0.112	0.090	0.074
Hi Red	MCL914PD	158-1097●	0.090	0.072	0.059
HE Red	MCL914MD	158-1098●	0.135	0.108	0.090
Green	MCL914GD	158-1099●	0.107	0.086	0.071
Yellow	MCL914YD	158-1100●	0.129	0.103	0.086
Amber	MCL914BD	158-1101●	0.129	0.103	0.086
Orange	MCL914AD	158-1102●	0.118	0.094	0.079

1.8mm, Standard and Super Bright



L=3.1, Dia=1.8
Lead pitch=2.54, Leads=0.4sq
Cathode identified by shorter lead

Colour	View Angle	Lum Intensity (mcd) @ I_F=10mA min	(max)	I_F (mA) max	PIV max	Order Code
Tinted Diffused Lens						
Red	70°	0.5	3.2	25	5	114-2456
Green	70°	2	20	25	5	114-2454
Yellow	70°	2	20	30	5	114-2461
Orange	70°	12.5	32	30	5	114-2455
Untinted Clear Lens						
Red Super Bright	30°	100	500	30	5	114-2459

206338

Order Multiple=5				Price Each		
Colour	Order Code	5+	50+	100+	500+	1K+
Red	114-2456●	0.100	0.081	0.073	0.055	0.048
Green	114-2454●	0.154	0.102	0.083	0.065	0.055
Yellow	114-2461●	0.100	0.070	0.060	0.050	0.040
Orange	114-2455●	0.106	0.059	0.053	0.040	0.035
Red Super Bright	114-2459●	0.182	0.167	0.141	0.096	0.071

1.8mm, Standard



L=2.9, Dia=1.8
Lead pitch=2.54
Leads=24.5 x 0.5sq

Colour	View Angle	Lum. Intensity (mcd) @ I_F=10mA min.	typ.	I_F (mA) (max.)	Size Diameter	PIV (max.)	Mftrs. List No.	Order Code
Tinted Diffused Lens								
HE Red	40°	4	5	30	1.8mm	6	TLUO2401	104-5496
Green	40°	4	12	30	1.8mm	6	TLUG2401	104-5497
Yellow	40°	2.5	8	30	1.8mm	6	TLUY2401	104-5498
Red	40°	1	1.5	50	1.8mm	6	TLUR2401	104-5495

206428

Order Multiple=5				Price Each		
Colour	Order Code	5+	25+	100+	250+	1K+
HE Red	104-5496●	0.143	0.108	0.088	0.073	0.063
Green	104-5497●	0.155	0.121	0.095	0.070	0.062
Yellow	104-5498●	0.176	0.124	0.098	0.069	0.066
Red	104-5495●	0.155	0.121	0.095	0.074	0.062

RL Re-reeling available

Over 480,000 products online QGO

1.8mm - 2.0mm Light Emitting Diodes (LEDs) - continued

2mm LEDs

Diffused Lens



New

Viewing Angle 60°
Current Rating 20mA
Power Dissipation 85mW
Operating Temperature -40°C to +85°C
Reverse Voltage 5V

Colour	Wavelength Peak (nm)	Wavelength Dominant (nm)	Luminous Intensity typ. (mcd)	Current, If max. (mA)	Voltage, Vf typ. (V)	Mftrs. List No.	Order Code
Super Red	660	643	25	100	1.85	MCL223SRD	158-1103
HI Red	697	650	2.6	50	2.1	MCL223PD	158-1104
HE Red	635	625	7.8	100	2	MCL223MD	158-1105
Green	568	570	7	100	2.1	MCL223GD	158-1106
Yellow	587	590	7.5	100	2.1	MCL223YD	158-1108
Amber	610	608	7.5	100	2.1	MCL223BD	158-1109
Orange	635	625	8	100	2	MCL223AD	158-1110

522010

Colour	Mftrs. List No.	Order Code	Price Each 5+	50+	100+
Super Red	MCL223SRD	158-1103●	0.112	0.090	0.074
HI Red	MCL223PD	158-1104●	0.090	0.072	0.059
HE Red	MCL223MD	158-1105●	0.135	0.108	0.090
Green	MCL223GD	158-1106●	0.107	0.086	0.071
Yellow	MCL223YD	158-1108●	0.129	0.103	0.086
Amber	MCL223BD	158-1109●	0.129	0.103	0.086
Orange	MCL223AD	158-1110●	0.118	0.094	0.079

3mm Light Emitting Diodes (LEDs)

3mm LEDs



(flanged)



(flangeless)

Current Rating 20mA*
Power Dissipation 85mW**
Operating Temperature -40°C to +85°C
Reverse Voltage 5V
* HI Red = 10mA
** HI Red = 45mW

New

Diffused Lens - 76° Viewing Angle

Colour	Wavelength Peak (nm)	Wavelength Dominant (nm)	Luminous Intensity typ. (mcd)	Current, If max. (mA)	Voltage, Vf typ. (V)	Mftrs. List No.	Order Code
Super Red *	660	643	35	100	1.9	MCL034SRD	158-1111
HI Red	697	650	2.6	50	2.1	MCL034PD	158-1112
HE Red	635	625	9.8	100	2	MCL034MD	158-1113
Green	568	570	6	100	2.1	MCL034GD	158-1114
Yellow	587	590	9.5	100	2.1	MCL034YD	158-1115
Amber	610	608	8.5	100	2.1	MCL034BD	158-1116
Orange	635	625	12	100	2	MCL034AD	158-1117

* Viewing angle = 70°

Colour	Mftrs. List No.	Order Code	Price Each 10+	100+	500+
Super Red	MCL034SRD	158-1111●	0.101	0.042	0.037
HI Red	MCL034PD	158-1112●	0.074	0.036	0.031
HE Red	MCL034MD	158-1113●	0.128	0.042	0.037
Green	MCL034GD	158-1114●	0.094	0.042	0.037
Yellow	MCL034YD	158-1115●	0.121	0.042	0.037
Amber	MCL034BD	158-1116●	0.121	0.042	0.037
Orange	MCL034AD	158-1117●	0.108	0.042	0.037

Transparent Lens - 36° Viewing Angle

Colour	Wavelength Peak (nm)	Wavelength Dominant (nm)	Luminous Intensity typ. (mcd)	Current, If max. (mA)	Voltage, Vf typ. (V)	Mftrs. List No.	Order Code
Super Red	660	643	250	100	1.9	MCL034SRT	158-1118
HI Red	697	650	12	50	2.1	MCL034PT	158-1121
HE Red	635	625	35	100	2	MCL034MT	158-1122
Green	568	570	26	100	2.1	MCL034GT	158-1123
Yellow	587	590	32	100	2.1	MCL034YT	158-1124
Amber	610	606	33	100	2.1	MCL034BT	158-1125
Orange	635	625	35	100	2	MCL034AT	158-1126

Colour	Mftrs. List No.	Order Code	Price Each 10+	100+	500+
Super Red	MCL034SRT	158-1118●	0.101	0.042	0.037
HI Red	MCL034PT	158-1121●	0.074	0.036	0.031
HE Red	MCL034MT	158-1122●	0.128	0.042	0.037
Green	MCL034GT	158-1123●	0.094	0.042	0.037
Yellow	MCL034YT	158-1124●	0.121	0.042	0.037
Amber	MCL034BT	158-1125●	0.121	0.042	0.037
Orange	MCL034AT	158-1126●	0.108	0.042	0.037

Diffused Lens (flangeless) - 76° Viewing Angle

Colour	Wavelength Peak (nm)	Wavelength Dominant (nm)	Luminous Intensity typ. (mcd)	Current, If max. (mA)	Voltage, Vf typ. (V)	Mftrs. List No.	Order Code
Super Red	660	643	45	100	1.85	MCL514SRD	158-1127
HI Red	697	650	1.6	50	2.1	MCL514PD	158-1128
HE Red	635	625	9.5	100	2	MCL514MD	158-1129
Green	568	570	10	100	2.1	MCL514GD	158-1130
Yellow	587	590	6.5	100	2.1	MCL514YD	158-1131
Amber	610	606	8.5	100	2.1	MCL514BD	158-1133
Orange	635	625	8.5	100	2	MCL514AD	158-1134

515341

Colour	Mftrs. List No.	Order Code	Price Each 10+	100+	500+
Super Red	MCL514SRD	158-1127●	0.114	0.047	0.042
HI Red	MCL514PD	158-1128●	0.088	0.040	0.036
HE Red	MCL514MD	158-1129●	0.141	0.047	0.042
Green	MCL514GD	158-1130●	0.108	0.047	0.042
Yellow	MCL514YD	158-1131●	0.135	0.047	0.042
Amber	MCL514BD	158-1133●	0.135	0.047	0.042
Orange	MCL514AD	158-1134●	0.121	0.047	0.042

3mm LED

Round, Water Clear





Material	Colour	Chip λD (nm)	Luminous Intensity (typ. mcd)	Viewing Angle	Mftrs List No.	Order Code
No Stand-offs						
InGaN	Blue	470	900	45°	OVLBB4C7	149-7965
InGaN	Green	525	2000	45°	OVLBG4C7	149-7966
AlInGaP	Red	623	1800	45°	OVLBR4C7	149-7967
AlInGaP	Yellow	589	2400	45°	OVLBY4C7	149-7968
With Stand-offs						
InGaN	Blue	470	600	65°	OVLAB6CB8	149-7988
InGaN	Green	527	2000	65°	OVLAG6CB8	149-7989
AlInGaP	Red	628	1100	65°	OVLAS6CB8	149-7990
InGaN	White	-	1000	45°	OVLAW4CB7	149-7991

497621

Colour	Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+
No Stand-offs						
Blue	OVLBB4C7	149-7965●	0.580	0.320	0.290	0.280
Green	OVLBG4C7	149-7966●	1.010	0.500	0.460	0.450
Red	OVLBR4C7	149-7967●	0.370	0.194	0.180	0.174
Yellow	OVLBY4C7	149-7968●	0.390	0.194	0.180	0.174
With Stand-offs						
Blue	OVLAB6CB8	149-7988●	0.910	0.450	0.420	0.400
Green	OVLAG6CB8	149-7989●	1.050	0.520	0.480	0.470
Red	OVLAS6CB8	149-7990●	0.430	0.220	0.200	0.196
White	OVLAW4CB7	149-7991●	0.900	0.530	0.500	0.460

3mm/T1 – With Integral Resistor



L=4.5, Dia=2.9, Lead pitch=2.54, Leads=23 x 0.5sq
Cathode identified by shorter lead

Colour	View Angle	Lum. Intensity (mcd) min.	Lum. Intensity (mcd) typ.	I_F (mA) (max.)	PIV (max.)	Mftrs. List No.	Order Code
Tinted Diffused Lens							
HE Red	60°	1.6	4 @ 12V	12	6	TLRH4420CU	104-5511
Yellow	60°	1.6	4 @ 12V	12	6	TLRY4420CU	104-5515
Green	60°	1.6	4 @ 12V	12	6	TLRG4420CU	104-5513

206431

Order Multiple=5

Colour	Mftrs. List No.	Order Code	Price Each 5+	25+	100+	250+	1K+
HE Red	TLRH4420CU	104-5511●	1.06	0.65	0.44	0.35	0.32
Yellow	TLRY4420CU	104-5515●	0.85	0.42	0.36	0.29	0.27
Green	TLRG4420CU	104-5513●	0.83	0.41	0.35	0.27	0.25

3mm/T1, Standard - With Integral Resistor

60 ° Viewing Angle



L=4.6, Dia.=3.0
Lead pitch=2.54, Leads=27 0.5sq
Cathode identified by shorter lead.
LEDs with tinted diffused lens.

RL Re-reeling available

Farnell

Colour	Wavelength	Max. Lum. Intensity (mcd)	@ I_F	Mftrs. List No.	Order Code
Red Ultra Bright	660	300	10	L-7104SRD-12V	113-9550
Green	565	32	10	L-7104GD-12V	113-9546

206312

Order Multiple=5			Price Each				
Colour	Voltage	Order Code	5+	25+	100+	250+	500+
Green	12V	113-9546●	0.380	0.370	0.330	0.171	0.156
Red Ultra Bright	12V	113-9550●	0.650	0.590	0.440	0.300	0.260

3mm/T1, Standard

VISHAY

Tinted Diffused Lens



VCH: L=5.08, Dia=3.05
Lead pitch=1.4, Leads=25 x 0.36sq
Cathode identified by flat on body and longer lead

VISH: L=4.5, Dia=3.0
Lead pitch=2.54, Leads=23 x 0.5sq
Cathode identified by shorter lead

Colour	Wavelength Peak (nm)	Viewing Angle	Typ Lum. Intensity (mcd)	I_F (mA) (max)	PIV (max)	Mftr.	Mftrs. List No.	Order Code
Red	660	60°	3 @ 20mA	50	5	VISH	TLUR4400	104-5372
Red	660	90°	1 @ 20mA	50	5	SLI	CMD5075C	113-9552
Red	650	32°	200 @ 20mA	50	6	VISH	TLDR4900	104-5472
Red	635	120°	1 @	30	15	VISH	TLHR4600	132-8312
Red	635	90°	5 @ 20mA	35	5	SLI	CMD5774C	113-9553
HE Red	635	32°	13 @ 10mA	30	6	VISH	TLHR4900	104-5468
HE Red	635	44°	15 @ 10mA	30	6	VISH	TLHR4205	104-5464
HE Red	635	44°	8 @ 10mA	30	6	VISH	TLHR4200	104-5463
HE Red	635	50°	2 @ 2mA	7	6	VISH	TLLR4401	104-5504
HE Red	635	60°	10 @ 10mA	30	6	VISH	TLHR4405	104-5457
HE Red	635	60°	5 @ 10mA	30	6	VISH	TLHR4401	104-5456
HE Red	635	60°	4 @	12	6	VISH	TLRH4420CU	104-5511
HE Red	635	120°	6 @ 10mA	30	6	VISH	TLHR4605	104-5458
Orange	605	60°	4 @ 10mA	30	6	VISH	TLHO4400	104-5462
Yellow	585	44°	20 @ 10mA	30	6	VISH	TLHY4205	104-5467
Yellow	585	50°	2 @ 2mA	7	6	VISH	TLLY4401	104-5506
Yellow	585	60°	10 @ 10mA	30	6	VISH	TLHY4405	104-5461
Yellow	585	60°	4 @	12	6	VISH	TLRY4420CU	104-5515
Yellow	585	90°	4 @ 20mA	35	5	SLI	CMD5374C	113-9556
Green	565	50°	2 @ 2mA	7	6	VISH	TLLG4401	104-5505
Green	565	60°	12 @ 10mA	30	6	VISH	TLHG4405	104-5459
Green	565	60°	4 @	12	6	VISH	TLRG4420CU	104-5513
Green	565	120°	5 @ 10mA	30	6	VISH	TLHG4605	104-5460
HE Green	565	44°	20 @ 10mA	30	6	VISH	TLHG4205	104-5466

221739

Order Multiple=5			Price Each		
Colour	Mftrs. List No.	Order Code	5+	100+	1K+
Red	TLUR4400	104-5372●	0.129	0.078	0.057
Red	TLHR4600	132-8312●	0.131	0.097	0.086
Red	TLDR4900	104-5472●	0.280	0.196	0.169
Red	CMD5075C	113-9552●	0.360	0.210	0.141
Red	CMD5774C	113-9553●	0.470	0.370	0.250
HE Red	TLHR4401	104-5456●	0.165	0.103	0.082
HE Red	TLHR4405	104-5457●	0.147	0.117	0.099
HE Red	TLHR4605	104-5458●	0.181	0.134	0.112
HE Red	TLHR4200	104-5463●	0.071	0.066	0.064
HE Red	TLHR4205	104-5464●	0.156	0.147	0.132
HE Red	TLHR4900	104-5468●	0.106	0.074	0.060
HE Red	TLLR4401	104-5504●	0.200	0.123	0.095
HE Red	TLRH4420CU	104-5511●	1.060	0.650	0.440
Orange	TLHO4400	104-5462●	0.169	0.155	0.132
Yellow	TLHY4405	104-5461●	0.250	0.153	0.127
Yellow	TLHY4205	104-5467●	0.270	0.240	0.200
Yellow	TLLY4401	104-5506●	0.172	0.106	0.081
Yellow	TLRY4420CU	104-5515●	0.850	0.420	0.360
Yellow	CMD5374C	113-9556●	0.470	0.320	0.250
Green	TLHG4405	104-5459●	0.192	0.158	0.135
Green	TLHG4605	104-5460●	0.192	0.158	0.135
Green	TLLG4401	104-5505●	0.172	0.106	0.081
Green	TLRG4420CU	104-5513●	0.830	0.410	0.350
HE Green	TLHG4205	104-5466●	0.145	0.119	0.102

3mm/T1, Standard

OMC
Applying the technology of light



L=5.08, Dia=3.1
Lead pitch=2.29, Leads=12.7 x 0.5sq
Recommended lead holes=0.8 dia

Cathode identified by 'flat' on body, except bright red — anode.

Colour	View Angle	Typ Lum. Intensity (mcd)	I_F (mA) (max.)	PIV (max.)	Peak Wavelength	Mftrs. List No.	Order Code
Tinted Diffused Lens							
Green	100°	6.3 @ 20mA	25	5	567nm	L02R3000F1	120-8845
Yellow	100°	6 @ 20mA	25	5	585nm	L03R3000F1	120-8847
HE Red	100°	6.5 @ 20mA	25	5	635nm	L4RR3000F1	120-8848
Orange	100°	6.5 @ 20mA	25	5	610nm	L08R3000F1	120-8849
Red	100°	22 @ 20mA	25	4	660nm	L07R3000F1	120-8850

221668

Order Multiple=5		Price Each				
Colour	Order Code	5+	100+	1K+	5K+	10K+
Green	120-8845●	0.230	0.178	0.135	0.103	0.076
Yellow	120-8847●	0.280	0.240	0.200	0.132	0.087
HE Red	120-8848●	0.220	0.159	0.121	0.092	0.066
Orange	120-8849●	0.240	0.183	0.157	0.103	0.076
Red	120-8850●	0.410	0.330	0.280	0.210	0.178

3mm T1 - White

VISHAY

Water Clear Lens



High intensity LED's with typical colour coordinates of x = 0.33, y = 0.33. They emit white light with a high colour-rendering index. The emission spectrum is tuned for ideal white, without the impression of being blue shaded or cold. The internal reflector is filled with a compound of TAG phosphor and an elastic resin to better protect the chip against temperature cycle stress.

Colour	Viewing Angle	Luminous Intensity (mcd) (Min.)	(Typ)	(Max.)	I_F (mA) (max)	PIV (max)	Mftrs. List No.	Order Code
White	32°	240	500	-	30	5	VLHW4900	132-8313
White	32°	430	-	2000	30	5	VLHW4902	132-8314

460065

			Price Each			
Colour	Mftrs. List No.	Order Code	1+	25+	100+	250+
White	VLHW4900	132-8313●	0.55	0.42	0.36	0.33
White	VLHW4902	132-8314●	0.68	0.52	0.45	0.41

3mm/T1 Standard and High Intensity

VISHAY



L=4.5, Dia=2.9, Lead pitch=2.54, Leads=23x0.5sq
Cathode identified by shorter lead

Colour	View Angle	Lum Intensity (mcd) @ If=10mA min	typ.	If (mA) max	PIV max	Mftrs. List No.	Order Code
Tinted Diffused Lens							
HE Red	60°	2.5	5	30	6	TLHR4401	104-5456
HE Red	60°	6.3	10	30	6	TLHR4405	104-5457
HE Red	120°	2.5	6	30	6	TLHR4605	104-5458
Green	60°	6.3	12	30	6	TLHG4405	104-5459
Green	120°	2.5	5	30	6	TLHG4605	104-5460
Yellow	60°	6.3	10	30	6	TLHY4405	104-5461
Orange	60°	1.6	4	30	6	TLHO4400	104-5462
Tinted Clear Lens							
HE Red	44°	4	8	30	6	TLHR4200	104-5463
HE Red	44°	10	15	30	6	TLHR4205	104-5464
HE Green	44°	16	20	30	6	TLHG4205	104-5466
Yellow	44°	10	20	30	6	TLHY4205	104-5467
Untinted Clear Lens							
HE Red	32°	6.3	13	30	6	TLHR4900	104-5468
Green	32°	16	37	30	6	TLHG4900	104-5469
Yellow	32°	10	26	30	6	TLHY4900	104-5470
Tinted Diffused Lens-High Intensity							
Red	60°	25*	45*	50	6	TLDR4400	104-5471
Untinted Clear Lens-High Intensity							
Red	32°	63*	200*	50	6	TLDR4900	104-5472

*I_F = 20mA

206432

Order Multiple=5			Price Each				
Colour	Order Code	5+	25+	100+	250+	1K+
HE Red	104-5456●	0.165	0.103	0.082	0.058	0.053
HE Red	104-5457●	0.147	0.117	0.099	0.063	0.054
HE Red	104-5458●	0.181	0.134	0.112	0.084	0.063
Green	104-5459●	0.192	0.158	0.135	0.095	0.080
Green	104-5460●	0.192	0.158	0.135	0.095	0.080
Yellow	104-5461●	0.250	0.153	0.127	0.088	0.070
Orange	104-5462●	0.169	0.155	0.132	0.093	0.080
HE Red	104-5463●	0.071	0.066	0.064	0.047	0.041
HE Red	104-5464●	0.156	0.147	0.132	0.098	0.089
HE Green	104-5466●	0.145	0.119	0.102	0.071	0.060
Yellow	104-5467●	0.270	0.240	0.200	0.172	0.141
HE Red	104-5468●	0.106	0.074	0.060	0.042	0.040
Green	104-5469●	0.112	0.101	0.078	0.058	0.048
Yellow	104-5470●	0.176	0.167	0.148	0.108	0.097
Red	104-5471●	0.320	0.210	0.178	0.120	0.101
Red	104-5472●	0.280	0.196	0.169	0.131	0.107

RL Re-reeling available

Farnell

3mm Light Emitting Diodes (LEDs) - continued

3mm/T1, Standard and Ultra Bright

Kingbright



L=4.6, Dia=2.9
Lead pitch=2.54, Leads=27 x 0.5sq
Cathode identified by shorter lead

Colour	View Angle	Lum. Intensity (mcd) @ I_F = 20mA min.	typ.	I_F (mA) (max)	PIV max.	Mftrs. List No.	Order Code
Tinted Diffused Lens							
Red	50°	1200	1400	30	5	L-934SRC-G	114-2526
Red	60°	8	20	30	5	L-934ID	114-2517
Red	60°	90.2	180	30	5	HLMP-NG07	100-3134
Orange	60°	8	50	30	5	L-934ND	114-2516
Green	60°	6.3	12	30	6	TLHG4405	104-5459
Green	50°	100	300	25	5	L-934SGC	114-2523

206334

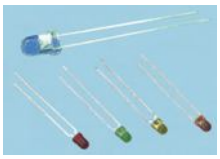
Colour	Colour	Order Code	Price Each 10+	100+	1K+	5K+
Red	L-934SRC-G	**114-2526●**	0.210	0.187	0.152	0.133
Red	L-934ID	**114-2517●**	0.080	0.070	0.060	0.050
Red	HLMP-NG07	**100-3134●**	0.184	0.170	0.147	0.113
Orange	L-934ND	**114-2516●**	0.070	0.060	0.050	0.040
Green	TLHG4405	**104-5459●**	0.192	0.158	0.135	0.095
Green	L-934SGC	**114-2523●**	0.081	0.072	0.064	0.037

3mm Superbright LEDs

multicomp

Water Clear Lens

New



Viewing Angle 36°
Current Rating 20mA
Power Dissipation 85mW
Operating Temperature -40°C to +85°C
Reverse Voltage 5V

Colour	Wavelength Peak (nm)	Dominant (nm)	Luminous Intensity typ. (mcd)	Current, If max. (mA)	Voltage, Vf typ. (V)	Mftrs. List No.	Order Code
Super Red	660	643	1200	100	1.9	MCL034URC	158-1165
Super Orange	635	625	2000	100	2.1	MCL034SAC	158-1166
Super Amber	610	606	1600	100	2.1	MCL034SBC	158-1167
Super Yellow	590	592	1500	100	2.1	MCL034SYC	158-1169
Super Green	570	572	1300	100	2.1	MCL034SGC	158-1171
Ultra Green	525	527	4500	100	3.4	MCL034UGC	158-1172
Ultra Blue / Green	505	510	3650	100	3.4	MCL034BGC	158-1173
Super Blue	470	472	1450	100	3.4	MCL034SBLC	158-1174

512393

Colour	Mftrs. List No.	Order Code	Price Each 5+	100+	500+
Super Red	MCL034URC	**158-1165●**	0.220	0.180	0.150
Super Orange	MCL034SAC	**158-1166●**	0.101	0.081	0.067
Super Amber	MCL034SBC	**158-1167●**	0.168	0.135	0.112
Super Yellow	MCL034SYC	**158-1169●**	0.168	0.135	0.112
Super Green	MCL034SGC	**158-1171●**	0.168	0.135	0.112
Ultra Green	MCL034UGC	**158-1172●**	0.370	0.290	0.250
Ultra Blue / Green	MCL034BGC	**158-1173●**	0.390	0.310	0.260
Super Blue	MCL034SBLC	**158-1174●**	0.168	0.135	0.112

3mm/T1 Hyper Bright

OSRAM



- 3mm radial
- Gehäuse ungefärbt
- Lichtstärke von 180 bis 900mcd

Cathode identified by shorter lead

L=4.6, Dia=2.9, Lead pitch=2.54, Leads=0.5sq x 26.5

Colour	View Angle	Lum Intensity (mcd) typ.	I_F (mA) (max)	Mftrs. List No.	Order Code
Untinted Clear Lens					
Yellow	50°	450 @ 20mA	30	LY3336-S2V1	121-2755
Tinted Diffused Lens					
Red	50°	@ 20mA	30	LS3336RU-S1U2	121-2754
Yellow	50°	@ 20mA	30	LY3366-S1T2	121-2757

206466

Colour	Mftrs. List No.	Order Code	Price Each 5+	100+	500+	1K+
Untinted Clear Lens						
Yellow	LY3336-S2V1	**121-2755●**	0.550	0.300	0.270	0.163
Tinted Diffused Lens						
Red	LS3336RU-S1U2	**121-2754●**	0.330	0.194	0.172	0.110
Yellow	LY3366-S1T2	**121-2757●**	0.430	0.220	0.200	0.121

3mm Low Current LEDs

multicomp

Diffused Lens

New



Viewing Angle 76°
Current Rating 20mA
Power Dissipation 85mW
Operating Temperature -40°C to +85°C
Reverse Voltage 5V

Colour	Wavelength Peak (nm)	Dominant (nm)	Luminous Intensity typ. (mcd)	Current, If max. (mA)	Voltage, Vf typ. (V)	Mftrs. List No.	Order Code
Red	660	643	85	100	1.9	MCL034SRDD	158-1214
Green	568	570	3.2	100	1.85	MCL034LGD	158-1215
Yellow	587	590	3.5	100	1.85	MCL034LYD	158-1216

512388

Colour	Mftrs. List No.	Order Code	Price Each 5+	100+	250+
Red	MCL034SRDD	**158-1214●**	0.157	0.075	0.063
Green	MCL034LGD	**158-1215●**	0.168	0.081	0.067
Yellow	MCL034LYD	**158-1216●**	0.174	0.083	0.070

3mm/T1, Low Current

Kingbright

60 ° Viewing Angle, Tinted Diffused Lens



Colour	Wavelength Peak	Lum Intensity (mcd) @ I_F=2mA min.	typ.	I_F (mA) (max)	PIV max.	Order Code
Red	660nm	0.8	20	2	5	114-2514
HE Red	625nm	0.7	3	2	5	114-2512
Green	565nm	0.8	3.2	2	5	114-2509
Yellow	590nm	0.8	3.2	2	5	114-2515

206336

Colour	Order Code	Price Each 5+	100+	1K+	5K+
HE Red	**114-2512●**	0.107	0.074	0.047	0.035
Green	**114-2509●**	0.107	0.074	0.047	0.035
Yellow	**114-2515●**	0.104	0.071	0.046	0.033
Red	**114-2514●**	0.150	0.121	0.060	0.044

3mm/T1, Low Current

VISHAY



L=4.5, Dia=2.9, Lead Pitch=2.54, Leads=23 x 0.5sq
Cathode identified by shorter lead

Colour	View Angle	Typ Lum Intensity @ I_F = 2mA min	typ	I_F (mA) Max	PIV Max	Mftrs. List No.	Order Code
Tinted Diffused Lens							
HE Red	50°	1	2	7	6	TLLR4401	104-5504
Green	50°	1	2	7	6	TLLG4401	104-5505
Yellow	50°	1	2	7	6	TLLY4401	104-5506

206426

Colour	Order Code	Price Each 5+	25+	100+	250+	1K+
HE Red	**104-5504●**	0.200	0.123	0.095	0.062	0.052
Green	**104-5505●**	0.172	0.106	0.081	0.073	0.066
Yellow	**104-5506●**	0.172	0.106	0.081	0.073	0.066

RL Re-reeling available

3mm/T1, Reflector

Kingbright



L=4.3, Dia.=2.9
Lead pitch=2.54, Leads=25.5 x 0.5sq
Cathode identified by flat on body and shorter lead.

Colour	View Angle	Lum. Intensity (mcd) @ I_F=10mA min.	typ.	I_F (mA) (max.)	PIV (max.)	Order Code
Tinted Clear Lens						
HE Red	130°	3.2	12.5	30	5	114-2508
Yellow	130°	2	8	30	5	114-2530
Green	130°	2	8	25	5	114-2507

206370

Order Multiple=10		Price Each				
Colour	Order Code	10+	50+	100+	250+	500+
HE Red	114-2508●	0.092	0.085	0.075	0.053	0.033
Yellow	114-2530●	0.098	0.095	0.082	0.061	0.051
Green	114-2507●	0.108	0.100	0.084	0.070	0.048

3mm/T1, Flashing

Kingbright



L=5, Dia=3
Lead pitch=2.54, Leads=27 x 0.5sq
Cathode identified by shorter lead
Flash rate 1.5-2.5Hz
Supply voltage min 3.5V, max 12V

Note: Internally current controlled, unsuitable for use with voltage dropping series resistors.

Colour	View Angle	Lum Intensity (mcd) @ 9V min.	typ	I_F (mA)	PIV max	Order Code
Tinted Diffused Lens						
Red	60°	1.3	3.2	38 - 56	0.5	116-8657
Green	60°	5	20	38 - 56	0.5	116-8658
Yellow	60°	5	20	38 - 56	0.5	116-8659
HE Red	60°	12.5	32	38 - 56	0.5	116-8660
Red Super Bright	60°	100	300	38 - 56	0.5	116-8661

221689

Colour	Order Code	Price Each 1+	25+	100+	500+
Red	116-8657●	0.340	0.250	0.200	0.170
Green	116-8658●	0.320	0.240	0.200	0.170
Yellow	116-8659●	0.320	0.240	0.200	0.170
HE Red	116-8660●	0.320	0.250	0.200	0.170
Red Super Bright	116-8661●	0.350	0.270	0.210	0.181

Bicolour, 3mm/T1

60 ° Viewing Angle, Untinted Diffused Lens

Kingbright



L=4.6= Dia.=2.8, Lead pitch=2.54,
Leads=27
Shorter lead indicates Red cathode
(Green cathode on Green/Yellow)

Colour	min	Typ Lum Intensity @ 20mA (mcd)	I_F (mA) (max)	PIV	Order Code
HE Red, Green	8/8	40/40	30/30	5	114-2488
HE Red, Yellow	8/5	40/20	30/30	5	114-2490
Green, Yellow	8/5	40/20	30/30	5	114-2487

206332

Colour	Order Code	Price Each 1+	50+	100+	1K+
HE Red, Green	114-2488●	0.37	0.29	0.22	0.16
HE Red, Yellow	114-2490●	0.14	0.10	0.08	0.07
Green, Yellow	114-2487●	0.14	0.10	0.08	0.07

Bicolour, 3mm/T1

multicomp





L=5.1, Dia=3.1L
Lead pitch=2.54, Leads=22x0.5sq.
Green cathode identified by flat on body and shorter lead

Bicolour LEDs have two diodes connected in inverse parallel. AC operation gives a third intermediate colour, e.g. red+green gives orange.

Colours	View Angle	Lum Intensity min	I_F (mA) (max)	Order Code
Untinted Diffused Lens				
HE Red, Green	100°	4.5/4.2	25/25	120-8856
Green, Yellow	100°	4/4.2	25/25	120-8857

206708

Colour	Order Code	Price Each 1+	50+	100+	1K+
HE Red, Green	120-8856●	1.36	0.89	0.79	0.44
Green, Yellow	120-8857●	1.36	0.89	0.79	0.44

3mm Bi-Colour LEDs

White Diffused Lens

multicomp



New

Viewing Angle 76°
Current Rating 20mA
Power Dissipation 85mW
Operating Temperature -40°C to +85°C
Reverse Voltage 5V

Colour	Wavelength (nm)	Luminous Intensity typ. (mcd)	Current, If max. (mA)	Voltage, Vf typ. (V)	Mftrs. List No.	Order Code
HI Red / Green	660 / 568	30 / 10	100	1.8 / 2.1	MCL039PURGW	158-1194
Orange / Green	635 / 568	8.2 / 8	100	2 / 2.1	MCL039AGW	158-1195
Yellow / Green	587 / 568	7.5 / 7	100	2.1 / 2.1	MCL039YGW	158-1196

513695

Colour	Mftrs. List No.	Order Code	Price Each 5+	100+	250+
HI Red / Green	MCL039PURGW	158-1194●	0.196	0.157	0.130
Orange / Green	MCL039AGW	158-1195●	0.196	0.157	0.130
Yellow / Green	MCL039YGW	158-1196●	0.210	0.171	0.141

3mm Tri-Colour LEDs

White Diffused Lens

multicomp



New

Viewing Angle 76°
Current Rating 20mA
Power Dissipation 85mW
Operating Temperature -40°C to +85°C
Reverse Voltage 5V

Colour	Wavelength (nm)	Luminous Intensity typ. (mcd)	Current, If max.(mA)	Voltage, Vf typ. (V)	Mftrs. List No.	Order Code
HI Red / Green	660 / 568	30 / 10	100	1.8 / 2.1	MCL036PURGW	158-1204
Orange / Green	635 / 568	8.2 / 8	100	2 / 2.1	MCL036AGW	158-1205
Yellow / Green	587 / 568	11 / 10	100	2.1 / 2.1	MCL036YGW	158-1206

513819

Colour	Mftrs. List No.	Order Code	Price Each 5+	100+	250+
HI Red / Green	MCL036PURGW	158-1204●	0.196	0.157	0.130
Orange / Green	MCL036AGW	158-1205●	0.196	0.157	0.130
Yellow / Green	MCL036YGW	158-1206●	0.210	0.171	0.141

Tricolour, 3mm/T1

Kingbright



Two colour LEDs connected common cathode. Both diodes connected gives third intermediate colour.

L=4.6, Dia=2.8
Lead spacing=2.54 (in-line)
Lead length A1=20.4 K=24.5 A2=22.4

Colours	View Angle	Lum Intensity min	(mcd) @ 20mA typ	I_F (mA) (max)	PIV	Order Code
Untinted Diffused Lens						
HE Red, Green	60°	20/20	50/50	30/25	5	114-2520
HE Red, Yellow	60°	20/20	50/50	30/30	5	114-2521
Green, Yellow	60°	20/20	50/50	25/30	5	114-2522
Untinted Clear Lens						
Red, Green	60°	100/50	700/100	25/25	5	114-2518

221690

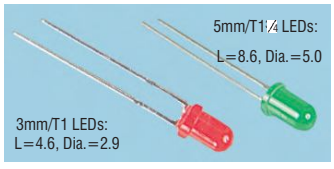
Colour	Order Code	Price Each 1+	50+	100+	1K+	5K+
HE Red, Green	114-2520●	0.450	0.330	0.240	0.150	0.100
HE Red, Yellow	114-2521●	0.540	0.450	0.420	0.330	0.189
Green, Yellow	114-2522●	0.140	0.100	0.080	0.075	0.073
Red, Green	114-2518●	0.390	0.350	0.270	0.200	0.155

3mm & 5mm Intensity Matched LEDs

Intensity Matched,

3mm/T1 and 5mm/T1¾

OSRAM



Lead pitch=2.54, Leads=25x0.5 sq.

Cathode identified by flat on body (5mm only) and shorter lead. LEDs have stand-offs

RL Re-reeling available

Farnell

3mm & 5mm Intensity Matched LEDs - continued

Intensity Matched, - continued

3mm/T1 and 5mm/T1¾ - continued

Colour	View Angle	Lum Intensity (mcd)min - max.	I_F (mA) (max)	PIV	Mftrs. List No.	Order Code
3mm/T1 Tinted Diffused Lens						
HE Red	70°	6.3-12.5 @ 10mA	40	5	LS3360-KL	121-9685
Green	70°	6.3-12.5 @ 10mA	40	5	LG3360-KN	121-9682
5mm/T1¾ Tinted Diffused Lens						
HE Red	50°	6.3-12.5 @ 10mA	40	5	LS5360-KL	121-9688

206279

Order Multiple=10		Price Each			
	Order Code	10+	100+	500+	1K+
HE Red	**121-9685●**	0.310	0.270	0.250	0.094
Green	**121-9682●**	0.290	0.250	0.220	0.094
HE Red	**121-9688●**	0.141	0.130	0.094	0.048

3mm & 5mm White, Blue & Green LEDs

3mm White LEDs

Water Clear Lens

multicomp



New

Viewing Angle 36°
Current Rating 20mA
Power Dissipation 85mW
Operating Temperature -40°C to +85°C
Reverse Voltage 5V

Colour	Luminous Intensity min. (mcd)	typ. (mcd)	max. (mcd)	Current, If max. (mA)	Voltage, Vf typ. (V)	Mftrs. List No.	Order Code
Warm White	2500	3700	5500	100	3.4	MCL034SWC-YH1	158-1175
Pure White	1350	270	4000	100	3.4	MCL034SWC-WH1	158-1176

512131

Colour	Mftrs. List No.	Order Code	Price Each 5+	100+	500+
Warm White	MCL034SWC-YH1	**158-1175●**	0.45	0.36	0.30
Pure White	MCL034SWC-WH1	**158-1176●**	0.45	0.36	0.30

5mm White LEDs

Water Clear Lens

multicomp



New

Viewing Angle 16°
Current Rating 20mA
Power Dissipation 85mW
Operating Temperature -40°C to +85°C
Reverse Voltage 5V

Colour	Luminous Intensity min. (mcd)	typ. (mcd)	max. (mcd)	Current, If max. (mA)	Voltage, Vf typ. (V)	Mftrs. List No.	Order Code
Warm White	4500	10000	15000	100	3.4	MCL053SWC-YH1	158-1186
Pure White	4500	9000	13500	100	3.4	MCL053SWC-WH1	158-1187

512143

Colour	Mftrs. List No.	Order Code	Price Each 5+	100+	500+
Warm White	MCL053SWC-YH1	**158-1186●**	0.45	0.36	0.30
Pure White	MCL053SWC-WH1	**158-1187●**	0.45	0.36	0.30

White, 3mm/T1 and 5mm/T1¾

MARL



3mm - L=5.4 (body), Dia=3.1, Lead pitch=2.54, Leads=16.5 x 0.5sq
5mm - L=7.6 (body), Dia=5.0, Lead pitch=2.54, Leads=16.5 x 0.5sq
Cathode identified by flat on body and shorter lead

Colour	View Angle	Typ Lum Intensity @ 20mA (mcd)	I_F (mA) (max)	Vf (typ)	PIV Max	Mftrs. List No.	Order Code
Untinted Diffused Lens							
White 5mm	70°	420	30	3.6	5	NSPW515BS	105-7069
Untinted Clear Lens							
White 3mm	25°	4600	30	3.6	5	NSPW300BS	105-7134
White 3mm	60°	1270	30	3.6	5	NSPW310BS	105-7123
White 5mm	20°	5600	30	3.6	5	NSPW500BS	105-7135
White 5mm	50°	1560	30	3.6	5	NSPW510BS	105-7132

206476

	Mftrs. List No.	Order Code	Price Each 1+	10+	25+	50+
Untinted Diffused Lens						
5mm T1¾	NSPW515BS	**105-7069●**	1.39	1.23	1.13	1.07
Untinted Clear Lens						
3mm T1	NSPW300BS	**105-7134●**	1.42	1.26	1.15	1.09
5mm T1¾	NSPW310BS	**105-7123●**	1.42	1.26	1.15	1.09
3mm T1	NSPW500BS	**105-7135●**	1.42	1.26	1.15	1.09
5mm T1¾	NSPW510BS	**105-7132●**	1.36	1.21	1.11	1.05

Very High Intensity LED - White

TOYODA GOSEI CO.,LTD

5mm



A range of Very High Intensity white LED's suitable for a wide range of applications including illumination, backlighting and indication.

- High performance, low cost
- ESD Protected

DC Forward Current	30mA	Power Dissipation	120mW
Pulsed Forward Current	100mA	Operating Temperature	-30 to 85°C
Reverse Current	100mA	Storage Temperature	-40 to 100°C

Size	View Angle	Luminous Intensity@20mA typ.	Mftrs. List No.	Code Code
5mm	30°	2100mcd	E1L53-AW0C2-01	105-7115
5mm	50°	1600mcd	E1L55-AW0C2-01	105-7116

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Viewing Angle	Order Code	Price Each 1+	10+	25+	100+	250+
30°	**105-7115●**	1.31	1.05	0.97	0.90	0.87
50°	**105-7116●**	1.35	1.07	0.99	0.92	0.89

Blue, 3mm/T1 and 5mm/T1¾

forge EUROPA



3mm/T1 - Length = 5.3, Dia = 3.0, Lead pitch = 2.54, Lead length = 16, Lead size = 0.5sq. Cathode identified by flat on body and shorter lead

5mm - Length = 8.6, Dia = 5.0, Lead pitch = 2.54, Lead length = 25.4, Lead size = 0.5sq. Cathode identified by flat on body and shorter lead

Colour/ Peak Wave-Length (nm)	Viewing Angle	Typ. Lum. Intensity @ 20mA (465nm = 10mA)	V_F Typ. @ I_F	I_f max. (mA)	PIV	Mftrs. List No.	Order Code
3mm/T1, Blue Diffused Lens							
Blue, 465nm	60°	34	3.3	15	5	FNL-U300B05CDSL	120-0579
Blue, 458nm	60°	70	3.5	25	5	FNL-U300B06CDSL	120-0580
Blue, 428nm	60°	24	3.7	25	5	FNL-U300B01CDSL	120-0581
3mm/T1, Water Clear Lens							
Blue, 465nm	35°	170	3.3	15	5	FNL-U300B05WCSL	120-0583
Blue, 458nm	35°	360	3.5	25	5	FNL-U300B06WCSL	120-0584
Blue, 428nm	35°	120	3.7	25	5	FNL-U300B01WCSL	120-0585
5mm/T1¾, Blue Diffused Lens							
Blue, 465nm	60°	45	3.3	15	5	FNL-U500B05CDSL	120-0588
Blue, 458nm	60°	150	3.5	25	5	FNL-U500B06CDSL	120-0589
Blue, 428nm	60°	31	3.7	25	5	FNL-U500B01CDSL	120-0590
5mm/T1¾, Water Clear Lens							
Blue, 458nm	25°	830	3.5	25	5	FNL-U501B06WCSL	120-0593
Blue 428nm	25°	240	3.7	25	5	FNL-U501B01WCSL	120-0594
5mm/T1¾, Water Clear Lens							
Blue, 465nm	15°	450	3.3	15	5	FNL-U500B05WCSL	120-0596
Blue, 458nm	15°	1470	3.5	25	5	FNL-U500B06WCSL	120-0597
Blue, 428nm	15°	315	3.7	25	5	FNL-U500B01WCSL	120-0599

229065

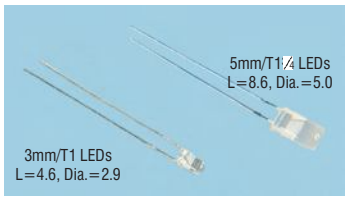
Colour, Peak Wavelegnth	Order Code	Price Each 1+	25+	100+	250+	500+
3mm/T1 - 60° Viewing Angle						
Blue, 465nm	**120-0579●**	0.56	0.49	0.46	0.39	0.35
Blue, 458nm	**120-0580●**	0.75	0.65	0.59	0.49	0.47
Blue, 428nm	**120-0581●**	0.50	0.44	0.41	0.33	0.32
3mm/T1 - 35° Viewing Angle						
Blue, 465nm	**120-0583●**	0.56	0.49	0.46	0.39	0.35
Blue, 458nm	**120-0584●**	0.66	0.58	0.55	0.49	0.47
Blue, 428nm	**120-0585●**	0.50	0.44	0.41	0.33	0.32
5mm/T1¾ - 60° Viewing Angle						
Blue, 465nm	**120-0588●**	0.56	0.49	0.46	0.39	0.35
Blue, 458nm	**120-0589●**	0.75	0.65	0.59	0.49	0.47
Blue, 428nm	**120-0590●**	0.50	0.44	0.41	0.33	0.32
5mm/T1¾ - 25° Viewing Angle						
Blue, 465nm	**120-0592●**	0.56	0.49	0.46	0.39	0.35
Blue, 458nm	**120-0593●**	0.75	0.65	0.59	0.49	0.47
Blue, 428nm	**120-0594●**	0.50	0.44	0.41	0.33	0.32
5mm/T1¾ - 15° Viewing Angle						
Blue, 465nm	**120-0596●**	0.56	0.49	0.46	0.39	0.35
Blue, 458nm	**120-0597●**	0.75	0.65	0.59	0.49	0.47
Blue, 428nm	**120-0599●**	0.50	0.44	0.41	0.33	0.32

Over 480,000 products online

QGO

Blue, 3mm/T1 and 5mm/T1¾

Kingbright



Lead pitch=2.54, Leads=25.5 x 0.5sq.
Cathode identified by flat on body and shorter lead

Colour	View Angle	Typ. Lum. Intensity (mcd) min	typ.	I_F (mA) (max.)	V_F (V) (typ.)	PIV (max.)	Peak Wavelength	Order Code
3mm/T1 Tinted diffused Lens								
Blue	60°	12.5	40	30	3.8	5	430nm	114-2491
3mm/T1 Untinted Clear Lens								
Blue	20°	400	450	30	3.3	5.0	468nm	114-2494
Blue	20°	20	90	30	3.8	5	430nm	114-2493
5mm/T1¾ Untinted Clear Lens								
Blue	16°	500	1000	30	3.3	5	468nm	114-2539
Blue	16°	40	150	30	3.8	5	430nm	114-2536

206268

Type	Order Code	Price Each 1+	25+	100+	250+	500+
3mm Diffused	**114-2491●**	0.64	0.62	0.47	0.37	0.34
3mm Clear	**114-2494●**	0.68	0.60	0.54	0.45	0.44
3mm Clear	**114-2493●**	0.52	0.40	0.38	0.32	0.29
5mm Clear	**114-2539●**	0.68	0.60	0.54	0.45	0.44
5mm Clear	**114-2536●**	0.52	0.39	0.31	0.26	0.24

Ultra-High Bright Blue and Green 3mm/T1¾ and 5mm/T1¾

MARL

5mm/T1¾
Dia.=5.0
L=8.6
L=7.6 (884-698)



3mm/T1
Dia.=3.1
L=4.6 (942-443)
L=5.0 (942-480)

Lead pitch=2.54
Leads=25.5 x 0.5sq. (0.45sq 1000047)
Cathode identified by shorter lead, the green and blue LEDs have stand-offs

Colour	View Angle	Typ Lum Intensity @ 20mA (mcd)	I_F (mA) (max)	V_F(V) (typ)	PIV (max)	Peak Wavelength	Order Code
3mm/T1 Untinted Clear Lens							
Red	50°	1300	30	1.85	5V	660nm	105-7124
Yellow	10°	4445	50	2.1	4V	590nm	105-7131
Green	15°	6800	30	3.5	5V	525nm	105-7126
Blue	15°	2000	30	3.6	5V	470nm	105-7127
Blue	45°	600	30	3.6	5V	470nm	105-7128
5mm/T1¾Untinted Clear Lens							
Red	30°	2250	30	1.85	5V	660nm	105-7129
Yellow	8°	4560	50	2.1	4V	590nm	105-7125
Green	15°	10000	30	3.5	5V	525nm	105-7119
Blue	15°	3000	30	3.6	5V	470nm	105-7120
Blue	45°	700	30	3.6	5V	470nm	105-7122

CAUTION - THESE DEVICES ARE STATIC SENSITIVE

206363

Colour	Order Code	Price Each 1+	10+	25+	50+	100+
3mm/T1						
Red	**105-7124●**	0.34	0.29	0.26	0.22	0.21
Yellow	**105-7131●**	0.96	0.82	0.72	0.66	0.64
Green	**105-7126●**	1.42	1.26	1.15	1.09	0.98
Blue	**105-7127●**	1.42	1.26	1.15	1.09	0.98
Blue	**105-7128●**	1.42	1.26	1.15	1.09	0.98
5mm/T1¾						
Red	**105-7129●**	0.34	0.29	0.26	0.22	0.21
Yellow	**105-7125●**	0.98	0.84	0.73	0.67	0.65
Green	**105-7119●**	1.42	1.26	1.15	1.09	0.98
Blue	**105-7120●**	1.42	1.26	1.15	1.09	0.98
Blue	**105-7122●**	1.42	1.26	1.15	1.09	0.98

5mm Blue, Green & Blue-Green

TOYODA GOSEI CO.,LTD



Cathode identified by short lead and flat on body (except E1L51-3BOA & GOA, cathode identified by short lead only).

All LEDs have stand-offs.

Colour	View Angle	Lum Intensity @ I_F = 20mA typ	(max)	I_F(ma) (max)	V_F typ	PIV max	Peak Wavelength min	max	Mftrs. List No.	Order Code
Untinted Clear Lens										
Blue / Green	20°	1195	2680	30	3.2	5	493	498	E1L53-YC1A2-03	105-7105

CAUTION - THESE DEVICES ARE STATIC SENSITIVE

221731

Colour	Order Code	Price Each 1+	25+	100+	250+	500+
Blue / Green	**105-7105●**	1.20	1.05	0.95	0.88	0.84

T-1 LEDs

New

ROHM SEMICONDUCTOR

Forward Current 10mA
LED / Lamp Size T-1
Operating temperature -25°C to +85°C

Colour	Luminous Intensity (typ)	Forward Current	Forward Voltage (max)	Mftrs. List No.	Order Code
3mm					
HB Red	–	–	–	SLA-370LT3F	168-5001
HB Green	100mcd	20mA	2.3V	SLA-370MT3F	168-5002
3.1mm					
Red	25mcd	10mA	2V	SLR-342VC3F	168-5019
Red	25mcd	10mA	2V	SLR-342VCT32	168-5020
Red	16mcd	10mA	2V	SLR-342VR3F	168-5021
Red	16mcd	10mA	2V	SLR-342VRT32	168-5022
Orange	25mcd	10mA	2V	SLR-342DCT32	168-5013
Yellow	16mcd	10mA	2.1V	SLR-342YC3F	168-5023
Yellow	10mcd	10mA	2.1V	SLR-342YY3F	168-5024
Green	25mcd	10mA	2.1V	SLR-342MC3F	168-5014
Green	25mcd	10mA	2.1V	SLR-342MCT32	168-5015
Green	16mcd	10mA	2.1V	SLR-342MG3F	168-5017
Green	16mcd	10mA	2.1V	SLR-342MGT32	168-5018
HB Blue	600mcd	20mA	3.3V	SLR343BCT3F	168-5025
3.2mm					
Red	16mcd	10mA	2V	SLR-325VCT31	168-5011
Yellow	6.3mcd	10mA	2.1V	SLR-325YYT31	168-5012
High Brightness					
Red	200mcd	20mA	1.9V	SLI-343URC3FW	168-5005
Yellow	200mcd	20mA	1.9V	SLI-343YC3FW	168-5006
Yellow	200mcd	20mA	1.9V	SLI-343YCT32W	168-5007

528838

Mftrs. List No.	Order Code	Price Each 1+	10+	100+	250+	500+
3mm						
SLA-370LT3F	**168-5001●**	0.410	0.198	0.164	0.140	0.128
SLA-370MT3F	**168-5002●**	0.410	0.198	0.164	0.140	0.128
3.1mm						
SLR-342VC3F	**168-5019●**	0.280	0.111	0.093	0.076	0.067
SLR-342VCT32	**168-5020●**	0.220	0.109	0.082	0.063	0.059
SLR-342VR3F	**168-5021●**	0.210	0.095	0.068	0.062	0.056
SLR-342VRT32	**168-5022●**	0.171	0.085	0.064	0.049	0.047
SLR-342DCT32	**168-5013●**	0.192	0.095	0.072	0.055	0.053
SLR-342YC3F	**168-5023●**	0.280	0.111	0.093	0.076	0.067
SLR-342YY3F	**168-5024●**	0.230	0.095	0.081	0.064	0.058
SLR-342MC3F	**168-5014●**	0.280	0.111	0.093	0.076	0.067
SLR-342MCT32	**168-5015●**	0.220	0.109	0.082	0.063	0.059
SLR-342MG3F	**168-5017●**	0.230	0.095	0.081	0.064	0.058
SLR-342MGT32	**168-5018●**	0.220	0.109	0.082	0.063	0.059
SLR343BCT3F	**168-5025●**	1.670	0.980	0.830	0.800	0.760
3.2mm						
SLR-325VCT31	**168-5011●**	0.320	0.153	0.115	0.105	0.094
SLR-325YYT31	**168-5012●**	0.320	0.153	0.115	0.105	0.094
High Brightness						
SLI-343URC3FW	**168-5005●**	0.700	0.350	0.260	0.200	0.192
SLI-343YC3FW	**168-5006●**	0.700	0.350	0.260	0.200	0.192
SLI-343YCT32W	**168-5007●**	0.700	0.350	0.260	0.200	0.192

5mm LED

TT electronics OPTEK Technology

High Luminous Intensity





Lens Colour = Water Clear

Material	Colour	λD (nm)	Luminous Intensity (typ)	Viewing Angle	Lead Type	Mftrs List No.	Order Code
InGaN	White	-	4200mcd	30°	Solder	OVLEW3CB6	149-7970
InGaN	White	-	2600mcd	50°	Solder	OVLEW5CB6	149-7971
InGaN	White	-	23500mcd	15°	No stand-offs	OVLEW1CB9	149-7969
AlInGaP	Red	623	5000mcd	30°	No stand-offs	OVLFR3C7	149-7975
AlInGaP	Red	623	8550mcd	6°	No stand-offs	OVLGS0C8B9	149-7978
AlInGaP	Yellow	589	5700mcd	30°	No stand-offs	OVLFY3C7	149-7976
AlInGaP	Yellow	585	10300mcd	6°	No stand-offs	OVLGY0C9B9	149-7979
InGaN	Blue	470	1350mcd	30°	No stand-offs	OVLFB3C7	149-7973
InGaN	Blue	465	3800mcd	6°	No stand-offs	OVLGB0C6B9	149-7977
InGaN	Green	525	5200mcd	30°	No stand-offs	OVLFG3C7	149-7974

RL Re-reeling available

Farnell

3mm & 5mm White, Blue & Green LEDs - continued

5mm LED - continued

High Luminous Intensity - continued

497627

Colour	Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+
White	OVLEW3CB6	**149-7970**	1.240	0.630	0.590	0.570
White	OVLEW5CB6	**149-7971**	1.130	0.630	0.590	0.570
White	OVLEW1CB9	**149-7969**	0.590	0.340	0.320	0.290
Red	OVLFR3C7	**149-7975**	0.390	0.194	0.180	0.174
Red	OVLGS0C8B9	**149-7978**	0.170	0.085	0.079	0.076
Yellow	OVLFY3C7	**149-7976**	0.370	0.194	0.180	0.174
Yellow	OVLGY0C9B9	**149-7979**	0.170	0.085	0.079	0.076
Blue	OVLFB3C7	**149-7973**	0.580	0.320	0.290	0.280
Blue	OVLGB0C6B9	**149-7977**	0.540	0.270	0.250	0.240
Green	OVLFG3C7	**149-7974**	1.010	0.500	0.460	0.450

5mm Light Emitting Diodes (LEDs)

Cylindrical High-Intensity LED

5mm

TT electronics OPTEK Technology



New

Viewing Angle 85°
Forward Current 20mA
Operating temperature -40°C to +85°C

Applications:
- Wide viewing angle
- High-brightness indicator
- Industry standard lead spacing
- Unique lens shape for flexible applications

The OVLLx8C7 series is designed for superior performance in signage and lighting applications that require wide angle uniform light output. These devices combine a high-intensity LED with a unique flat-topped T-1¾ package to provide both high brightness and a wide spatial radiation pattern.

Colour	Luminous Intensity (typ)	Forward Voltage (max)	Mftrs. List No.	Order Code
Red	380mcd	2.6V	OVLLR8C7	167-8695
Yellow	340mcd	2.6V	OVLLY8C7	167-8696
Green	1200mcd	4V	OVLLG8C7	167-8694
Blue	300mcd	4V	OVLLB8C7	167-8692

527914

Colour	Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
Red	OVLLR8C7	**167-8695**	0.330	0.290	0.250	0.210	0.171
Yellow	OVLLY8C7	**167-8696**	0.330	0.290	0.250	0.210	0.171
Green	OVLLG8C7	**167-8694**	0.800	0.720	0.460	0.440	0.420
Blue	OVLLB8C7	**167-8692**	0.510	0.450	0.390	0.330	0.270

For **Through Hole LED Accessories** see page 884

5mm LEDs

multicomp



New

Current Rating 20mA*
Power Dissipation 85mW**
Operating Temperature -40°C to +85°C
Reverse Voltage 5V
* HI Red = 10mA
** HI Red = 45mW

Clear Lens - 16° Viewing Angle

Colour	Wavelength Peak (nm)	Wavelength Dominant (nm)	Luminous Intensity typ. (mcd)	Current, If max. (mA)	Voltage, Vf typ. (V)	Mftrs. List No.	Order Code
Super Red	660	643	250	100	1.85	MCL053SRT	158-1142
HI Red	697	650	10	50	2.1	MCL053PT	158-1143
HE Red	635	625	55	100	2	MCL053MT	158-1145
Green	568	570	45	100	2.1	MCL053GT	158-1146
Yellow	587	590	50	100	2.1	MCL053YT	158-1147
Amber	610	605	45	100	2.1	MCL053BT	158-1148
Orange	635	325	50	100	2	MCL053AT	158-1149

Colour	Mftrs. List No.	Order Code	Price Each 10+	100+	1K+
Super Red	MCL053SRT	**158-1142**	0.101	0.039	0.031
HI Red	MCL053PT	**158-1143**	0.074	0.031	0.029
HE Red	MCL053MT	**158-1145**	0.128	0.039	0.031
Green	MCL053GT	**158-1146**	0.094	0.039	0.031
Yellow	MCL053YT	**158-1147**	0.121	0.039	0.031
Amber	MCL053BT	**158-1148**	0.121	0.039	0.031
Orange	MCL053AT	**158-1149**	0.108	0.039	0.031

Diffused Lens - 45° Viewing Angle

Colour	Wavelength Peak (nm)	Wavelength Dominant (nm)	Luminous Intensity typ. (mcd)	Current, If max. (mA)	Voltage, Vf typ. (V)	Mftrs. List No.	Order Code
Super Red	660	643	50	100	1.85	MCL053SRD	158-1135
HI Red	697	650	2.8	50	2.1	MCL053PD	158-1136
HE Red	635	625	15	100	2	MCL053MD	158-1137
Green	568	570	16	100	2.1	MCL053GD	158-1138
Yellow	587	590	15	100	2.1	MCL053YD	158-1139
Amber	610	605	16	100	2.1	MCL053BD	158-1140
Orange	635	625	9.5	100	2	MCL053AD	158-1141

512132

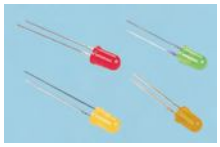
Colour	Mftrs. List No.	Order Code	Price Each 10+	100+	1K+
Super Red	MCL053SRD	**158-1135**	0.101	0.039	0.031
HI Red	MCL053PD	**158-1136**	0.074	0.031	0.029
HE Red	MCL053MD	**158-1137**	0.128	0.039	0.031
Green	MCL053GD	**158-1138**	0.094	0.039	0.031
Yellow	MCL053YD	**158-1139**	0.121	0.039	0.031
Amber	MCL053BD	**158-1140**	0.121	0.039	0.031
Orange	MCL053AD	**158-1141**	0.108	0.039	0.031

5V and 12V LEDs

Diffused Lens

multicomp

New



Viewing Angle 45°
Current Rating 20mA*
Power Dissipation 85mW**
Operating Temperature -40°C to +85°C
Reverse Voltage 5V
* Bright Red = 10mA
** Bright Red = 45mW

5V

Colour	Wavelength Peak (nm)	Wavelength Dominant (nm)	Luminous Intensity typ .(mcd)	Current, If max. (mA)	Voltage, Vf typ. (V)	Mftrs. List No.	Order Code
Bright Red	697	650	2.8	50	2.1	MCL053HPD/5	158-1220
Green	568	570	16	100	2.1	MCL053HGD/5	158-1221
Yellow	587	590	15	100	2.1	MCL053HYD/5	158-1222
Orange	635	625	16	100	2	MCL053HAD/5	158-1224

Colour	Mftrs. List No.	Order Code	Price Each 5+	100+	250+
Bright Red	MCL053HPD/5	**158-1220**	0.34	0.27	0.22
Green	MCL053HGD/5	**158-1221**	0.37	0.29	0.25
Yellow	MCL053HYD/5	**158-1222**	0.39	0.31	0.26
Orange	MCL053HAD/5	**158-1224**	0.39	0.31	0.26

12V

Colour	Wavelength Peak (nm)	Wavelength Dominant (nm)	Luminous Intensity typ. (mcd)	Current, If max. (mA)	Voltage, Vf typ. (V)	Mftrs. List No.	Order Code
Bright Red	697	650	2.8	50	2.1	MCL053HPD/12	158-1225
Green	586	570	16	100	2.1	MCL053HGD/12	158-1226
Yellow	587	590	15	100	2.1	MCL053HYD/12	158-1227
Orange	635	625	16	100	2	MCL053HAD/12	158-1228

514816

Colour	Mftrs. List No.	Order Code	Price Each 5+	100+	250+
Bright Red	MCL053HPD/12	**158-1225**	0.34	0.27	0.22
Green	MCL053HGD/12	**158-1226**	0.37	0.29	0.25
Yellow	MCL053HYD/12	**158-1227**	0.39	0.31	0.26
Orange	MCL053HAD/12	**158-1228**	0.39	0.31	0.26

5mm/T1¾, Standard

With Integral Resistor

Kingbright



L=8.6, Dia.=5.0
Lead pitch=2.54, Leads=25.5 x 0.25sq
Cathode identified by flat on body and shorter lead.

Colour	Wavelength Peak	Lum.Intensity (mcd) @ I_F=10mA min.	Lum.Intensity (mcd) @ I_F=10mA typ.	Peak Wavelength	PIV max.	Order Code
Tinted Diffused Lens						
HE Red	625nm	12.5	80	625	5	114-2556
HE Red	625nm	12.5	80	625	5	114-2557
Red	660nm	100	500	660	5	114-2573
Red	660nm	100	500	660	5	114-2575
Green	565nm	5	32	565	5	114-2553
Green	565nm	5	32	565	5	114-2554
Green	565nm	12.5	32	565	5	114-2569
Green	565nm	12.5	32	565	5	114-2571
Yellow	590nm	5	32	590	5	114-2583
Yellow	590nm	5	32	590	5	114-2584

206368

Order Multiple=5 Colour	Voltage	Order Code	Price Each 5+	50+	100+	500+	1K+
HE Red	5V	**114-2556**	0.133	0.100	0.080	0.070	0.060
HE Red	12V	**114-2557**	0.152	0.151	0.123	0.097	0.082
Red	5V	**114-2573**	0.140	0.100	0.080	0.070	0.060
Red	12V	**114-2575**	0.160	0.136	0.126	0.116	0.097
Green	5V	**114-2553**	0.133	0.100	0.080	0.070	0.060

RL Re-reeling available

Farnell

Order Multiple=5			Price Each				
Colour	Voltage	Order Code	5+	50+	100+	500+	1K+
Green	12V	**114-2554●**	0.140	0.100	0.080	0.070	0.060
Green	5V	**114-2569●**	0.140	0.100	0.080	0.070	0.060
Green	12V	**114-2571●**	0.140	0.100	0.080	0.070	0.060
Yellow	5V	**114-2583●**	0.140	0.100	0.080	0.070	0.060
Yellow	12V	**114-2584●**	0.140	0.100	0.080	0.070	0.060

5mm / T1¾

ROHM SEMICONDUCTOR

New



Colour	Luminous Intensity (typ)	Forward Current	Forward Voltage (max)	Mftrs. List No.	Order Code
5mm					
Red	10mcd	10mA	2V	SLR-56VRT32	168-5031
HB Red	3000mcd	20mA	1.9V	SLI-570UT3F	168-5009
Yellow	10mcd	10mA	2.1V	SLR-56YY3F	168-5032
Yellow	10mcd	10mA	2.1V	SLR-56YYT32	168-5033
HB Yellow	2500mcd	20mA	1.9V	SLI-570YT3F	168-5010
HB Yellow	1000mcd	20mA	1.9V	SLI-560YT3F	168-5008
Green	40mcd	10mA	2.1V	SLR-56MC3F	168-5026
Green	16mcd	10mA	2.1V	SLR-56MG3F	168-5027
Green	16mcd	10mA	2.1V	SLR-56MGT32	168-5029
HB Green	8000mcd	20mA	3.3V	SLA580ECT3F	168-5003

528844

Mftrs. List No.	Order Code	Price Each 1+	10+	100+	250+	500+
5mm						
SLA580ECT3F	**168-5003●**	1.840	1.080	0.920	0.900	0.840
SLI-560YT3F	**168-5008●**	0.420	0.200	0.153	0.140	0.124
SLI-570UT3F	**168-5009●**	0.380	0.185	0.140	0.127	0.114
SLR-56MC3F	**168-5026●**	0.260	0.127	0.095	0.086	0.078
SLR-56MG3F	**168-5027●**	0.260	0.103	0.086	0.069	0.063
SLR-56MGT32	**168-5029●**	0.200	0.101	0.076	0.058	0.055
SLR-56VRT32	**168-5031●**	0.200	0.101	0.076	0.058	0.055
SLR-56YY3F	**168-5032●**	0.260	0.103	0.086	0.069	0.063
SLR-56YYT32	**168-5033●**	0.200	0.101	0.076	0.058	0.055
SLI-570YT3F	**168-5010●**	0.420	0.200	0.153	0.140	0.124

5mm/T1¾, Standard

CML INNOVATIVE TECHNOLOGIES

VISHAY



VCH: L=8.64, Dia=5.08
Lead pitch=2.54, Leads=25 x 0.51sq.
Cathode identified by flat on body, Cathode is shorter lead on CMD64530, longer lead on others.

VISHAY: L=8.6, Dia=5.1
Lead pitch=2.54, Leads=25 x 0.63sq.
Cathode identified by flat on body and shorter lead, LED has stand-offs.

FOR SUITABLE MOUNTING CLIP AND RING SEE ORDER CODE 110-5125

Colour	View Angle	Typ Lum Intensity (mcd)	I_F (mA) (max)	PIV (max)	Mftr	Mftrs. List No.	Order Code
Tinted Diffused Lens							
Red	60°	1.6 @ 20mA	20	5	VISH	TLUR5400	104-5373
Red	80°	1.6 @ 20mA	100	5	SLI	CMD5053	113-9561
Red	150°	0.6 @ 20mA	100	5	SLI	CMD5055	113-9562
Red	65°	6 @ 20mA	35	5	SLI	CMD5753	113-9564
Yellow	65°	6 @ 20mA	35	5	SLI	CMD5353	113-9566
Green	65°	6 @ 20mA	35	5	SLI	V64530	113-9559
Tinted Clear Lens							
Red	28°	40 @ 20mA	35	5	SLI	CMD5752	113-9565
Yellow	28°	45 @ 20mA	35	5	SLI	CMD5352	113-9567
Green	35°	25 @ 20mA	35	5	SLI	CMD64520	113-9560

221725

Order Multiple=5		Price Each				
Colour	Order Code	5+		100+		1K+
Red	**104-5373●**	0.129		0.078		0.057
Red	**113-9561●**	0.320		0.260		0.141
Red	**113-9562●**	0.450		0.340		0.200
Red	**113-9564●**	0.480		0.380		0.320
Yellow	**113-9566●**	0.510		0.410		0.220
Green	**113-9559●**	0.510		0.410		0.220
Tinted Clear Lens		5+	100+	250+	500+	1K+
Red	**113-9565●**	0.470	0.460	0.410	0.270	0.240
Yellow	**113-9567●**	0.470	0.460	0.410	0.270	0.240
Green	**113-9560●**	0.470	0.460	0.410	0.270	0.177

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WWW

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5mm/T1¾, Standard

OMC Applying the technology of light



L=8.7, Dia=5.0
Lead pitch=2.54, Leads=17.8 x 0.64sq
Recommended lead holes=0.8 dia
Cathode identified by 'flat' on body, except bright red - anode.
LEDs have stand-offs.

Colour	View Angle	Typ Lum Intensity (mcd)	I_F (mA) (max)	PIV (max)	Peak Wavelength	Mftrs. List No.	Order Code
Tinted Diffused Lens							
Green	68°	3.7 @ 10mA	30	5	567nm	L02R5000Q1	120-8851
Yellow	68°	3.1 @ 10mA	30	5	585nm	L03R5000Q1	120-8852
HE Red	68°	4.3 @ 10mA	30	5	635nm	L4RR5000E1	120-8853
Red Ultra Bright	68°	32 @ 10mA	25	3	660nm	L07R5000Q1	120-8855

FOR SUITABLE MOUNTING CLIP AND RING SEE ORDER CODE 558-412

221667

Order Multiple=10		Price Each					
Colour	Order Code	10+	100+	1K+	5K+	10K+	50K+
Green	**120-8851●**	0.260	0.200	0.157	0.103	0.087	0.073
Yellow	**120-8852●**	0.330	0.220	0.179	0.138	0.110	0.083
HE Red	**120-8853●**	0.330	0.220	0.167	0.149	0.131	0.115
Red Ultra Bright	**120-8855●**	0.720	0.560	0.350	0.270	0.240	0.198

5mm Round LED Lamps

CREE

New



L=8.8, Dia=5
Lead pitch=2.54, Leads=25 (min)

Applications include:
- Advertising Signs
- Automotive Lighting
- Flashlight
- Illuminations
- Indicators
- LCD Backlights
- Moving-Message Signs
- Traffic Lights

Colour	Viewing Angle	Luminous Intensity (typ)	Forward Voltage (max)	Forward Current	Mftrs. List No.	Order Code
Red	15°	12000mcd	2.6V	50mA	LC503UHR1-15P-A-00001	164-8992
Red	15°	12000mcd	2.6V	50mA	LC503UHR1-15Q-A-00001	164-8993
Red	23°	5000mcd	2.6V	50mA	C503B-RBN-CW0Z0AA1	164-8994
Red	30°	5100mcd	2.6V	50mA	LC503UHR1-30P-A-00001	164-8995
Red	30°	5100mcd	2.6V	50mA	LC503UHR1-30Q-A-00001	164-8996
Amber	15°	16000mcd	2.6V	50mA	LC503UYL1-15P-A-00001	164-8997
Amber	15°	16000mcd	2.6V	50mA	LC503UYL1-15Q-A-00001	164-8999
Amber					LC503UYL1-23Q-A-00001	164-9001
Amber	30°	4800mcd	2.6V	50mA	LC503UYL1-30P-A-00001	164-9002
Amber	30°	4800mcd	2.6V	50mA	LC503UYL1-30Q-A-00001	164-9003
Green	15°	34000mcd	4V	25mA	LC503FPG1-15P-A3-00001	164-8984
Green	15°	34000mcd	4V	25mA	LC503FPG1-15Q-A3-00001	164-8985
Green	30°	12500mcd	4V	25mA	LC503FPG1-30P-A3-00001	164-8987
Green	30°	12500mcd	4V	25mA	LC503FPG1-30Q-A3-00001	164-8988
Blue	15°	11000mcd	4V	25mA	LC503FBL1-15P-A3-00001	164-8980
Blue	15°	11000mcd	4V	25mA	LC503FBL1-15Q-A3-00001	164-8981
Blue	30°	4100mcd	4V	25mA	LC503FBL1-30P-A3-00001	164-8982
Blue	30°	4100mcd	4V	25mA	LC503FBL1-30Q-A3-00001	164-8983
White	15°	24000mcd	4V	25mA	LC503FWH1-15P-A0-00001	164-8989
White	15°	24000mcd	4V	25mA	LC503FWH1-15Q-A0-00001	164-8990
White	60°	4000mcd	4V	25mA	LC513FWH1-60Q-A0-00001	164-8991

525299

Colour	Mftrs. List No.	Order Code	Price Each 5+	100+	250+
Red	LC503UHR1-15P-A-00001	**164-8992●**	0.210	0.182	0.152
Red	LC503UHR1-15Q-A-00001	**164-8993●**	0.210	0.182	0.152
Red	C503B-RBN-CW0Z0AA1	**164-8994●**	0.210	0.182	0.152
Red	LC503UHR1-30P-A-00001	**164-8995●**	0.210	0.182	0.152
Red	LC503UHR1-30Q-A-00001	**164-8996●**	0.210	0.182	0.152
Amber	LC503UYL1-15P-A-00001	**164-8997●**	0.210	0.182	0.152
Amber	LC503UYL1-15Q-A-00001	**164-8999●**	0.210	0.182	0.152
Amber	LC503UYL1-23Q-A-00001	**164-9001●**	0.210	0.182	0.152
Amber	LC503UYL1-30P-A-00001	**164-9002●**	0.210	0.182	0.152
Amber	LC503UYL1-30Q-A-00001	**164-9003●**	0.210	0.182	0.152
Green	LC503FPG1-15P-A3-00001	**164-8984●**	0.410	0.360	0.310
Green	LC503FPG1-15Q-A3-00001	**164-8985●**	0.410	0.360	0.310
Green	LC503FPG1-30P-A3-00001	**164-8987●**	0.410	0.360	0.310
Green	LC503FPG1-30Q-A3-00001	**164-8988●**	0.410	0.360	0.310
Blue	LC503FBL1-15P-A3-00001	**164-8980●**	0.410	0.360	0.310
Blue	LC503FBL1-15Q-A3-00001	**164-8981●**	0.410	0.360	0.310
Blue	LC503FBL1-30P-A3-00001	**164-8982●**	0.410	0.360	0.310
Blue	LC503FBL1-30Q-A3-00001	**164-8983●**	0.410	0.360	0.310
White	LC503FWH1-15P-A0-00001	**164-8989●**	0.410	0.360	0.310
White	LC503FWH1-15Q-A0-00001	**164-8990●**	0.410	0.360	0.310
White	LC513FWH1-60Q-A0-00001	**164-8991●**	0.410	0.360	0.310

5mm/T1¾,Untinted, Non-Diffused

VISHAY



- Untinted non diffused lens
- Medium viewing angle
- Typical applications include: outdoor LED panels, instrumentation, and front panel indicators

These LEDs utilize AlInGaP and GaP technologies, to produce stable light output whilst being cost effective.

L=8.7, Dia=5.0
Lead Pitch=2.54, Leads=25 x 0.5sq
Cathode identified by flat on body and shorter lead

RL Re-reeling available

Farnell

5mm Light Emitting Diodes (LEDs) - continued

5mm/T1¾,Untinted, Non-Diffused - continued

Colour	View Angle	Lum. Intensity (mcd) @ I_F=20mA min.	I_F (mA) (max.)	PIV (max.)	Mftrs. List No.	Order Code
Red	18°	320	30	6	TLHK5100	132-8315
Yellow	18°	750	30	6	TLHE5100	132-8316

458025

Order Multiple=5		Price Each				
Colour	Order Code	5+	25+	100+	250+	1K+
Red	**132-8315●**	0.151	0.132	0.105	0.100	0.095
Yellow	**132-8316●**	0.197	0.147	0.132	0.119	0.113

5mm/T1¾ Standard and High Intensity

VISHAY



L=8.7, Dia=5.0, Lead pitch=2.54, Leads=24 x 0.6sq
Cathode identified by flat on body and shorter lead. LEDs have stand-offs.

Colour	View Angle	Lum Intensity (mcd) @ I_F=10mA min	typ	I_F (mA) (max)	PIV max.	Mftrs. List No.	Order Code
Tinted Diffused Lens							
HE Red	60°	1.6	3.5	30	6	TLHR5400	104-5473
HE Red	60°	4	7	30	6	TLHR5401	104-5474
HE Red	60°	6.3	10	30	6	TLHR5405	104-5475
Green	60°	6.3	15	30	6	TLHG5405	104-5476
Yellow	60°	6.3	10	30	6	TLHY5405	104-5478
Tinted Clear Lens							
HE Red	28°	10	20	30	6	TLHR5200	104-5479
HE Red	28°	16	30	30	6	TLHR5201	104-5480
HE Red	28°	25	40	30	6	TLHR5205	104-5481
Green	28°	40	50	30	6	TLHG5205	104-5482
Untinted Clear Lens							
Green	8°	400*	700*	30	6	TLHG5800	104-5483
Yellow	8°	100*	250*	30	6	TLHY5800	104-5484
Blue	4°	130*	380*	20	5	TLHB5800	104-5418
Tinted Diffused Lens-High Intensity							
Red	60°	35*	70*	50	6	TLDR5400	104-5485
Untinted Clear Lens-High Intensity							
Red	8°	1000*	2500*	50	6	TLDR5800	104-5486
Yellow	8°	1000*	3500*	30	5	TLHE5800	104-5487
Orange	8°	1000*	3500*	30	5	TLHF5800	104-5488

* If = 20mA

206433

Order Multiple=5		Price Each				
Colour	Order Code	5+	25+	100+	250+	1K+
Tinted Diffused Lens						
HE Red	**104-5473●**	0.120	0.083	0.066	0.049	0.043
HE Red	**104-5474●**	0.124	0.076	0.062	0.043	0.040
HE Red	**104-5475●**	0.111	0.089	0.074	0.048	0.041
Green	**104-5476●**	0.240	0.142	0.105	0.073	0.063
Yellow	**104-5478●**	0.270	0.150	0.116	0.081	0.072
Tinted Clear Lens						
HE Red	**104-5479●**	0.165	0.103	0.082	0.058	0.053
HE Red	**104-5480●**	0.108	0.096	0.088	0.063	0.055
HE Red	**104-5481●**	0.111	0.105	0.095	0.065	0.058
Green	**104-5482●**	0.310	0.188	0.139	0.097	0.084
Untinted Clear Lens						
Green	**104-5483●**	0.196	0.185	0.168	0.128	0.113
Yellow	**104-5484●**	0.117	0.089	0.074	0.062	0.054
Blue	**104-5418●**	0.690	0.370	0.340	0.280	0.240
Tinted Diffused Lens-High Intensity						
Red	**104-5485●**	0.340	0.310	0.300	0.240	0.220
Untinted Clear Lens-High Intensity						
Red	**104-5486●**	0.370	0.280	0.210	0.170	0.131
Yellow	**104-5487●**	0.460	0.300	0.192	0.144	0.115
Orange	**104-5488●**	0.510	0.340	0.220	0.168	0.133

5mm Superbright LEDs

multicomp

Water Clear Lens



New

Viewing Angle	16°	Operating Temperature	-40°C to +85°C
Current Rating	20mA	Reverse Voltage	5V
Power Dissipation	85mW		

Colour	Wavelength Peak (nm)	Wavelength Dominant (nm)	Luminous Intensity typ. (mcd)	Current, If max. (mA)	Voltage, Vf typ. (V)	Mftrs. List No.	Order Code
Super Red	660	643	1450	100	1.85	MCL053URC	158-1177
Super Orange	635	625	2750	100	2.1	MCL053SAC	158-1178
Super Amber	610	605	2000	100	2.1	MCL053SBC	158-1179
Super Yellow	590	592	2500	100	2.1	MCL053SYC	158-1180
Super Green	570	572	1850	100	2.1	MCL053SGC	158-1182
Ultra Green	525	527	4500	100	3.4	MCL053UGC	158-1183
Ultra Blue / Green	505	510	14500	100	3.4	MCL053BGC	158-1184
Super Blue	470	472	2500	100	3.4	MCL053SBLC	158-1185

512420

	Mftrs.		Price Each		
Colour	List No.	Order Code	5+	100+	500+
Super Red	MCL053URC	**158-1177●**	0.185	0.113	0.093
Super Orange	MCL053SAC	**158-1178●**	0.185	0.113	0.093
Super Amber	MCL053SBC	**158-1179●**	0.168	0.135	0.112
Super Yellow	MCL053SYC	**158-1180●**	0.185	0.113	0.093
Super Green	MCL053SGC	**158-1182●**	0.168	0.135	0.112
Ultra Green	MCL053UGC	**158-1183●**	0.370	0.290	0.250
Ultra Blue / Green	MCL053BGC	**158-1184●**	0.390	0.310	0.260
Super Blue	MCL053SBLC	**158-1185●**	0.168	0.135	0.112

White - High Intensity

TOYODA GOSEI CO.,LTD

5mm - With Standoff



Power Dissipation	120mW
DC Forward Current	30mA
Reverse Current	100mA
Operating Temperature	-30 to 85°C

Cathode identified by short lead

H = 8.65 (body), L = 25.5mm (cathode lead)

Colour	Viewing Angle	Luminous Intensity Typ (mcd)	Vf (V) Typ.	If (mA) Max.	Order Code
White	30°	2100	3.4	100	105-7115

419076

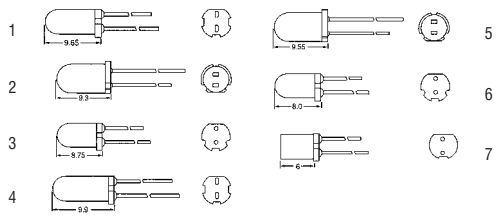
		Price Each				
Mftrs. List No.	Order Code	1+	10+	25+	100+	250+
E1L53-AW0C2-01	**105-7115●**	1.31	1.05	0.97	0.90	0.87
E1L55-AW0C2-01	**105-7116●**	1.35	1.07	0.99	0.92	0.89

5mm/T1¾, Ultrahigh Bright

TOSHIBA



Lead pitch 2.54, leads 21.0 x 0.5sq.
Cathode identified by flat on body and shorter lead.



Colour	View Angle	Lum Intensity (mcd) @ I_F = 20mA min	max	I_F (mA) max.	PIV Max.	Outline	Mftrs. List No.	Order Code
Ultrahigh Bright- Untitnted Clear Lens - InGaAlP								
Red	30°	476	2300	50	4	3	TLSH16T(F)	114-1085
Red	20°	153	450*	50	4	3	TLSU156P(F)	114-1091
Red	8°	2720	7000	50	4	1	TLRE20TP(F)	114-1082
Red	8°	2720	12880	50	4	1	TLSH180P(UV,F)	114-1087
Green	7°	--	1200*	50	4	4	TLPGE183P(F)	114-1081
Ultrahigh Bright - Tinted Diffused Lens - InGaAlP								
Red	40°	47.6	100*	50	4	2	TLSU114P(F)	114-1088

* = Typical Value
Peak emission wavelength (typ.) TLRE=644nm, TLOE=612nm, TLYE=590nm, TLRH=644nm, TLSH=623nm, TLOH=612nm, TLYH=590nm, TLPGA=562nm, TLGE=574nm, TLPGE=562nm, TLRMH=636nm, TLSU=636nm, TLSE=623nm, TLYU=590nm

206415

		Price Each				
Colour	Order Code	1+	50+	100+	1K+	5K+
Ultrahigh Bright - Untinted Clear Lens - InGaAlP						
Red	**114-1085●**	0.340	0.310	0.300	0.280	0.270
Red	**114-1091●**	0.151	0.140	0.131	0.118	0.106
Red	**114-1082●**	0.370	0.340	0.330	0.260	0.250
Red	**114-1087●**	0.720	0.590	0.520	0.400	0.320
Green	**114-1081●**	1.130	0.940	0.910	0.660	0.630
Ultrahigh Bright - Tinted Diffused Lens - InGaAlP						
Red	**114-1088●**	0.144	0.134	0.124	0.113	0.102

5mm/T1¾, Ultra Bright

Kingbright



L=8.6, Dia.=5; Lead pitch=2.54,
Leads=27 x 0.5sq
Cathode identified by shorter lead
Ligitek
L=9.0, Dia=4.9; Lead pitch=2.54, Leads=25.0 x 0.5sq
Cathode identified by short lead and flat on body

Colour	View Angle	Lum. Intensity (mcd) @ I_F=10mA min.	typ.	I_F (mA) (max.)	PIV (max.)	Order Code
Untinted Clear Lens						
Red	30°	500	1000	30	5	114-2576
Red	30°	2000	3500	30	5	114-2577
Green	30°	100	300	25	5	114-2572
Tinted Diffused Lens						
Yellow	60°	100	500	30	5	114-2581

*=Typ. Luminous Intensity. **=Max. forward voltage

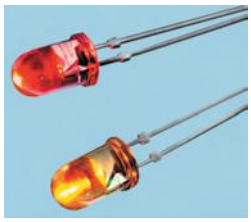
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Order Multiple=5		Price Each			
	Order Code	5+	100+	1K+	5K+
Green	114-2572●	0.060	0.040	0.030	0.019
Red	114-2576●	0.154	0.120	0.063	0.044
Red	114-2577●	0.210	0.187	0.152	0.133
		5+	50+	100+	500+
Yellow	114-2581●	0.190	0.168	0.147	0.111

5mm/T1¾ - Ultrabright

Untinted - Non-Diffused

VISHAY



- High performance - high output
- Ideal for solid state illumination

L=8.7, Dia=5.0,
Lead Pitch=2.54,
Leads=27.2 x 0.5sq
Cathode identified by shorter lead, leads have stand-offs

Colour	View Angle	Lum Intensity (mcd) min	typ	I_F (mA) (max)	PIV max.	Mftrs. List No.	Order Code
Untinted Non-Diffused Lens							
White	±9°	1000	4000 @ 30mA	30mA	5V	TLCW5100.	491-2408
Blue	±9°	575	1500 @ 30mA	30mA	5V	TLCB5100.	491-2410
Red	±9°	4300	11000 @ 50mA	50mA	5V	TLCR5100.	491-2433
Yellow	±9°	3200	7500 @ 50mA	50mA	5V	TLCY5100.	491-2470
Red	±4°	7500	20000 @ 50mA	50mA	5V	TLCR5800.	491-2445
Yellow	±4°	5750	14000 @ 50mA	50mA	5V	TLCY5800.	491-2482
Red	±4°	5750	2500 @ 30mA	30mA	5V	TLHK5800	104-5419

337284.343588

Colour	Angle of Half Intensity	Order Code	Price Each 5+	100+	250+	500+	1K+
White	9°	491-2408●	2.080	1.840	1.430	1.040	0.960
Blue	9°	491-2410●	1.760	1.550	1.220	0.880	0.790
Red	9°	491-2433●	0.390	0.350	0.280	0.191	0.173
Yellow	9°	491-2470●	0.420	0.350	0.290	0.200	0.183
Red	4°	491-2445●	0.390	0.350	0.280	0.191	0.173
Yellow	4°	491-2482●	0.194	0.162	0.130	0.096	0.087
Red	4°	104-5419●	0.220	0.154	0.126	0.095	0.084

5mm Low Current LEDs

Diffused Lens

multicomp



New

Viewing Angle 45°
Current Rating 20mA
Power Dissipation 85mW
Operating Temperature -40°C to +85°C
Reverse Voltage 5V

Colour	Wavelength Peak (nm)	Dominant (nm)	Luminous Intensity typ. (mcd)	Current, If max. (mA)	Voltage, Vf typ. (V)	Mftrs. List No.	Order Code
Red	660	643	75	100	1.85	MCL053SRDD	158-1217
Green	568	570	7	100	1.9	MCL053LGD	158-1218
Yellow	587	590	8	100	1.9	MCL053LYD	158-1219

512179

Colour	Mftrs. List No.	Order Code	Price Each 5+	100+	250+
Red	MCL053SRDD	158-1217●	0.157	0.075	0.063
Green	MCL053LGD	158-1218●	0.168	0.081	0.067
Yellow	MCL053LYD	158-1219●	0.174	0.083	0.070

5mm/T1¾, Low Current

VISHAY



L=8.7, Dia=5.0
Lead Pitch=2.54, Leads=25 x 0.5sq
Cathode identified by flat on body and shorter lead

Colour	View Angle	Lum. Intensity (mcd) @ I_F=2mA min.	typ.	I_F (mA) (max.)	PIV (max.)	Mftrs. List No.	Order Code
Tinted Diffused Lens							
HE Red	50°	1	2	7	6	TLLR5401	104-5508
Green	50°	1	2	7	6	TLLG5401	104-5509
Yellow	50°	1	2	7	6	TLLY5401	104-5510

206430

Order Multiple=5		Price Each				
Colour	Order Code	5+	25+	100+	250+	1K+
HE Red	104-5508●	0.200	0.187	0.092	0.083	0.074
Green	104-5509●	0.200	0.187	0.092	0.083	0.074
Yellow	104-5510●	0.131	0.108	0.093	0.053	0.044

5mm/T1¾, Low Current

Kingbright



L=8.6, Dia=5.9,Lead
pitch=2.54, Leads=27 x 0.5sq

206335

Colour	View Angle	Lum. Intensity (mcd) @ I_F=10mA min.	typ.	I_F (mA) (max.)	PIV (max.)	Order Code
Tinted Diffused Lens						
HE Red	60°	0.8	5	7	5	114-2563
Green	60°	0.8	3.2	7	5	114-2561
Yellow	60°	0.8	3.2	7	5	114-2565
Red	60°	8	20	30	5	114-2564

Order Multiple=5		Price Each				
		5+	100+	1K+	5K+	+
HE Red	114-2563●	0.107	0.074	0.047	0.035	– –
Green	114-2561●	0.107	0.098	0.060	0.035	– –
Yellow	114-2565●	0.104	0.071	0.046	0.033	– –
Red	114-2564●	0.150	0.121	0.060	0.044	– –

5mm/T1¾, Reflector

Kingbright



L=7.0, Dia.=5.0
Lead pitch=2,54,
Leads=25.5 x 0.5sq
Cathode identified by flat on body and shorter lead.

Colour	View Angle	Lum. Intensity (mcd) @ I_F=10mA min.	typ.	I_F (mA) (max.)	PIV (max.)	Order Code
Tinted Diffused Lens						
HE Red	140	3.2	12.5	30	5	114-2559
Yellow	140	2	8	30	5	114-2585
Green	140	2	8	25	5	114-2555

206369

Order Multiple = 10		Price Each				
		10+	50+	100+	1K+	2K5+
HE Red	114-2559●	0.080	0.060	0.050	0.040	0.035
Yellow	114-2585●	0.080	0.060	0.050	0.040	0.035
Green	114-2555●	0.080	0.060	0.050	0.040	0.036

5mm Bi-Colour LEDs

White Diffused Lens

multicomp



New

Viewing Angle 45°
Current Rating 20mA
Power Dissipation 85mW
Operating Temperature -40°C to +85°C
Reverse Voltage 5V

Colour	Wavelength (nm)	Luminous Intensity typ. (mcd)	Current, If max. (mA)	Voltage, Vf typ. (V)	Mftrs. List No.	Order Code
HI Red / Green	660 / 568	50 / 15	100	1.8 / 2.1	MCL059PURGW	158-1197
Orange / Green	635 / 568	8.2 / 15	100	2 / 2.1	MCL059AGW	158-1198
Yellow / Green	587 / 568	15 / 14	100	2.1 / 2.1	MCL059YGW	158-1199

513704

Colour	Mftrs. List No.	Order Code	Price Each 5+	100+	250+
HI Red / Green	MCL059PURGW	158-1197●	0.196	0.157	0.130
Orange / Green	MCL059AGW	158-1198●	0.196	0.157	0.130
Yellow / Green	MCL059YGW	158-1199●	0.210	0.171	0.141

Bicolour, 5mm/T1¾

Untined Diffused Lens

Kingbright



Red cathode identified by flat on body and shorter lead.
(Green cathode on Green/Yellow).

L=8.6, Dia=5,
Lead pitch=2.54, Leads=27 x 0.5sq

RL Re-reeling available

Farnell

5mm Light Emitting Diodes (LEDs) - continued

Bicolour, 5mm/T1¾ - continued

Untined Diffused Lens - continued

Colour	Viewing Angle	Luminous Intensity (mcd) @ =20mA min	typ	I_F (max) (mA)	PIV (V)	Mftrs. List No.	Order Code
HE Red, Green	60°	20 / 12.5	50 / 40	30 / 25	5	L-57EGW	114-2560
HE Red, Yellow	60°	20 / 5	50 / 20	30 / 30	5	L-57EYW	114-2535
Green, Yellow	60°	12.5 / 5	40 / 5	25 / 30	5	L-57GYW	114-2534

206340

		Price Each				
Colours	Order Code	1+	50+	100+	500+	1K+
HE Red, Green	114-2560●	0.260	0.240	0.168	0.132	0.082
HE Red, Yellow	114-2535●	0.116	0.112	0.092	0.080	0.071
Green, Yellow	114-2534●	0.116	0.112	0.092	0.080	0.071

Bicolour, 5mm/T1

Untinted Diffused Lens





L=8.9, Dia=5.08
Lead pitch=2.54, Leads=22 x 0.5sq

Green cathode identified by flat on body and shorter lead (HE Red cathode on HE Red/Yellow)

Bicolour LEDs have two diodes connected in inverse parallel. AC operation gives a third intermediate colour, e.g. red + green gives orange.

Colour	Viewing Angle	Luminous Intensity (mcd) (typ)	I_F (mA) (max)	Mftrs. List No.	Order Code
HE Red, Green	90°	5/4.8 @ 20mA	25	L24R5005K2P2	120-8859
HE Red, Yellow	90°	5/4.5 @ 20mA	25	L34R5005K2P2	120-8861
Green, Yellow	90°	4.8/4.5 @ 20mA	25	L23R5005K2P2	120-8862

FOR SUITABLE MOUNTING CLIP SEE ORDER CODE 233-547

221743

		Price Each			
Colour	Order Code	1+	50+	100+	1K+
HE Red, Green	120-8859●	1.21	1.08	0.87	0.67
HE Red, Yellow	120-8861●	0.89	0.80	0.64	0.37
Green, Yellow	120-8862●	1.10	0.98	0.75	0.43

5mm Tri-Colour LEDs

White Diffused Lens



New

Viewing Angle	45°
Current Rating	20mA
Power Dissipation	85mW
Operating Temperature	-40°C to +85°C
Reverse Voltage	5V

Colour	Wavelength (nm)	Luminous Intensity typ. (mcd)	Current, If max. (mA)	Voltage, Vf typ. (V)	Mftrs. List No.	Order Code
HI Red / Green	660 / 568	50 / 15	100	1.8 / 2.1	MCL056PURGW	158-1207
Orange / Green	635 / 568	16 / 15	100	2 / 2.1	MCL056AGW	158-1208
Yellow / Green	587 / 568	15 / 14	100	2.1 / 2.1	MCL056YGW	158-1209

513820

	Mftrs.		Price Each		
Colour	List No.	Order Code	5+	100+	250+
HI Red / Green	MCL056PURGW	158-1207●	0.196	0.157	0.130
Orange / Green	MCL056AGW	158-1208●	0.196	0.157	0.130
Yellow / Green	MCL056YGW	158-1209●	0.210	0.171	0.141

Tricolour, 5mm/T1¾

Untinted Clear Lens



Order Code	Mftrs. List No.	Anode (A) Pin No. 1	Cathode Pin No. 2	Anode (B) Pin No. 3
114-2566	L-59EGC	Red	Common	Green
116-8662	L-59EYC	Red	Common	Yellow
114-2567	L-59GYC	Green	Common	Yellow
114-2568	L-59SRSGC	Red	Common	Green

L=8.6, Dia=5, Lead spacing=2.54 (in-line)
Lead length A1=20.5 K=24.5 A2=22.5

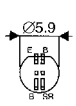
Colour	View Angle	Luminous Intensity (mcd) @ 20mA min	typ	I_F (max) (mA)	PIV (V)	Order Code
HE Red, Green	24°	100 / 50	300 / 200	30 / 25	5	114-2566
HE Red, Yellow	24°	100 / 30	300 / 80	30 / 30	5	116-8662
Green, Yellow	24°	50 / 50	200 / 200	25 / 25	5	114-2567
Red, Green	24°	300 / 80	700 / 200	30 / 25	5	114-2568

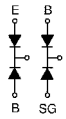
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		Price Each				
Colour	Order Code	1+	50+	100+	500+	1K+
HE Red, Green	114-2566●	0.310	0.230	0.179	0.108	0.082
HE Red, Yellow	116-8662●	0.192	0.185	0.177	0.170	0.162
Green, Yellow	114-2567●	0.194	0.168	0.154	0.108	0.082
Red, Green	114-2568●	0.280	0.200	0.179	0.108	0.082

5mm/T1¾, Full Colour RGB







L=8.6, Dia.=5.0, Lead pitch=2.54,
Leads=21.5 x 0.5sq, Centre pin anode.

Colour	View Angle	Lum. Intensity (mcd) @ I_F=20mA min.	typ.	I_F (mA) (max.)	PIV (max.)	Order Code
Water Clear Lens						
HE Red	15°	90	200	30	5	116-8572
Green		50	150	25	5	
Blue		12.5	40	30	5	
Blue		12.5	40	30	5	
White Diffused Lens						
HE Red	30°	20	90	30	5	116-8585
Green		10	70	25	5	
Blue		3.2	12.5	30	5	
Blue		3.2	12.5	30	5	

206386

		Price Each				
	Order Code	1+	25+	50+	100+	250+
Water clear	116-8572●	2.57	1.93	1.54	1.29	1.10
White diffused	116-8585●	3.70	2.90	2.38	1.59	1.28

5mm Flashing LEDs

Diffused Lens



Flash Frequency min	typ	max	Supply Voltage min	max
2Hz	2.4Hz	2.8Hz	3V	10V

New

Viewing Angle	45°	Operating Temperature	-40°C to +85°C
Forward Current (max)	30mA	Reverse Voltage	5V

Colour	Wavelength Peak (nm)	Wavelength Dominant (nm)	Luminous Intensity typ. (mcd)	Forward Current (mA)	Mftrs. List No.	Order Code
Super Red	660	643	35	30	MCLF056SRD	158-1188
Green	568	570	8.8	30	MCLF056GD	158-1189
Yellow	587	590	9.8	30	MCLF056YD	158-1190
Orange	635	625	9.8	30	MCLF056AD	158-1191
HE Red	635	625	10	30	MCLF056MD	158-1192

512162

	Mftrs.		Price Each		
Colour	List No.	Order Code	1+	25+	50+
Super Red	MCLF056SRD	158-1188●	0.40	0.34	0.29
Green	MCLF056GD	158-1189●	0.40	0.34	0.29
Yellow	MCLF056YD	158-1190●	0.40	0.34	0.29
Orange	MCLF056AD	158-1191●	0.40	0.34	0.29
HE Red	MCLF056MD	158-1192●	0.40	0.34	0.29

Flashing, 5mm/T1¾



L=8.6, Dia=5,
Lead Pitch=2.54, Leads=27x0.5sq.
Cathode=Shorter lead

Flash rate 1.5 - 2.5Hz
Supply voltage 3.5 (min) - 13V (max)

Note: Internally current controlled. Unsuitable for use with voltage dropping series resistors.

Colour	View Angle	Luminous Intensity (typ)	I_F (mA) (max.)	PIV (max.)	Mftrs. List No.	Order Code
Tinted Diffused Lens						
Red	60°	2mcd @ 9V	38-56	0.5	L-56BHD	114-2543
Green	60°	20mcd @ 9V	8-20	0.5	L-56BGD	114-2540
Yellow	60°	20mcd @ 9V	8-43	0.5	L-56BYD	114-2544
HE Red	60°	40mcd @ 9V	8-43	0.5	L-56BID	114-2541
Red Super Bright	60°	200mcd @ 9V	38-56	0.5	L-56BSRD-B	114-2542

221745

		Price Each			
Colour	Order Code	1+	25+	50+	100+
Red	114-2543●	0.340	0.250	0.200	0.170
Green	114-2540●	0.340	0.250	0.200	0.170
Yellow	114-2544●	0.340	0.250	0.200	0.170
HE Red	114-2541●	0.340	0.250	0.200	0.170
Red Super Bright	114-2542●	0.400	0.198	0.138	0.110

Over 480,000 products online

RL Re-reeling available

Farnell

8mm & 10mm Light Emitting Diodes (LEDs)

8mm, Standard and Ultrabright

Kingbright



L=11, Dia=8.0 , Lead pitch=2.54, Leads=25.5 x 0.5 sq
Black plastic mounting clip: Bezel dia=14
Back of panel dia=12, Depth=13.5

Colour	View Angle	Typ. Lum. Intensity (mcd)	I_F (mA) (max)	PIV (max.)	Peak Wavelength	Order Code
Tinted Diffused Lens						
HE Red	50°	100 @ 20mA	30	5	625nm	114-2588
Green	50°	60 @ 20mA	30	5	565nm	114-2587
Yellow	50°	50 @ 20mA	30	5	590nm	114-2596
Ultra Bright-Tinted Diffused Lens						
Red	60°	200 @ 20mA	30	5	660nm	114-2589
Red	60°	350 @ 20mA	30	5	660nm	114-2590
Red	60°	550 @ 20mA	30	5	660nm	114-2593
Ultra Bright-Untinted Clear Lens						
Red	40°	1000 @ 20mA	30	5	660nm	114-2591
Red	40°	3000 @ 20mA	30	5	660nm	114-2594

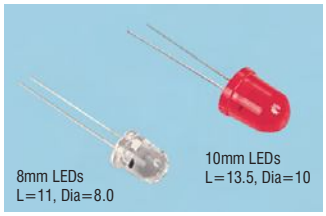
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Order Multiple=5		Price Each			
Colour	Order Code	5+	50+	100+	250+
HE Red	114-2588●	0.120	0.090	0.080	0.060
Green	114-2587●	0.120	0.090	0.080	0.060
Yellow	114-2596●	0.120	0.090	0.080	0.060
Red	114-2589●	0.360	0.250	0.184	0.080
Red	114-2590●	0.134	0.118	0.103	0.074
Red	114-2593●	0.170	0.130	0.100	0.090
Red	114-2591●	0.200	0.150	0.120	0.095
Red	114-2594●	0.340	0.250	0.200	0.170
Mounting clip	121-7237●	0.230	0.171	0.143	0.103

Flashing, 8mm and 10mm

Standard and Ultrabright

Kingbright



Note: Internally current controlled. Unsuitable for use with a voltage dropping series resistor.

Flash Rate	1.5 - 2.5Hz
Forward Voltage, V_F	Min = 3.5V, Max = 12V
Forward Current, I_F	38 - 56mA (typ)
Reverse Voltage, V_R	0.5V

Lead pitch=2.54, Leads=25.5 x 0.5sq
Cathode identified by shorter lead.

	8mm LED clip	10mm LED clip
Black plastic mounting clips		
Bezel dia.	14	16
Back of panel dia.	12	14
Back of panel depth	13.5	15

Type	Colour	View Angle	Typ Lum Intensity (mcd)	Peak Wavelength	Mftrs. List No.	Order Code
8mm Tinted Diffused Lens						
Standard	HE Red	60°	100 @ 9V	625nm	L-796BID	116-8544
Standard	Yellow	60°	40 @ 9V	590nm	L-796BYD	166-8867
Ultrabright	Red	60°	400 @ 9V	660nm	L-796BSRD-B	116-8545
8mm Untinted Clear Lens						
Ultrabright	Red	40°	1000 @ 9V	660nm	L-796BSRC-B	116-8559
10mm Tinted Diffused Lens						
Standard	HE Red	60°	100 @ 9V	625nm	L-816BID	116-8548
Standard	Yellow	60°	40 @ 9V	590nm	L-816BYD	166-8871
Standard	Green	60°	50 @ 9V	565nm	L-816BGD	166-8868
Ultrabright	Red	60°	400 @ 9V	660nm	L-816BSRD-B	116-8554
10mm Untinted Clear Lens						
Ultrabright	Red	40°	1000 @ 9V	660nm	L-816BSRC-B	116-8568

206252

Order Multiple=1			Price Each		
Colour	Order Code	1+	50+	100+	250+
8mm					
HE Red	116-8544●	0.470	0.360	0.300	0.250
Yellow	NEW 166-8867●	0.490	0.380	0.290	0.240
Red	116-8545●	0.570	0.430	0.340	0.290
Red	116-8559●	0.560	0.430	0.340	0.290
10mm		1+	50+	100+	250+
HE Red	116-8548●	0.490	0.370	0.300	0.250
Yellow	NEW 166-8871●	0.490	0.380	0.290	0.240
Green	NEW 166-8868●	0.490	0.380	0.290	0.240
Red	116-8554●	0.570	0.430	0.340	0.290
Red	116-8568●	0.570	0.430	0.340	0.290
Order Multiple=5					
Mounting Clips		**5+**	**50+**	**100+**	**250+**
8mm	121-7237●	0.230	0.171	0.143	0.103
10mm	121-7238●	0.200	0.160	0.130	0.105

10mm, Standard and Ultrabright

Kingbright



L=13.5, Dia=10.0
Lead pitch=2.54, Leads=25.5 x 0.5sq
Black plastic mounting clip:
Bezel dia=16
Back of panel dia=14, Depth=15
Cathode identified by shorter lead.

Colour	Peak Wavelength	View Angle	Typ. Luminous Intensity (mcd)	I_F (max) (mA)	PIV (max)	Mftrs. List No.	Order Code
Tinted Diffused Lens							
HE Red	625nm	60°	150 @ 20mA	30	5	L-813ID	116-8543
Green	565nm	60°	70 @ 20mA	30	5	L-813GD	114-2462
Yellow	590nm	60°	70 @ 20mA	30	5	L-813YD	114-2474
Ultra Bright - Tinted Diffused Lens							
Red	660nm	60°	200 @ 20mA	30	5	L-813SRD-B	114-2464
Red	660nm	60°	350 @ 20mA	30	5	L-813SRD-C	114-2465
Red	660nm	60°	550 @ 20mA	30	5	L-813SRD-E	114-2467
Ultra Bright - Untinted Clear Lens							
Red	660nm	40°	1000 @ 20mA	30	5	L-813SRC-B	114-2466
Red	660nm	40°	3000 @ 20mA	30	5	L-813SRC-E	114-2469

206250

Order Multiple=5		Price Each			
Colour	Order Code	5+	50+	100+	250+
Tinted Diffused Lens					
HE Red	116-8543●	0.120	0.090	0.080	0.060
Green	114-2462●	0.120	0.090	0.080	0.060
Yellow	114-2474●	0.120	0.090	0.080	0.060
Ultra Bright - Tinted Diffused Lens					
Red	114-2464●	0.390	0.370	0.320	0.146
Red	114-2465●	0.230	0.210	0.162	0.093
Red	114-2467●	0.170	0.130	0.100	0.090
Ultra Bright - Untinted Clear Lens					
Red	114-2466●	0.200	0.150	0.120	0.100
Red	114-2469●	0.340	0.250	0.200	0.170
Mounting Clip	121-7238●	0.200	0.160	0.130	0.105

10mm, Ultrahigh Bright

TOSHIBA



L=15.1, Dia=10.0
Lead pitch=2.54,
Leads=21.0 0.5sq

Cathode identified by flat on body and shorter lead

Colour	View Angle	Lum. Intensity (med) @ I_F 20mA min	Lum. Intensity (med) @ I_F 20mA max	I_F max (mA)	PIV max	Mftrs. List No.	Order Code
Untinted Clear Lens - InGaALP							
Red	4°	4760	23000	50mA	4	TLRH190P	120-1935
Orange	4°	8500	41400	50	4	TLOH190P(F)	114-1066
Yellow	4°	8500	41400	50	4	TLYH190P(F)	114-1067

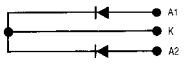
206404

		Price Each				
Colour	Order Code	1+	25+	50+	100+	250+
Red	120-1935●	2.28	1.83	1.38	0.99	0.85
Orange	114-1066●	2.56	1.92	1.51	1.04	0.94
Yellow	114-1067●	4.73	3.94	3.10	2.16	1.92

Tricolour, 10mm

Kingbright





L=13.5, Dia=9.8
Lead spacing= 2.54 (leads in line)
Leads=24.5 x 0.5sq

Black plastic mounting clip:
Bezel dia=16
Back of panel dia=14, Depth=15

K= Common cathode centre lead)
A2=Red (kinked lead)

Colour	View Angle	Lum. Intensity (mcd) @ 20mA Min.	Lum. Intensity (mcd) @ 20mA typ.	I_F (mA) (max)	PIV (max)	Peak Wavelength	Order Code
Untinted Diffused Lens							
HE Red, Green	50°	30/20	90/60	30/25	5	625/565nm	114-2463
Untinted Clear Lens							
Green, Yellow	50°	20/20	60/60	25/30	5	590/590nm	114-2472
Red, Green	50°	100/40	300/70	30/25	5	660/660nm	114-2473

206251

Order Multiple=5		Price Each			
Colour	Order Code	5+	50+	100+	250+
HE Red, Green	114-2463●	0.270	0.200	0.160	0.140
Green, Yellow	114-2472●	0.620	0.600	0.570	0.260
Red, Green	114-2473●	0.260	0.250	0.240	0.154
Mounting clip	121-7238●	0.200	0.160	0.130	0.105

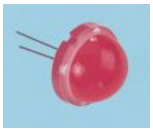
RL Re-reeling available

Farnell

20mm Light Emitting Diodes (LEDs)

20mm, Standard

Kingbright



L=13.5, Dia=20
Lead spacing=2.54,
Leads=27 x 0.6sq
Cathode identified by shorter lead

Colour	Peak Wavelength	View Angle	Lum Intensity (mcd) min.	Lum Intensity (mcd) typ.	@ I_F (mA)	I_F (mA) (max)	PIV (max)	Order Code
Tinted Diffused Lens								
Red	660	120°	50	80	20	30	5	114-2477
HE Red	625	120°	4	13	10	25	5	114-2476
Yellow	590	120°	2.5	80	10	30	5	114-2478
Green	565	120°	8	8.3	10	25	5	114-2475
Blue	470	120°	12.5	23.4	10	30	5	113-9543

206346

Colour	Order Code	Price Each 1+	25+	100+	250+
HE Red	**114-2476●**	0.89	0.67	0.53	0.45
Green	**114-2475●**	0.89	0.67	0.53	0.45
Red	**114-2477●**	0.88	0.74	0.59	0.52
Yellow	**114-2478●**	0.89	0.67	0.53	0.45
Blue	**113-9543●**	5.79	5.68	5.28	4.89

Flat Top Light Emitting Diodes (LEDs)

2mm, Flat Top

140 ° Viewing Angle, Tinted Diffused Lens

Kingbright



Cathode identified by shorter lead.

547 Series: Body H=5.0, W=2.8, D=4.0
Head L=1.95, Dia.=2.0
Lead pitch=2.54, Leads=27 x 0.5sq

Colour	Wavelength Peak	Typ Lum Intensity (mcd)	I_F (mA) (max)	Piv (max)	Order Code
HE Red	625nm	20 @ 10mA	30	5	114-2481
Yellow	590nm	8 @ 10mA	30	5	114-2485
Green	565nm	8 @ 10mA	25	5	114-2479
Low Current					
HE Red	625nm	2 @ 2mA	-	5	114-2482

206703

Order Multiple=5 Colour	Order Code	Price Each 5+	100+	1K+	5K+
HE Red	**114-2481●**	0.160	0.141	0.116	0.063
Yellow	**114-2485●**	0.160	0.141	0.116	0.063
Green	**114-2479●**	0.165	0.148	0.120	0.065
HE Red	**114-2482●**	0.380	0.370	0.270	0.146

2mm, Flat Top

140 ° Viewing Angle, Tinted Diffused Lens

Kingbright



Body H=8.0, W=4.8, D=2.5
Head L=4.5, Dia.=2.0
Lead pitch=2.54, Leads=27 x 0.5sq

Cathode identified by shorter lead.

Colour	Viewing Angle	Typ Lum Intensity (mcd)	I_F (mA) (max)	PIV (max)	Order Code
Red	700nm	2 @ 10mA	25	5	114-2484
Yellow	590nm	12.5 @ 10mA	30	5	114-2486
Green	565nm	12.5 @ 10mA	25	5	114-2480

206704

Order Multiple=5 Colour	Order Code	Price Each 5+	50+	100+	500+
Red	**114-2484●**	0.080	0.060	0.050	0.040
Green	**114-2480●**	0.102	0.085	0.077	0.066
Yellow	**114-2486●**	0.080	0.060	0.050	0.040

3mm, Flat Top

100 ° Viewing Angle, Tinted Diffused lens

Kingbright



L=6.0, Dia.=4.0
Lead pitch=2.54, Leads=25.5 x 0.5sq
Cathode identified by shorter lead

Colour	Wavelength Peak (nm)	Lum. Intensity (mcd) @ I_F10mA min.	typ.	I_F (mA) (max.)	PIV (max.)	Order Code
Red	700	0.5	3.2	25	5	114-2499
HE Red	625	3.2	12.5	30	5	114-2497
Orange	625	3.2	12.5	30	5	114-2498
Green	565	1.3	8	25	5	114-2496
Yellow	590	1.3	8	30	5	114-2500

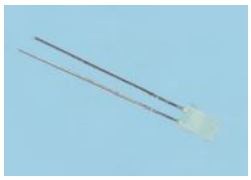
206371

Order Multiple=5 Colour	Order Code	Price Each 5+	50+	100+	500+	1K+
Red	**114-2499●**	0.070	0.052	0.042	0.033	0.027
HE Red	**114-2497●**	0.070	0.050	0.040	0.030	0.027
Green	**114-2496●**	0.073	0.055	0.043	0.033	0.027
Yellow	**114-2500●**	0.070	0.050	0.040	0.030	0.025
Orange	**114-2498●**	0.143	0.141	0.118	0.075	0.043

4mm, Flat Top

100 ° Viewing Angle, Tinted Diffused Lens

Kingbright



L=6.0, Dia.=4.0
Lead pitch=2.54, Leads=25.5 x 0.50sq

Cathode identified by shorter lead.

Colour	Wavelength Peak	Typ. Lum. Intensity (mcd)	I_F (mA) (max)	PIV (max.)	Order Code
HE Red	625nm	810mA	30	5	114-2532
Yellow	590nm	810mA	30	5	114-2533
Green	565nm	810mA	25	5	114-2531

206226

Order Multiple=5 Colour	Order Code	Price Each 5+	100+	1K+	5K+
HE Red	**114-2532●**	0.160	0.141	0.116	0.063
Yellow	**114-2533●**	0.160	0.141	0.116	0.063
Green	**114-2531●**	0.120	0.095	0.077	0.055

5mm, Flat Top

Kingbright



L=9.6, Dia.=5.0, Lead pitch=2.54,
Leads=25.5 x 0.5sq
Cathode identified by flat on body and shorter lead

Colour	Wavelength Peak	Lum. Intensity (mcd) @ I_F=10mA min.	typ.	I_F (mA) (max.)	PIV (max.)	Order Code
Tinted Diffused Lens, 100° Viewing Angle						
Red	700nm	0.5	3.2	25	5	114-2548
HE Red	625nm	3.2	12.5	30	5	114-2546
Orange	625nm	3.2	12.5	30	5	114-2547
Yellow	590nm	1.3	8	30	5	114-2552
Green	565nm	1.3	8	25	5	114-2545
Bi-Colour, White Diffused Lens, 80° Viewing Angle						
Red, Green	—	*12.5 *5	*60 *20	30 25	5 5	114-2551

*=I_F @ 20mA

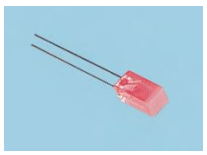
206373

Single Order Code		Price Each 10+	50+	100+	500+	1K+
Red	**114-2548●**	0.070	0.050	0.040	0.030	0.024
HE Red	**114-2546●**	0.070	0.050	0.040	0.030	0.026
Green	**114-2545●**	0.070	0.050	0.040	0.030	0.024
Yellow	**114-2552●**	0.070	0.050	0.040	0.030	0.025
Orange	**114-2547●**	0.046	0.043	0.038	0.032	0.024
Bi-Colour						
Red, Green	**114-2551●**	0.240	0.180	0.140	0.120	0.100

Square, Rectangular & Side Viewing LEDs

Square

Kingbright



H=5.0, W=5.0, D=9.7
Lead pitch=2.54,
Leads=25.5 x 0.5sq
Short lead cathode

Colour	View Angle	Lum Intensity (mcd) @ I_F= 10mA min.	typ.	I_F (mA) (max)	PIV max.	Order Code
Tinted Diffused Lens						
HE Red	110°	3.2	12.5	30	5	114-2621
Red	110°	*32	*100	30	5	114-2622
Green	110°	1.3	8	25	5	114-2620
Yellow	110°	1.3	8	30	5	114-2623

*=I_F @ 20 mA

206189

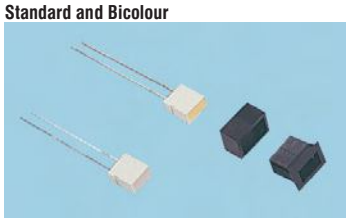
Order Multiple=5 Colour	Order Code	Price Each 5+	50+	100+	500+	1K+
HE Red	**114-2621●**	0.143	0.141	0.118	0.075	0.043
Red	**114-2622●**	0.090	0.070	0.060	0.050	0.040
Green	**114-2620●**	0.080	0.060	0.050	0.040	0.030
Yellow	**114-2623●**	0.062	0.055	0.048	0.029	0.024

RL Re-reeling available

Farnell

Rectangular

Standard and Bicolour



H=3.81, W=6.35, D=6.8
Light area=3.2 x 5.6
Lead pitch=2.54,
Leads=20 x 0.51sq

Short lead anode.

Black plastic mounting clip and bush:

Panel cutout 7.9 x 5.6 Viewing Angle 100°
Max panel thickness 3.2

Colour	Typ Lum Intensity (mcd) @ 20mA	I_F (mA) (max)	PIV (max)	Peak Wavelength (nm)	Mftrs. List No.	Order Code
Standard						
Red	6	25	5	635	CMD57124A	113-9585
Green	6	25	5	562	CMD54124A	113-9582
Yellow	6	25	5	585	CMD53124A	113-9588
Bicolour						
Red, Green	6/6	25	5	635/562	CMD49124A	113-9586

206186

Order Multiple=5		Price Each			
Colour	Order Code	5+	50+	100+	500+
Red	**113-9585●**	0.520	0.490	0.440	0.370
Green	**113-9582●**	0.520	0.490	0.440	0.370
Yellow	**113-9588●**	0.520	0.490	0.440	0.370
Bicolour					
Red, Green	**113-9586●**	1.080	1.020	0.800	0.480
Order Multiple = 10		**10+**	**100+**	**1K+**	
Mounting Clip	**110-5118●**	0.185	0.125	0.089	

Rectangular, 3.9mm x 1.9mm



H=1.9, W=3.9, D=7.0
Lead pitch=2.54, Leads=25.5 x 0.5sq
Shorter lead cathode.

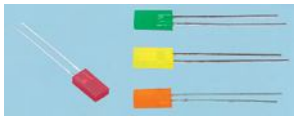
Colour	View Angle	Lum. Intensity (mcd) @ I_F=10mA min	typ	I_F (mA) (max)	PIV (max.)	Order Code
Tinted Diffused Lens						
Red	110°	0.5	2	25	5	114-2606
HE Red	110°	3.2	20	30	5	114-2602
Green	110°	2	8	25	5	114-2600
Yellow	110°	2	8	30	5	114-2610
Orange	110°	3.2	20	30	5	114-2605

206372

Order Multiple = 5		Price Each				
Colour	Order Code	5+	50+	100+	500+	1K+
Red	**114-2606●**	0.080	0.060	0.050	0.040	0.032
HE Red	**114-2602●**	0.080	0.060	0.050	0.040	0.034
Green	**114-2600●**	0.103	0.097	0.083	0.064	0.053
Yellow	**114-2610●**	0.119	0.106	0.104	0.095	0.082
Orange	**114-2605●**	0.060	0.053	0.041	0.031	0.026

2mm × 5mm LEDs

Diffused Lens



Viewing Angle 120°
Current Rating 20mA*
Power Dissipation 85mW**
Operating Temperature -40°C to +85°C
Reverse Voltage 5V
* HI Red = 10mA
** HI Red = 45mW

Colour	Wavelength Peak (nm)	Wavelength Dominant (nm)	Luminous Intensity typ. (mcd)	Current, If max. (mA)	Voltage, Vf typ. (V)	Mftrs. List No.	Order Code
Super Red	660	643	12	100	1.85	MCL453SRD	158-1150
HI Red	697	650	1.2	50	2.1	MCL453PD	158-1151
HE Red	635	625	3.8	100	2	MCL453MD	158-1152
Green	568	570	3.2	100	2.1	MCL453GD	158-1153
Yellow	587	590	3.4	100	2.1	MCL453YD	158-1154
Amber	610	606	3.6	100	2.1	MCL453BD	158-1155
Orange	635	625	3.6	100	2	MCL453AD	158-1157

514778

Colour	Mftrs. List No.	Order Code	Price Each 10+	100+	1K+
Super Red	MCL453SRD	**158-1150●**	0.095	0.076	0.064
HI Red	MCL453PD	**158-1151●**	0.073	0.058	0.048
HE Red	MCL453MD	**158-1152●**	0.118	0.094	0.079
Green	MCL453GD	**158-1153●**	0.090	0.072	0.059
Yellow	MCL453YD	**158-1154●**	0.112	0.090	0.074
Amber	MCL453BD	**158-1155●**	0.112	0.090	0.074
Orange	MCL453AD	**158-1157●**	0.101	0.081	0.067

2mm x 5mm Bi-Colour LEDs

White Diffused Lens



Viewing Angle 120°
Current Rating 20mA
Power Dissipation 85mW
Operating Temperature -40°C to +85°C
Reverse Voltage 5V

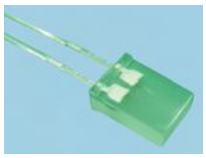
Colour	Wavelength (nm)	Luminous Intensity typ. (mcd)	Current, If max. (mA)	Voltage, Vf typ. (V)	Mftrs. List No.	Order Code
HI Red / Green	660 / 568	12 / 3.1	100	1.8 / 2.1	MCL239PURGW	158-1201
Orange / Green	635 / 568	8.2 / 3.1	100	2 / 2.1	MCL239AGW	158-1202
Yellow / Green	587 / 568	3.2 / 3.1	100	2.1 / 2.1	MCL239YGW	158-1203

515366

Colour	Mftrs. List No.	Order Code	Price Each 5+	100+	250+
HI Red / Green	MCL239PURGW	**158-1201●**	0.196	0.157	0.130
Orange / Green	MCL239AGW	**158-1202●**	0.196	0.157	0.130
Yellow / Green	MCL239YGW	**158-1203●**	0.210	0.171	0.141

2mm x 5mm Tri-Colour LEDs

White Diffused Lens



Viewing Angle 120°
Current Rating 20mA
Power Dissipation 85mW
Operating Temperature -40°C to +85°C
Reverse Voltage 5V

Colour	Wavelength (nm)	Luminous Intensity typ. (mcd)	Current, If max.(mA)	Voltage, Vf typ. (V)	Mftrs. List No.	Order Code
HI Red / Green	660 / 568	12 / 3.1	100	1.8 / 2.1	MCL236PURGW	158-1210
Orange / Green	635 / 568	8.2 / 3.1	100	2 / 2.1	MCL236AGW	158-1212
Yellow / Green	587 / 568	3.2 / 3.1	100	2.1 / 2.1	MCL236YGW	158-1213

519755

Colour	Mftrs. List No.	Order Code	Price Each 5+	100+	250+
HI Red / Green	MCL236PURGW	**158-1210●**	0.196	0.157	0.130
Orange / Green	MCL236AGW	**158-1212●**	0.196	0.157	0.130
Yellow / Green	MCL236YGW	**158-1213●**	0.210	0.171	0.141

Rectangular 5mm x 2.5mm

Top Diffused Package



H=9.5, W=5.0, D=2.5
Lead Pitch 2.54 (1.27 spacing TLSV5100)
Leads 25 x 0.5sq
Cathode identified by shorter leads (centre pin common cathode, TLSV5100)

Colour	View Angle	Lum Intensity (mcd) @ I_F=10mA min.	Lum Intensity @ I_F=10mA typ.	I_F (mA) (max)	PIV (max)	Mftrs. List No.	Order Code
Bi-Colour							
HE Red, Green	100°	0.63	1	30	6	TLSV5100	104-5503

206427

Order Multiple=1		Price Each				
Colour	Order Code	1+	25+	100+	250+	1K+
HE Red, Green	**104-5503●**	0.600	0.350	0.290	0.181	0.151

Rectangular, 5mm x 2.5mm



H=2.5, W=5.0, D=9.6
Lead pitch=2.54,
Leads=25.5 x 0.5sq
Shorter lead cathode.

RL Re-reeling available

Square, Rectangular & Side Viewing LEDs - continued

Rectangular, 5mm x 2.5mm - continued

Colour	View Angle	Lum. Intensity (mcd) @ I_F=10mA min.	typ.	I_F (mA) (max.)	PIV (max.)	Order Code
Tinted Diffused Lens						
HE Red	110°	3.2	12.5	30	5	114-2601
Red	110°	40	80	30	5	114-2608
Green	110°	1.3	8	25	5	114-2597
Yellow	110°	1.3	8	30	5	114-2609
Orange	110°	3.2	12.5	30	5	114-2603
White Diffused Lens						
* = I_F @ 20mA						
Green	100°	8	20	25	5	114-2607

206374

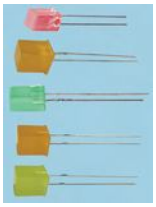
Order Multiple=5

Colour	Order Code	Price Each 5+	50+	100+	500+	1K+
HE Red	**114-2601**	0.093	0.085	0.075	0.064	0.053
Red	**114-2608**	0.179	0.170	0.142	0.111	0.066
Green	**114-2597**	0.080	0.064	0.056	0.050	0.037
Yellow	**114-2609**	0.080	0.060	0.050	0.040	0.034
Orange	**114-2603**	0.045	0.042	0.037	0.031	0.026
Green	**114-2607**	0.080	0.060	0.050	0.040	0.036

5mm × 5mm LEDs

multicomp

Diffused Lens



Viewing Angle	150°
Current Rating	20mA
Power Dissipation	85mW
Operating Temperature	-40°C to +85°C
Reverse Voltage	5V

New

Colour	Wavelength Peak (nm)	Wavelength Dominant (nm)	Luminous Intensity typ. (mcd)	Current, If max. (mA)	Voltage, Vf typ. (V)	Mftrs. List No.	Order Code
Super Red	660	643	20	100	1.85	MCL293SRD	158-1158
HI Red	698	650	1.2	100	2.1	MCL293PD	158-1159
HE Red	635	625	4.8	100	2	MCL293MD	158-1160
Green	568	570	3.2	100	2.1	MCL293GD	158-1161
Yellow	587	590	3.4	100	2.1	MCL293YD	158-1162
Amber	610	606	4.5	100	2.1	MCL293BD	158-1163
Orange	635	625	4.5	100	2	MCL293AD	158-1164

512443

Colour	Mftrs. List No.	Order Code	Price Each 10+	100+	1K+
Super Red	MCL293SRD	**158-1158**	0.112	0.090	0.074
HI Red	MCL293PD	**158-1159**	0.090	0.072	0.059
HE Red	MCL293MD	**158-1160**	0.135	0.108	0.090
Green	MCL293GD	**158-1161**	0.107	0.086	0.071
Yellow	MCL293YD	**158-1162**	0.129	0.103	0.086
Amber	MCL293BD	**158-1163**	0.129	0.103	0.086
Orange	MCL293AD	**158-1164**	0.118	0.094	0.079

Side Viewing

VISHAY



H=4.8, W=4.5, D=4.0
Lead pitch =2.54, Leads=13.5 x 0.45 sq
Viewed from front, pins downward cathode is right hand pin, LEDs have stand-offs

Colour	View Angle	Lum Intensity(msd) @ I_F = 10mA min	typ	I_F (mA) (max.)	PIV (max.)	Mftrs. List No.	Order Code
Tinted Diffused Lens							
HE Red	160°	0.63	1.5	30	6	TLPH5600	104-5499
Green	160°	0.63	1.5	30	6	TLPG5600	104-5500
Yellow	160°	0.63	1.5	30	6	TLPY5600	104-5501

206423

Order Multiple=5

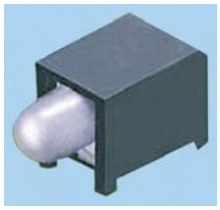
Colour	Order Code	Price Each 5+	25+	100+	250+	1K+
HE Red	**104-5499**	0.200	0.158	0.135	0.102	0.097
Green	**104-5500**	0.540	0.420	0.360	0.280	0.270
Yellow	**104-5501**	0.540	0.420	0.360	0.280	0.270

PCB Mounting LEDs

SMD LED Round Lens

Dialight

Prism® Circuit Board Indicator



- Compatible with automatic placement equipment
- Compatible with infrared and vapour phase soldering processess
- Black housing enhances contrast ratio
- Housing material meets UL94V-0 flammability rating
- Lens material meets UL94V-HB flammability rating

H = 5, W = 4.3, D (body) = 6.1mm
D (lens) = 2.7, Diam. (lens) = 2.8mm

Description	113-8259 Super, Bi-colour	113-8260 High efficiency	113-8262 High performance	113-8263 High performance
LED colours	Red, Green	Red	Green	Yellow
Forward current (mA dc)	30	30	30	30
Forward voltage (V)	2/2	2		
Reverse voltage (V)	5 / 5	5	5	5
Dominant wavelength (nm)	628 / 570			
Luminous intensity (mcd)	6.5 / 8			
Viewing angle	40°			
Operating temterature	-55 to 100°C			

361077

Mftrs List No.	Order Code	Price Each 1+	10+	50+	100+	250+
5913001002F	SMD **113-8259**	0.95	0.90	0.85	0.80	0.70
5912001002F	SMD **113-8260**	0.54	0.48	0.45	0.41	0.38
5912301002F	SMD **113-8262**	0.49	0.45	0.41	0.39	0.35
5912401002F	SMD **113-8263**	0.49	0.45	0.41	0.39	0.35

For **Light Pipes** see page 887

Bi-level SMD LED

Dialight

3mm Prism® Circuit Board Indicator



Colour Position 1	Position 2	Mftrs. List No.	Order Code
Red	Red	592-2020-002F	113-8386
Green	Green	592-2323-002F	113-8387
Yellow	Yellow	592-2424-002F	113-8389

H = 10.92, W = 4.32mm
D (LED)=2.67, D (body)=14.22mm

	Red	Green	Yellow
Forward current (mA dc)	30	30	20
Forward voltage (V)	2	2	2
Reverse voltage (V)	5	5	5
Dominant wavelength (nm)	628	570	590
Luminous intensity (mcd)	5	4	5

Viewing angle	40°
Operating temterature	-40 to +100°C

- Compatible with automatic placement equipment
- Compatible with surface mount reflow soldering processess
- Black housing enhances contrast ratio
- Housing material meets UL94V-0 flammability rating
- Indicator position 1 furthest from PCB

361085

Colours	Order Code	Price Each 1+	10+	50+	100+	250+
Red over Red	SMD **113-8386**	1.79	1.62	1.50	1.39	1.28
Green over Green	SMD **113-8387**	1.44	1.30	1.20	1.12	1.03
Yellow over Yellow	SMD **113-8389**	1.79	1.62	1.50	1.39	1.28

Tri-level SMD LED

Dialight

3mm Prism® CBI®



New

SMD

Viewing Angle	40°
LED Size	3mm
Operating Temperature	-40C to +100C

- Incorporates latest LED technology, specifically designed for surface mounting
- Compatible with automatic placement equipment
- Compatible with surface mount reflow soldering processes
- Black housing enhances contrast ratio
- Housing material meet UL-94V-0 flammability ratings
- Patented Tri-level design provides increased indication without increased space
- Illumination areas compatible with industry standard 3mm through-hole Tri-level Circuit Board Indicators
- Packaged in moisture barrier bags for dry packaging per IPC/JEDEC J-STD-033, moisture sensitivity level 2
- Helps to eliminate mixed technology pc board processing

RL Re-reeling available

Farnell

Single Colour

Colour	Luminous Intensity (typ)	Forward Current	Forward Voltage (max)	Mftrs. List No	Order Code
Red	6mcd	30mA	2.5V	593-202020-013F	163-9820
Green	11mcd	30mA	2.5V	593-232323-013F	163-9824
Yellow	11mcd	30mA	2.5V	593-242424-013F	163-9825
Blue	7mcd	20mA	4.2V	593-262626-013F	163-9826
White	85mcd	20mA	3.9V	593-282828-013F	163-9828

		Price Each				
Colours	Order Code	1+	25+	100+	250+	+
Red	SMD 163-9820● RL	2.85	2.41	1.87	1.70	– –
Green	SMD 163-9824● RL	2.85	2.41	1.87	1.70	– –
Yellow	SMD 163-9825● RL	2.85	2.41	1.87	1.70	– –
Blue	SMD 163-9826● RL	4.62	3.90	3.04	2.76	– –
White	SMD 163-9828● RL	5.60	4.73	3.69	3.36	– –

Bright Single Colour

Colour	Luminous Intensity (typ)	Forward Current	Forward Voltage (max)	Mftrs. List No	Order Code
AlGaAs Red	29mcd	30mA	2.5V	593-212121-013F	163-9822
Green	16mcd	30mA	2.5V	593-222222-013F	163-9823
AlInGaP Yellow	80mcd	30mA	2.4V	593-272727-013F	163-9827

		Price Each				
Colours	Order Code	1+	25+	100+	250+	+
AlGaAs Red	SMD 163-9822● RL	3.04	2.57	2.01	1.83	– –
Green	SMD 163-9823● RL	2.85	2.41	1.87	1.70	– –
AlInGaP Yellow	SMD 163-9827● RL	2.97	2.51	1.96	1.78	– –

Bi-Colour

Colour	Luminous Intensity (typ)	Forward Current	Forward Voltage (max)	Mftrs. List No	Order Code
Red / Green	10mcd	30mA	2.5V	593-303030-013F	163-9829
Yellow / Green	10mcd	30mA	2.5V	593-313131-013F	163-9830

523181

		Price Each				
Colours	Order Code	1+	25+	100+	250+	+
Red / Green	SMD 163-9829● RL	3.15	2.66	2.08	1.90	– –
Yellow / Green	SMD 163-9830● RL	3.15	2.66	2.08	1.90	– –

595 Series

SMD Dialight New



LED / Lamp Size 2mm
Forward Current 20mA

Colour	Luminous Intensity (typ)	Forward Voltage (max)	Operating Temperature	Mftrs. List No.	Order Code
Red	25mcd	2V	-30°C to +85°C	595-2101-007F	168-5257
HI Green	11mcd	2.5V	-30°C to +85°C	595-2201-007F	168-5258
Yellow	9mcd	2.5V	-30°C to +85°C	595-2401-007F	168-5261
Orange	9mcd	2.5V	-30°C to +85°C	595-2501-007F	168-5262
Yellow	9mcd	2.5V	-30°C to +85°C	595-2701-007F	168-5263
Blue	80mcd	3.8V	-40°C to +100°C	595-2602-007F	168-5265
HB Green	300mcd	3.8V	-40°C to +100°C	595-2902-007F	168-5266

528562

	Mftrs		Price Each				
Colour	List No.	Order Code	1+	25+	100+	250+	500+
Red	595-2101-007F	168-5257● RL	1.37	1.09	1.01	0.91	0.83
HI Green	595-2201-007F	168-5258● RL	1.37	1.09	1.01	0.91	0.83
Yellow	595-2401-007F	168-5261● RL	1.37	1.09	1.01	0.91	0.83
Orange	595-2501-007F	168-5262● RL	1.37	1.09	1.01	0.91	0.83
Yellow	595-2701-007F	168-5263● RL	1.37	1.09	1.01	0.91	0.83
Blue	595-2602-007F	168-5265● RL	2.31	1.82	1.73	1.54	1.47
HB Green	595-2902-007F	168-5266● RL	2.83	2.23	2.13	1.89	1.81

Subminiature

AVAGO TECHNOLOGIES



Body: H=6.35, W=2.44, D=5.08
L=3.4 x 0.5 x 0.2, Lead pitch=2.54.

Front lead is anode. w

Colour	Typ. Lum. Intensity (mcd)	I_F (mA) (max.)	PIV (max.)	Mftrs. List No.	Order Code
Tinted Diffused Lens					
Red	1 @ 10mA	50	3	HLMP-6000-E0010	100-3191
HE Red	3 @ 10mA	30	5	HLMP-6300-F0010	100-3192
Yellow	3 @ 10mA	20	5	HLMP-6400-F0010	100-3194
Green	3 @ 10mA	30	5	HLMP-6500-F0010	100-3195

206701

		Price Each				
Colour	Order Code	1+	250+	500+	1K+	2K5+
Red	100-3191●	0.67	0.66	0.56	0.47	0.35
HE Red	100-3192●	0.41	0.40	0.38	0.33	0.30
Yellow	100-3194●	0.41	0.37	0.32	0.28	0.26
Green	100-3195●	0.47	0.46	0.44	0.38	0.34

Subminiature

MARL

Modular Tie Bar System



PCB mounting LEDs that have a 10 way tie bar available separately enabling them to be built up into arrays of any number.

Front Lead in Anode
H=6.4, W=2.5, D=5.6 (body)
Lead Pitch=2.54, Leads=7.0 x 0.5 x 0.2

Colour	View Angle	Typ. Lum. Intensity (mcd) I_F = 10(mA)	PIV (max.)	V_F (typ)	Mftrs. List No.	Order Code
Red	44°	6.3	3	2	101-205-02	973-8932
Green	44°	6.3	3	2.1	101-214-02	973-8940
Yellow	44°	6.3	3	2.1	101-211-02	973-8959

206439

		Price Each				
Colour	Order Code	1+	25+	100+	250+	500+
Red	973-8932●	0.530	0.480	0.430	0.390	0.350
Green	973-8940●	0.720	0.690	0.630	0.530	0.470
Yellow	973-8959●	0.470	0.450	0.410	0.370	0.340
Tie Bar	973-8967●	0.310	0.290	0.220	0.169	0.132

Subminiature - 5 Volt

MARL

Modular Tie Bar System



PCB mounting LEDs that have a 10 way tie bar available seperately enabling them to be built up into arrays of any number.

H=6.4, W=2.5, D=5.6 (body),
Lead Pitch=2.54, Leads=7.0 x 0.5 x 0.2,
Tie bar=25.4 x 5.6 x 1.1

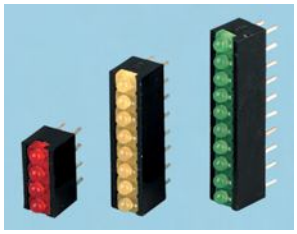
Colour	View Angle	Typ. Lum. Intensity (mcd) I_F = 7(mA)	PIV (max)	Mftrs. List No.	Order Code
Red	44°	4.4	3	101-205-20	973-8975
Green	44°	4.4	3	101-214-20	973-8983
Yellow	44°	4.4	3	101-211-20	973-8991

206438

		Price Each				
Colour	Order Code	1+	25+	100+	250+	500+
Red	973-8975●	0.890	0.880	0.810	0.770	0.650
Green	973-8983●	0.760	0.700	0.650	0.600	0.570
Yellow	973-8991●	0.730	0.660	0.600	0.560	0.520
Tie Bar	973-8967●	0.310	0.290	0.220	0.169	0.132

2mm THT Bargraph Arrays - Vertical

MENTOR



Viewing Angle	70°
LED Size	1.8mm
Operating Temperature	-40°C to +85°C
Forward Voltage (max)	2.5V
Reverse Voltage	5V

	Length	Width	Depth
4 x LEDs	10.3mm	5.08mm	5.5mm
8 x LEDs	20.32mm	5.08mm	5.5mm
10 x LEDs	25.4mm	5.08mm	5.5mm

Lead pitch=2.54, Row spacing=2.54, Lead=3.3 x 0.5 sq

Colour	Luminous Intensity (min)	Intensity (typ)	Wavelength (peak)	Forward Voltage (typ)	Mftrs. List No.	Order Code
4 x LEDs						
Red	0.7mcd	1.6mcd	660nm	2.25V	RTZ.2040R	121-5799
8 x LEDs						
Red	0.7mcd	1.6mcd	660nm	2.25V	RTZ.2080R	121-5801
Yellow	5mcd	8mcd	588nm	2.1V	RTZ.2080Y	121-5803
Green	5mcd	10mcd	568nm	2.2V	RTZ.2080G	121-5800
10 x LEDs						
Green	5mcd	10mcd	568nm	2.2V	RTZ.2100G	121-5804

249104

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
4 x LEDs						
RTZ.2040R	121-5799●	3.64	3.30	3.14	3.00	2.88
8 x LEDs						
RTZ.2080R	121-5801●	5.50	5.02	4.75	4.53	4.38
RTZ.2080Y	121-5803	6.16	5.60	5.33	5.07	4.90
RTZ.2080G	121-5800	6.16	5.60	5.33	5.07	4.90
10 x LEDs						
RTZ.2100G	121-5804●	7.38	6.73	6.37	6.10	5.89

Over 480,000 products online QGO

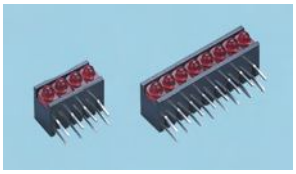
RL Re-reeling available

Farnell

2mm

4, 8 & 10 LED Arrays

MENTOR



H=5.08, W=10.16, (x 4) 20.32 (x 8) 25.4 (x 10),
D=7.5 (body)
Lead pitch=2.54, Row spacing=2.54,
Leads=3.3 x 0.5sq
Rear pins are anode

Colour	View Angle	Lum Intensity (mcd) @ I_F 10mA min	(max)	1_F(mA) max	PIV (max)	Mftrs. List No.	Order Code
Red x 4	20°	1	3.2	50	6	RTZ2041R	121-5806
Red x 8	20°	1	3.2	50	6	RTZ2081R	121-5807
Red x 10	20°	1	3.2	50	6	RTZ2101R	121-5808

206395

		Price Each				
Colour	Order Code	1+	10+	25+	50+	100+
Red x 4	121-5806●	3.04	2.85	2.59	1.89	1.85
Red x 8	121-5807●	5.51	5.13	4.71	3.23	3.15
		1+	25+	50+	100+	250+
Red x 10	121-5808●	7.57	6.96	5.70	4.07	3.80

2mm, Tri-Level

MENTOR



A miniature triple LED module, with matched 2mm LEDs.

Colour	View Angle	Lum. Intensity mcd	V_f @ 20mA	I_{max}
Red	35°	3.2	2	25
Yellow	35°	12.5	2.1	30
Green	35°	12.5	2.2	25

Dimensions: H=10.16, W=5.08, L=2.5
Front view right leg anode

206655

		Price Each				
Colour	Order Code	1+	25+	100+	250+	500+
Red over Yellow over Green	121-5770●	2.74	2.60	2.47	1.94	1.91
Red over Red over Red	121-5769	2.67	2.57	2.41	1.90	1.86

2mm and 3mm PCB LEDs

Dialight



LED Size	Colours	Peak Wavelength (nm)	Luminous Intensity (typ) (mcd)	I_F typ (mA)	V_F typ (V)	Mftrs. List No.	Order Code
2mm, Tri-Level Housing							
2mm	R, Y, G		12.6	20		570-0100-132F	130-6019
2mm	G, G, G	565	10	25		570-0100-222F	130-6020
3mm, Dual-Level, High Efficiency							
3mm	Red, Red	650	10	10	2	553-0111F	130-6022
3mm	Green, Green	563	16	10	2.1	553-0122F	130-6023
3mm	Yellow, Yellow	585	6.3	10	2.1	553-0133F	130-6024
3mm	Blue, Blue	428		10	3.5	553-0188F	130-6025
3mm, Single-Level Housing							
3mm	Green	563	16	25	2.1	551-0207F	130-6026
3mm	Yellow	585	6.3	20	2.1	551-0307F	130-6027
3mm	Red	650	3.6	20	2	551-0407F	130-6028
3mm	Blue	428	12	20	3.5	551-0807F	130-6031
3mm	Orange	600	7	25	1.9	551-2507F	130-6032
3mm	Red	635	1.6	7	1.7	551-1107F	130-6033
3mm	Yellow	585	1	7	1.8	551-1207F	130-6034
3mm	Green	565	1	7	1.9	551-1307F	130-6035
0.2", Single-Level Housing							
5mm	Green	563	10	25	2.1	550-2207F	130-6036
5mm	Yellow	583	8	10	2	550-2307F/	130-6037
5mm	Red	650	6.3	20	2.2	550-2407F	130-6038
5mm	Orange	600	7	30	1.9	550-2507F	130-6039
SMD, Single-Level Housing							
2.4	Red	635	18	10	2	597-2001-202F	130-6040
2.4	Green	572	16.3	10	2	597-2301-202F	130-6041
2.4	Yellow	586	18.8	10	2	597-2401-202F	130-6043
553 Series							
3mm / T-1	Red, Red		10	30		553-0111-200F	130-6044
3mm / T-1	Green, Green		12.6	30		553-0122-200F	130-6045
3mm / T-1	Yellow, Yellow		10	20		553-0133-200F	130-6046

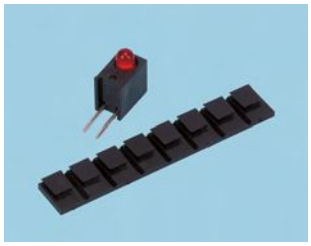
451239

			Price Each		
Mftrs. List No.	Mftrs. List No.	Order Code	1+	25+	100+
2mm, Tri-Level Housing					
R, Y, G	570-0100-132F	130-6019●	1.38	1.27	1.17
G, G, G	570-0100-222F	130-6020●	1.77	1.30	1.05
3mm, Dual-Level, High Efficiency					
Red, Red	553-0111F	130-6022●	0.96	0.78	0.63
Green, Green	553-0122F	130-6023●	1.07	0.78	0.63
Yellow, Yellow	553-0133F	130-6024●	0.85	0.77	0.69
Blue, Blue	553-0188F	130-6025●	3.69	2.69	2.20
3mm, Single-Level Housing					
Green	551-0207F	130-6026●	0.47	0.37	0.28
Yellow	551-0307F	130-6027●	0.45	0.37	0.28
Red	551-0407F	130-6028●	0.47	0.37	0.28
Blue	551-0807F	130-6031●	2.00	1.46	1.19
Orange	551-2507F	130-6032●	0.33	0.26	0.23
Red	551-1107F	130-6033●	0.51	0.45	0.38
Yellow	551-1207F	130-6034●	0.51	0.45	0.38
Green	551-1307F	130-6035●	0.51	0.45	0.38
0.2", Single-Level Housing					
Green	550-2207F	130-6036●	0.53	0.38	0.30
Yellow	550-2307F/	130-6037●	0.53	0.38	0.31
Red	550-2407F	130-6038●	0.51	0.38	0.30
Orange	550-2507F	130-6039●	0.35	0.25	0.21
SMD, Single-Level Housing					
Red	597-2001-202F	130-6040●	0.33	0.26	0.22
Green	597-2301-202F	130-6041●	0.33	0.26	0.22
Yellow	597-2401-202F	130-6043●	0.27	0.24	0.22
553 Series					
Red, Red	553-0111-200F	130-6044●	0.72	0.54	0.46
Green, Green	553-0122-200F	130-6045●	0.72	0.54	0.46

3mm/T1

Standard and Low Current

MARL



Viewed from front, pins downward, anode is left pin.
A 8 way tie bar is available separately enabling the LEDs to be accurately mounted as arrays.

3mm – H=8.3 (body), W=4.6, D=6.3 (body)
Lead pitch=2.54, Leads=5.0 x 0.5sq.

Colour	View Angle	Lum. Intensity (mcd) @ I_F = 20mA (typ)	I_F (max)	V^F(typ)	PIV (max)	Mftrs. List No.	Order Code
Red	30°	35	20	2.2	5	113-305-04	973-9190
Yellow	30°	20	20	2.2	5	113-311-04	973-9203
Green	30°	20	20	2.2	5	113-314-04	973-9211
Low Current							
Red	30°	3.5*	2	1.9	5	113-305-01	973-9220
Yellow	30°	2*	2	1.9	5	113-311-01	973-9238
Green	30°	2*	2	1.9	5	113-314-01	973-9246

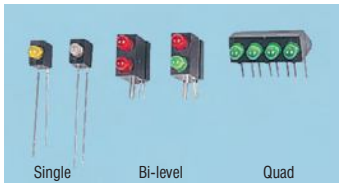
206532

Order Multiple=5			Price Each			
Colour	Order Code	5+	25+	100+	250+	500+
Red	973-9190●	0.280	0.270	0.250	0.200	0.177
Yellow	973-9203●	0.280	0.270	0.250	0.200	0.177
Green	973-9211●	0.280	0.270	0.250	0.200	0.177
Low Current						
Red	973-9220●	0.370	0.320	0.300	0.193	0.174
Yellow	973-9238●	0.370	0.320	0.300	0.193	0.174
Green	973-9246●	0.370	0.320	0.300	0.193	0.174
		5+	100+	250+		
Tie Bar	973-6956●	0.330	0.310	0.250		

3mm/T1

Single, Bi-colour, Bi-level and Quad

MARL



Single
H=6.2, W=4.0, D (body)=5.2
Lead pitch=2.54
Leads=21 x 0.5sq.

Bi-level
H=10.16, W=5.08,
D (body)=10
Lead pitch=2.54 x 2.54
Leads=3.75 x 0.5sq.

Quad
H=6.7, W=17.6, D (body)=9.3
Lead pitch=2.54
LED pitch=4.4
Leads=5.0 x 0.5sq.

Viewed from front, pins downward, anode is left hand pin on single (red bi-colour) and quad types, right hand pin on bi-level types.

Colour	View Angle	Typ Lum Intensity (mcd)	Mftrs. List No.	Order Code
Single				
Red	30°	35 @ 20mA	103-305-04	973-7286
Yellow	30°	35 @ 20mA	103-311-04	973-7294
Green	30°	20 @ 20mA	103-314-04	973-7308
Single Bi - colour				
Red over Green	50°	25 / 25 @ 20mA	103-330-04	973-7316

RL Re-reeling available

Farnell

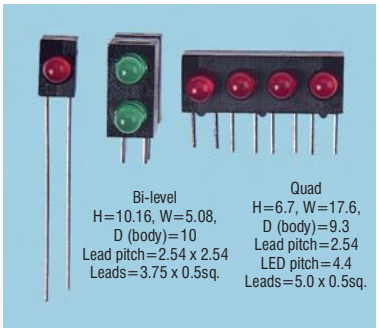
	View	Typ Lum		
Bi - Level				
Red over Red	30°	35 @ 20mA	122-305-04	973-7324
Green over Green	30°	20 @ 20mA	122-314-04	973-7332
Red over Green	30°	35 / 20 @ 20mA	122-000-04-52	973-7340
Quad				
Red x 4	30°	35 @ 20mA	107-305-04	973-7359
Green x 4	30°	20 @ 20mA	107-314-04	973-7367

206272

Order Multiple=5				Price Each	
Colour	**Order Code**	**5+**	**50+**	**100+**	**500+**
Red	**973-7286●**	0.52	0.47	0.40	0.33
Yellow	**973-7294●**	0.52	0.47	0.40	0.33
Green	**973-7308●**	0.52	0.47	0.40	0.33
Order Multiple=1		**1+**	**50+**	**100+**	**500+**
Red over Green	**973-7316●**	1.84	1.41	1.14	0.91
Red over Red	**973-7324●**	1.05	0.93	0.78	0.70
Green over Green	**973-7332●**	1.05	0.93	0.78	0.70
Red over Green	**973-7340●**	2.01	1.46	1.23	0.77
Red x 4	**973-7359●**	5.19	4.02	3.12	1.46
Green x 4	**973-7367●**	2.81	2.17	1.68	0.79

3mm/T1 Low Current

Single, Bi-level and Quad



Single
H=6.2, W=4.0,
D (body)=5.2
Lead pitch=2.54
Leads=21 x 0.5sq.

Bi-level
H=10.16, W=5.08,
D (body)=10
Lead pitch=2.54 x 2.54
Leads=3.75 x 0.5sq.

Quad
H=6.7, W=17.6,
D (body)=9.3
Lead pitch=2.54
LED pitch=4.4
Leads=5.0 x 0.5sq.

Colour	View Angle	Typ. Lum. Intensity (mcd)	I_F (mA) (max.)	Mftrs. List No.	Order Code
Single					
Red	30°	1.5	2	103-305-01	973-8223
Yellow	30°	1.5	2	103-311-01	973-8231
Green	30°	2	2	103-314-01	973-8240
Bi-Level					
Red	30°	1.5	2	122-305-01	973-8258
Yellow	30°	1.5	2	122-311-01	973-8266
Green	30°	2	2	122-314-01	973-8274
Quad					
Red x 4	30°	1.5	2	107-305-01	973-8282
Green x 4	30°	2	2	107-314-01	973-8290

221692

Colour				Price Each		
Single	**Order Code**	1+	25+	100+	250+	500+
Red	**973-8223●**	0.62	0.51	0.44	0.32	0.28
Yellow	**973-8231●**	0.62	0.51	0.44	0.32	0.28
Green	**973-8240●**	0.62	0.51	0.44	0.32	0.28
Bi-Level						
Red	**973-8258●**	1.48	1.23	1.10	0.65	0.60
Yellow	**973-8266●**	1.48	1.23	0.96	0.65	0.60
Green	**973-8274●**	1.48	1.23	1.10	0.79	0.76
Quad						
Red x 4	**973-8282●**	2.55	2.11	1.88	1.17	0.72
Green x 4	**973-8290●**	1.30	0.90	0.83	0.57	0.41

3mm/T1

Low Current



H=7.3, W=4.6, D=6.3 (body)
Lead Pitch=2.54,
Leads 3.4 x 0.45sq.

View from front, pin downward, cathode is right hand pin

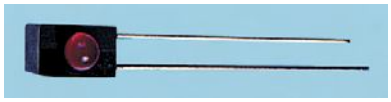
Colour	View Angle	Typ Lum Intensity (mcd)	F_F (mA) (max.)	PIV (max.)	Mftrs. List No.	Order Code
Tinted Diffused Lens						
Red	50°	1.8 / 2mA	7	5	HLMP-1700-B00A2	100-3383
Yellow	50°	1.6 / 2mA	7	5	HLMP-1719-A00A2	100-3384
Green	50°	1.6 / 2mA	7	5	HLMP-1790-A00A2	100-3385

206402

Order Multiple=5				Price Each		
Colour	**Order Code**	5+	100+	250+	500+	1K+
Red	**100-3383●**	0.320	0.270	0.240	0.189	0.167
Yellow	**100-3384●**	0.400	0.320	0.270	0.210	0.195
Green	**100-3385●**	0.320	0.270	0.240	0.189	0.167

3mm/T1 5 Volt

Single



H = 6.2, W = 4.0, D (body) = 5.2
Lead pitch = 2.54, Leads = 21 x 0.5sq.

Colour	View Angle	Typ Lum Intensity	I_F (mA) (max.)	Mftrs. List No.	Order Code
Red	60°	8mcd	10	103-381-20	973-8347
Green	60°	8mcd	10	103-383-20	973-8355

221694

Colour				Price Each		
Single	**Order Code**	1+	25+	100+	250+	500+
Red	**973-8347●**	0.76	0.61	0.52	0.39	0.29
Green	**973-8355●**	0.90	0.72	0.62	0.46	0.34

ESD Protected Single, Dual and Tri Level



CE marking requires that equipment be immune from RF radiation and electrostatic discharge. These unique products feature protective covers that stop ESD from entering through the front panel and causing damage. These LEDs are available in single, dual, and triple modules using 3mm and have ESD Protection to 15kV **(DIN IEC801-2DIN IEC801-2)**.

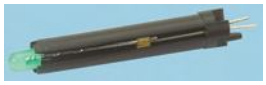
Front facing right pin Anode
Pitch 2.54mm
Single H=10.16 W=5.08 L=13.8
Triple H=15.24 W=5.08 L=13.8

Colour	View Angle	mcd	V_f @ 20mA	I_{max}
Red	35°	3.2	2	25
Green	35°	8	2.2	30

206659

Colour	Order Code	1+	25+	Price Each 100+	250+	500+
Single						
Red	**121-5762●**	1.16	1.09	1.02	0.80	0.79
Green	**121-5763●**	1.16	1.09	1.02	0.80	0.79
Triple						
Red	**121-5764**	3.02	2.93	2.74	2.17	2.09

3mm/T1 with Spacers and Press-In Pin Mounts, Vertical



Total height above PCB 5313F series=34.3, Overall dia.=5.8
Lead length=3.8 x 0.45 dia.
Viewed with pins down, press-in pin at front cathode is left hand pin

Colour	Lum. Intensity (mcd) @ I_F=10mA	I_F (max.)	V_F (typ)	PIV (max.)	Peak Wavelength (nm)	Mftrs. List No.	Order Code
Green	16	30	2.2	5	562	5313F5	110-5122

206605

Colour				Price Each		
	Order Code	1+	50+	100+	250+	500+
Height Above PCB = 34.3						
Green	**110-5122●**	0.90	0.89	0.82	0.54	0.48

5mm/T1¾

Standard



H = 6.2, W = 6.2, D (body) = 9.0
Lead pitch = 2.54, Lead length = 3.7
Leads - 0.45sq (HLMP3301/3401/3507)
0.64sq 9HLMP3001/3105/3600/3680)
Cathode is right hand pin (viewed from front, pins downward)

Colour	View Angle	Typ Lum Intensity (mcd)	I_F (mA) (max.)	PIV (max.)	Mftrs. List No.	Order Code
Tinted Diffused Lens						
HE Red	60°	7 @ 10mA	25	5	HLMP-3301-F00B2	100-3372
Yellow	60°	8 @ 10mA	20	5	HLMP-3401-E00B2	100-3373
Green	60°	5.2 @ 10mA	25	5	HLMP-3507-D00B2	100-3374

206696

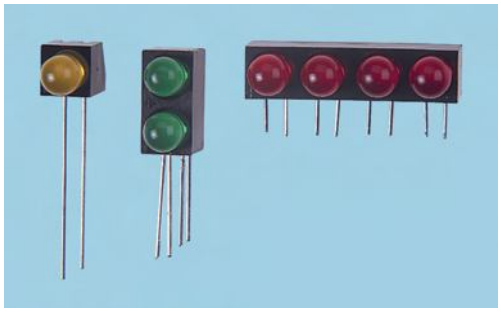
Colour				Price Each		
	Order Code	5+	100+	250+	500+	1K+
HE Red	**100-3372●**	0.320	0.300	0.280	0.260	0.250
Yellow	**100-3373●**	0.320	0.250	0.199	0.156	0.123
Green	**100-3374●**	0.320	0.300	0.280	0.260	0.250

£ € 40,000 PRICES REDUCED

PCB Mounting LEDs - continued

5mm/T1¾

Bi-Level and Quad



Bi-level
H=12.4, W=6.2, D (body)=8.8
Lead pitch=2.54 x 2.54
Leads=12 x 0.5sq

Quad
H=6.2, W=25, D (body)=8.8
Lead pitch=2.54, LED pitch=6.4
Leads=5.0 x 0.5sq

Anode is left hand pin, viewed from front, pins downward.

A range of 5mm LEDs housed in black plastic end-stackable mouldings to give right angle mounting on PCBs. Lenses are tinted diffused. Ideal for status and fault indication.

Colour	View Angle	Typ. Lum. Intensity (mcd)@ I_F max	Mftrs. List No.	Order Code
Red over Green x 4	30	@ =2,81=2,2000	110-000-04-50	973-7375
Red x 4	30	33 @ =2,81=2,2000	108-505-04	973-7383
Bi-level				
Red over Green	30°	33/68 @ 20mcd	110-000-04-50	973-7375
Quad				
Red x 4	30	33 @ 20mcd	108-505-04	973-7383

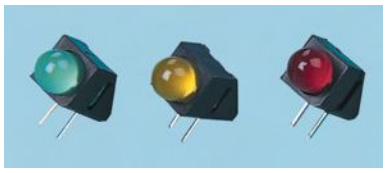
I_F (max)=25mA (all types). PIV=3.0V (max) (all types)

206271

Colour	Order Code	Price Each 1+	50+	100+	500+
Red over Green x 4	**973-7375●**	1.63	1.21	1.01	0.58
Red x 4	**973-7383●**	2.20	1.91	1.65	1.01
Red over Green	**973-7375●**	1.63	1.21	1.01	0.58
Red x 4	**973-7383●**	2.20	1.91	1.65	1.01

5mm/T1¾

Low Current



H=6.2, W=6.2, D=9.0 (body)
Lead Pitch=2.54, Leads=4.1 x 0.45sq.

Flat on body denotes cathode

Colour	View Angle	Typ. Lum. Intensity (mcd)	I_F (mA) (max)	PIV max	Mftrs. List No.	Order Code
Tinted Diffused Lens						
Red	50°	2 @ 2mA	7	5	HLMP-4700-C00B2	100-3377
Yellow	50°	1.8 @ 2mA	7	5	HLMP-4719-A00B2	100-3378
Green	50°	1.8 @ 2mA	7	5	HLMP-4740-A00B2	100-3381

206403

Order Multiple=5 Colour	Order Code	5+	100+	Price Each 250+	500+	1K+
Red	**100-3377●**	0.250	0.240	0.200	0.178	0.146
Yellow	**100-3378●**	0.250	0.240	0.200	0.178	0.146
Green	**100-3381●**	0.250	0.240	0.200	0.178	0.146

5mm/T1¾ - Low Current



H=6.2, W=6.2, D (body)=8.8
Lead pitch=2.54 Leads=21 x 0.5sq.

Colour	View Angle	Typ Lum Intensity (mcd)	I_F (mA) max	Mftrs. List No.	Order Code
Red	30°	1.5	1.8	106-505-01	973-8312
Green	30°	2	1.9	106-514-01	973-8339

221691

Colour	Order Code	Price Each 1+	25+	100+	250+	500+
Red	**973-8312●**	1.72	1.42	1.26	0.89	0.61
Green	**973-8339●**	0.63	0.52	0.46	0.33	0.22

5mm/T1¾ with Spigot Mounting

Standard and Low Current



Viewed from front, pins downward, anode is left pin.

5mm – H=8.0 (body), W=8.0, D=9.0 (body)
Lead pitch=2.54, Leads=3.0 x 0.5sq.
Spigot mounting hole=2.8 dia.
Row spacing from Spigot to lead centres=5.2

Colour	View Angle	Lum Intensity (mcd) @ I_F=20mA (typ)	I_F (mA) (typ)	V_F (max)	PIV (max)	Mftrs. List No.	Order Code
Low Current							
Red	30°	20	2	2.0	5	125-505-01	973-9262
Yellow	30°	32	2	2.1	5	125-511-01	973-9173
Green	30°	32	2	2.2	5	125-514-01	973-9181

High Current
The spigot mounting allows the LEDs to be placed firmly on the PCB.

206531

Order Multiple=5 Colour	Order Code	5+	25+	Price Each 100+	250+	500+
Low Current						
Red	**973-9262●**	0.55	0.48	0.44	0.34	0.30
Yellow	**973-9173●**	0.55	0.48	0.44	0.30	0.28
Green	**973-9181●**	0.55	0.48	0.44	0.30	0.28

3mm/T1 Tri-Level



Viewed from front, pins downward, anode is right hand pin

Tri Level
H=12, W=5.08, D (body)=12.5
LED pitch=3.87
Lead pitch=2.54 x 2.54, Leads=3.2 x 0.5sq

Colour	View Angle	Lum. Intensity (mcd) @ I_F 10mA min	max	I_F (mA) (max)	PIV (max)	Mftrs. List No.	Order Code
Tinted Diffused Lens							
Tri Level							
Red over Yellow over Green	60°	2/5/5	5/12.5/12.5	25/30/25	5	1882.2781	121-5768
Red x 3	60°	2	5	25	5	1882.2221	121-5766

206366

Colour	Order Code	Price Each 1+	25+	100+	250+	500+
Red over Yellow over Green	**121-5768**	3.79	3.45	3.10	1.83	1.74
Red x 3	**121-5766**	3.36	3.16	2.63	1.86	1.75

Superflux LEDs

High Flux



This revolutionary package design allows the lighting designer to reduce the number of LEDs required and provide a more uniform and unique illuminated appearance than with other LED solutions. This package LEDs are designed for high current operation and high flux output application. But the package's design features better thermal management characteristics than other LED solutions. Because of these advantages, this product have many applications. Such as automotive tail, stop and turn signal lamps, and electronic signs etc.

- High flux output and high luminance
- Designed for high current operation
- Uniform color
- Low profile and low thermal resistance
- Packaged in tubes for use with automatic insertion equipment

Luminous Intensity, typ.	VF, typ	Drive Current	PD	Viewing Angle	Mftrs. List No.
2500 mcd	3.4 V	30 mA	120 mW	70	HW321A
1600 mcd	3.4 V	30 mA	120 mW	110	HW331A

490809

Mftrs. List No.	Order Code	Price Each 1+	10+	50+
HW321A	**149-4306●**	0.87	0.68	0.59
HW331A	**149-4476●**	0.87	0.68	0.59

P4 Series



Applications include:
- Advertising Signs
- Automotive Lighting
- Illuminations
- Indicators
- Message Boards
- Traffic

L=7.6, W=7.6

Colour	Viewing Angle	Luminous Flux (typ)	Forward Voltage (max)	Forward Current	Mftrs. List No.	Order Code
HI Red	120°	6lm	3V	70mA	LP379UHR1-C0G-01-00001	164-9021
Amber	120°	7lm	3V	70mA	LP379UYL1-C0G-01-00001	164-9023
Green	120°	2lm	4.4V	30mA	LP379PPG1-C0G-03-00001	164-9020
Blue	120°	0.8lm	4.4V	30mA	LP379PBL1-C0G-03-00001	164-9019
White	130°	1.1lm	4.4V	30mA	LP368PWN1-D0G-00001	164-9015
White	60°	7lm	4.4V	30mA	LP377FWH1-60G-00001	164-9017
White	90°	7lm	4.4V	30mA	LP377FWH1-90G-00001	164-9018

525306

Colour	Mftrs. List No.	Order Code	Price Each 5+	25+	100+
HI Red	LP379UHR1-C0G-01-00001	164-9021	0.26	0.25	0.23
Amber	LP379UYL1-C0G-01-00001	164-9023	0.26	0.25	0.23
Green	LP379PPG1-C0G-03-00001	164-9020	0.42	0.38	0.36
Blue	LP379PBL1-C0G-03-00001	164-9019	0.36	0.34	0.32
White	LP368PWN1-D0G-00001	164-9015	0.50	0.46	0.44
White	LP377FWH1-60G-00001	164-9017	0.47	0.44	0.41
White	LP377FWH1-90G-00001	164-9018	0.47	0.44	0.41

QuadriLED 4-pin Square LEDs

High Performance - Flat and Domed Lens versions



QuadriLED 4-pin square rugged package construction makes these devices ideally suited to arduous environmental conditions. The two lens options add to the diversity of potential applications including displays, backlighting and illumination.

Features:

- 7.6mm square body with flat or lensed options
- Flat lens QuadriLED has 115°C viewing angle in both planes
- Available in white, red, yellow, green, blue, RGB and bi-colour with1-3 die variants
- Device construction is ideally suited to high current operation
- Manufactured with copper leadframes for enhanced thermal conductivity
- Ultra wide angle option ideal for backlighting and switch top illumination

Mftrs. List No.	Colour	Wavelength Dom. (nm)	Lum Intensity @ If (mcd)	(mA)	No. of die	Viewing angle (Deg.)
Flat						
FNL-P115B11TWCCI	Blue	624	540	50	1	115
FCL-PH115Y1512WCCI	Yellow	589	540	50	1	115
FCL-PH115G16WCCI	Green	527	480	35	1	115
FCL-PH115B17WCCI	Blue	470	220	35	1	115
FCL-P115R078G03WCCI	Red, Green	624/525	140/140	50/35	2	115
FNL-P115R078TWCCI	Red	624	1030	45	3	115
FCL-PH115R2112WCCI	Red	624	540	50	3	115
FSL-P115W12TWCCI	White	0.31/0.32	1080	30	3	115
FCL-P115R078G03B12WCCI	R, G, B	624/525/470	140/140/140	50/35/35	3	115
Small Domed lens						
FCL-PH65W15WCCI	White	0.31/0.32	1350	35	1	65
Large Domed lens						
FNL-P5DR078TWCCI	Red / Yellow	624/589	3800	45	3	115
FNL-P5DY048TWCCI	Yellow	527	3800	45	3	115
FNL-P5DG16TWCCI	Green	527	4100	30	3	115
FNL-P5DB11TWCCI	Blue	460	1600	30	3	115
FCL-P5DR078G03B12WCCI	R, G, B	624/525/470	400/400/260	50/35/35	3	115

383702

Mftrs. List No.	Order Code	Price Each 1+	10+	25+	50+
Flat					
FNL-P115B11TWCCI	873-8742	2.63	2.35	2.15	1.96
FCL-PH115Y1512WCCI	873-8840	0.41	0.36	0.33	0.31
FCL-PH115G16WCCI	873-8858	0.75	0.67	0.60	0.55
FCL-PH115B17WCCI	873-8874	1.20	1.06	0.97	0.89
FCL-P115R078G03WCCI	873-8785	1.11	0.99	0.91	0.84
FNL-P115R078TWCCI	873-8688	0.58	0.52	0.48	0.44
FCL-PH115R2112WCCI	873-8831	0.41	0.36	0.33	0.31
FSL-P115W12TWCCI	873-8769	2.63	2.35	2.15	1.96
FCL-P115R078G03B12WCCI	873-8661	2.00	1.78	1.62	1.49
Small Domed lens					
FCL-PH65W15WCCI	873-8947	1.28	1.13	1.04	0.95
Large Domed lens					
FNL-P5DR078TWCCI	873-8670	0.58	0.52	0.48	0.44
FNL-P5DY048TWCCI	873-8696	0.43	0.38	0.35	0.32
FNL-P5DG16TWCCI	873-8718	2.63	2.35	2.15	1.96
FNL-P5DB11TWCCI	873-8734	2.06	1.84	1.69	1.54
FCL-P5DR078G03B12WCCI	873-8653	2.00	1.78	1.62	1.49

4-Pin LED Lamp

7.6mm Square - Mono-colour Type



- Low-profile lens
- Fast responce time
- Low power consumption
- Compatible with automatic placement equipment
- Compatible with infrared and vapor phase reflow solder process

H (Body) = 2.5, H (Lens) = 1.5, W = 7.6, D = 7.6mm

Material	Chip Colour	λD Typ. (nm)	Lens Colour	Luminous Intensity (Typ. mlm)	Viewing Angle	Mftrs List No.	Order Code
AlInGaP	Amber	591	Water Clear	5000	100°	OVFSAAC8	149-7981
InGaN	Blue	470	Water Clear	850	60°	OVFSB6C8	149-7982
InGaN	Green	527	Water Clear	2500	60°	OVFSG6C8	149-7983
AlInGaP	Red / Orange	618	Water Clear	4500	40°	OVFSQ4C8	149-7985
AlInGaP	Red	624	Water Clear	4500	100°	OVFSRAC8	149-7986
InGaN	White		Water Clear	1200	60°	OVFSW6C8	149-7987

497667

Colour	Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+
Amber	OVFSAAC8	149-7981	0.470	0.240	0.230	0.220
Blue	OVFSB6C8	149-7982	0.730	0.360	0.340	0.330
Green	OVFSG6C8	149-7983	0.970	0.490	0.450	0.440
Red / Orange	OVFSQ4C8	149-7985	0.290	0.260	0.210	0.182
Red	OVFSRAC8	149-7986	0.430	0.220	0.200	0.196
White	OVFSW6C8	149-7987	1.080	0.530	0.500	0.480

Telux™ LEDs 0.3 to 5 Lumen

7.62mm Square, High Temperature Package



H = 2.85, W = 7.62, D = 7.62mm

Features:

- High Luminance
- High Power Dissipation
- High Operating Temperature
- High ESD withstand voltage

Applications:

- Exterior Lighting
- Automotive Lighting
- Traffic Signs and Signals
- Replacement Incandescent lamps

The TELUX™ series is a clear, non-diffused LED for high-end applications where supreme luminous flux is required.
It is designed in an industry standard 7.62mm square package utilizing highly developed (AS) AlInGaP and InGaN technologies.
The 4-pin Through Hole Technology design allows highly efficient heat dissipation.

Colour	Luminous Flux (lm)	Dominant Wavelength λ_D	Angle of Half Intensity	V_F (V)	I_F (mA)	Order Code	Mftrs. List No.
Red	3.2	615nm	55°	2.7	70	831-0980	TLWR9000.
Red	3.0	615nm	45°	2.7	70	831-0971	TLWR8900.
Red	3.0	615nm	30°	2.67	70	831-0963	TLWR8600.
Red	2.1	618nm	45°	2.67	70	831-0955	TLWR7900.
Red	2.1	618nm	30°	2.67	70	831-0947	TLWR7600.
Orange-Soft	2.1	605nm	30°	2.67	70	831-0920	TLWO7600.
Orange-Soft	1.4	592nm	45°	2.67	70	831-0939	TLWO7900.
Yellow	3.0	590nm	45°	2.7	70	831-1226	TLWY8900.
Yellow	3.0	590nm	30°	2.67	70	831-1218	TLWY8600.
Yellow	2.1	605nm	45°	2.67	70	831-1200	TLWY7900.
Yellow	1.4	592nm	30°	2.67	70	831-1196	TLWY7600.
Green	2.0	523nm	30°	5	70	831-1099	TLWTG8600.
Green	0.9	523nm	30°	4.7	50	831-1072	TLWTG7600.
Blue / Green	1.3	505nm	45°	5	50	831-0912	TLWBG8900.
Blue / Green	0.7	505nm	45°	2.67	50	831-0904	TLWBG7900.
Blue	1.3	505nm	30°	5.0	50	831-0882	TLWB8600.
Blue	0.33	470nm	30°	4.7	50	831-0866	TLWB7600.
White	3.6	5500K*	30°	5.2	50	132-8373	VLWW9601
White	2.2	5500K*	45°	5.2	50	132-8374	VLWW9900
White	2.0	5500K*	30°	5.2	50	831-1161	TLWW9600.
White	2.0	5500K*	45°	5.2	50	831-1170	TLWW9900.
White	0.65	5500K*	30°	5.1	50	831-1110	TLWW7600.

* Colour Temperature

458045

Colour	Order Code	Price Each 5+	25+	100+	250+
60° Viewing Angle					
Red	831-0947	0.220	0.177	0.146	0.123
Red	831-0963	0.270	0.210	0.178	0.128
White	132-8373	0.770	0.570	0.500	0.460
Yellow	831-1196	0.220	0.178	0.151	0.132
Orange-Soft	831-0920	0.370	0.290	0.240	0.163
Green	831-1072	1.030	0.790	0.630	0.440
Green	831-1099	0.910	0.690	0.550	0.430
Blue	831-0866	0.880	0.670	0.550	0.380
Blue	831-0882	1.100	0.840	0.690	0.470
White	831-1110	0.820	0.650	0.550	0.440
White	831-1161	1.040	0.810	0.640	0.490
Yellow	831-1218	0.430	0.350	0.270	0.190
90° Viewing Angle					
Red	831-0955	0.380	0.300	0.230	0.176
Red	831-0971	0.290	0.220	0.174	0.119
Orange-Soft	831-0939	0.370	0.290	0.240	0.163
Yellow	831-1200	0.290	0.220	0.174	0.136
Yellow	831-1226	0.450	0.370	0.280	0.196
Blue / Green	831-0904	0.780	0.590	0.470	0.340
Blue / Green	831-0912	1.000	0.770	0.630	0.450
White	831-1170	1.040	0.800	0.640	0.450
White	132-8374	0.960	0.650	0.520	0.410
110° Viewing Angle					
Red	831-0980	0.400	0.310	0.260	0.177

RL Re-reeling available

Superflux LEDs - continued

SuperFlux LEDs

LUMILEDS™ LIGHT FROM SILICON VALLEY



H=2.5mm, W=7.62mm, D=7.62mm

Applications:
- Automotive Lighting
- Electronic Signs and Signalling
- Speciality Lighting

Features:
- High Luminance
- Low Power Consumption
- Low Profile

This revolutionary package design allows the lighting designer to reduce the number of LEDs required and provide a more uniform and unique illuminated appearance than with other LED solutions. This is possible through the efficient optical package design and high-current capabilities.Tha low profile package can be easily coupled with reflectors or lenses to efficiently distribute light and provide the desired lit appearance.The product range employs the brightest red, red-orange, amber, blue, cyan and green materials available.

Parameter	Green	Red/Red-Orange/Amber
DC Forward Current (mA)	50	70
Power Dissipation (mW)	233	221
Reverse Voltage (V)	0.55	10
Operating Temp. Range (°C)		-40 to +100
Storage Temp. Range (°C)		-55 to +100
LED Junction Temp.		125°C
Solder Temperature		260°C*

* For 5 Seconds

Colour	Vf (V)	Vr (V)	Dominant Wavelength λD	Luminous Flux (lm)	Viewing Angle	Capacitance (pF)	Thermal Resistance (°C/W)	Speed of Response (ns)
Red	2.5	20	640nm	0.6	70°	40	125	20
Red / Orange	2.5	20	626nm	0.6	70°	40	125	20
Amber	2.6	20	596nm	0.6	70°	40	125	20
Green	3.9	0.65	520nm	0.9	90°	1900	130	20

248834

Colour	Mftrs. List No.	Order Code	Price Each 1+	10+	50+
Red	HPWT-MD00-00000	**121-9889●**	0.36	0.35	0.31
Red / Orange	HPWT-MH00-00000	**121-9890●**	0.36	0.35	0.31
Amber	HPWT-ML00-00000	**121-9891●**	0.27	0.25	0.23
Green	HPWN-MG00-00000	**121-9888●**	1.08	1.01	0.91

Surface Mount LED Array

High Luminous Efficacy Power LedFlex™ Emitter

15W

LedEngin, Inc.

New



LED / Lamp Size 7 x 7mm
Forward Current 1.5A
Operating Temperature -40°C to +125°C

- General lighting
- Museum lighting
- Retail and display lighting
- Hospitality lighting
- Accent and task lighting
- Architectural detail lighting

Colour	Viewing Angle	Luminous Intensity (typ)	Forward Voltage (max)	Mftrs. List No.	Order Code
Red	90°	377lm	11.4V	LZ4-00R115	167-8984
Amber	95°	265lm	12V	LZ4-00A115	167-8969
Green	95°	661lm	15.4V	LZ4-00G115	167-8976
Blue	110°	205lm	15.1V	LZ4-00B215	167-8971
Cool White	105°	703lm	15.1V	LZ4-00CW15	167-8973
Neutral White	–	710lm	–	LZ4-00NW15	167-8982
Warm White	105°	500lm	15.1V	LZ4-00WW15	167-8989

528618

Colour	Mftrs. List No.	Order Code	Price Each 1+	10+	50+	100+
Red	LZ4-00R115	**167-8984●** RL	19.83	18.55	– –	– –
Amber	LZ4-00A115	**167-8969●** RL	28.75	26.14	24.78	23.19
Green	LZ4-00G115	**167-8976●** RL	27.76	25.97	– –	– –
Blue	LZ4-00B215	**167-8971●** RL	22.80	21.33	– –	– –
Cool White	LZ4-00CW15	**167-8973●** RL	22.80	21.33	20.26	19.25
Neutral White	LZ4-00NW15	**167-8982●** RL	22.80	21.33	20.26	19.25
Warm White	LZ4-00WW15	**167-8989●** RL	22.80	21.33	20.26	19.25

LED Strips

Flexible White

OMC Applying the technology of light



These flexible strips are 612mm in length and contain 48 ultra-white LED's. There are cut-points after every 3 LED's and solder points after each LED. Two versions are available with either top or side emission.

496716

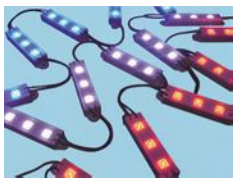
Description	Mftrs. List No.	Order Code	1+	10+
LED Strip - Side Illumination	SFSW1	**122-6703●**	23.60	17.09
LED Strip - Top Illumination	HLLSPLFHW3-012	**122-6698●**	17.64	12.76

LED Module Series

IP67 Rated

New

OMC Applying the technology of light



A range of high performance, screw-mountable 12V LED modules, providing an easy and cost-effective solution for the application of LED lighting to inductrial, architechtural, signage and many other illumination and lighting applications.

L=92, W=18, H=11.5

Viewing Angle 120° Forward Voltage (max) 12V
Forward Current 20mA Operating Temperature -35°C to +65°C

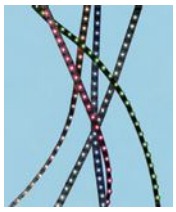
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Colour	Light Output	Mftrs. List No.	Order Code	1+	10+	25+	100+
Red	14lm	LMMR1	**168-4442●**	2.51	1.76	1.60	1.47
Green	37lm	LMMG1	**168-4443●**	3.63	2.54	2.31	2.12
Blue	12lm	LMMB1	**168-4444●**	3.23	2.26	2.05	1.88
Amber	30lm	LMMY1	**168-4445●**	2.66	1.86	1.69	1.55
White	40lm	LMMW1	**168-4446●**	3.40	2.38	2.16	1.98

LED Arrays

Flexible - Self-adhesive back

CML INNOVATIVE TECHNOLOGIES WHERE INNOVATION COMES TO LIGHT



Colour	Viewing Angle (°)	Size Length/Width	Mftrs List No.	Order Code
10V Input				
Red	120	364 x 10mm	LM-FB26R	122-8812
Blue	120	364 x 10mm	LM-FB26B	122-8815
12V Input				
Red	120	364 x 10mm	LM-FB26R-12	122-8817
Blue	120	364 x 10mm	LM-FB26B-12	122-8820
R, G, B	100	400 x 15mm	LM-FB20F-12	122-8823

- High quality LED's
- Easy handling
- Compact construction
- Long life span
- Low maintenance costs
- Constant current regulation
- No IR or UV radiation

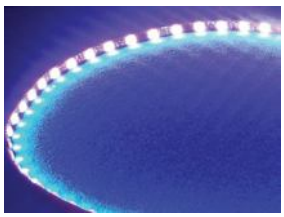
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Colour	Mftrs. List No.	Order Code	Price Each 1+	5+	10+	25+
Red	LM-FB26R	**122-8812●**	12.94	11.15	9.95	9.61
Blue	LM-FB26B	**122-8815●**	14.85	12.82	11.42	10.92
Red	LM-FB26R-12	**122-8817●**	12.94	11.15	9.95	9.52
Blue	LM-FB26B-12	**122-8820●**	14.85	12.82	11.42	11.03
R, G, B	LM-FB20F-12	**122-8823●**	118.58	102.22	91.21	87.19

Flexistrip™

New

OMC Applying the technology of light



High preformance, extremely versatile DC flexible LED strip designed for industrial , architechtural, signage and many other illumination and lighting applications.

L=200, W=10, H=2.1

Viewing Angle 120° Forward Voltage (max) 24V
Forward Current 20mA Operating Temperature -33°C to +55°C

528693

Colour	Mftrs. List No.	Order Code	1+	10+	50+	100+
RGB	FFSRGB2	**168-4447●**	19.95	14.51	13.30	12.28

Power LED's

0.5W PLCC-4 Surface Mount LED Indicators

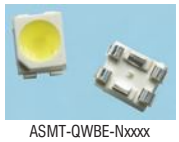
Single Colour

AVAGO TECHNOLOGIES

New



ASMT-QxB2-Fxxxx



ASMT-QWBE-Nxxxx



ASMT-QYBE-Nxxxx

L=3.2, W=2.8, H=1.9
Viewing angle=120°

Colour	Luminous Flux Min (mcd)	Typ (mcd)	Max (mcd)	Current If (mA)	Voltage Vf Typ (V)	Max (V)	Dominant Wavelength Typ (mnm)	Mftrs. List No.	Order Code
Amber	9	11.4	15	150	2.7	3.25	594.5	ASMT-QAB2-FDE0E	155-4791
Red-Orange	11.5	14	19.5	150	2.7	3.25	617	ASMT-QHB2-FEF0E	155-4792
Red	7	9.8	11.5	150	3.1	3.55	624	ASMT-QRB2-FCD0E	155-4793
Cool White	15	19.5	33	150	3.6	4.1	-	ASMT-QWBE-NFH0E	155-4794
Cool White	15	19.5	33	150	3.6	4.1	-	ASMT-QWBE-NFHCE	161-8715
Cool White	15	19.5	33	150	3.6	4.1	-	ASMT-QWBE-NFHDE	161-8716
Warm White	11.5	18	25.5	150	3.6	4.1	-	ASMT-QYBE-NEG0E	155-4795
Blue	3.4	4.8	7	150	3.6	4.1	464.5	ASMT-QBBE-N0B0E	155-4796
Green	11.5	17	25.5	150	3.6	4.1	522	ASMT-QGBE-NEG0E	155-4798

RL Re-reeling available

Colour	Order Code	Price Each 1+	25+	100+	250+	500+
Amber	SMD 155-4791● RL	0.47	0.37	0.31	0.27	0.24
Red-Orange	SMD 155-4792● RL	0.47	0.37	0.31	0.27	0.24
Red	SMD 155-4793● RL	0.47	0.37	0.31	0.27	0.24
Cool White	SMD 155-4794● RL	1.00	0.78	0.64	0.55	0.49
Cool White	SMD 161-8715● RL	1.09	0.77	0.62	0.57	– –
Cool White	SMD 161-8716● RL	1.09	0.77	0.62	0.57	– –
Warm White	SMD 155-4795● RL	1.04	0.81	0.66	0.58	0.52
Blue	SMD 155-4796● RL	1.00	0.78	0.64	0.55	0.49
Green	SMD 155-4798● RL	1.32	1.02	0.84	0.72	0.64

Tricolour - RGB



ASMT-QTB0-0AA02



ASMT-QTC0-0AA02

Colour	Viewing Angle	Luminous Intensity Min (mcd)	Typ (mcd)	Current If (mA)	Voltage Vf Typ (V)	Wavelength Typ (nm)	Mftrs. List No.	Order Code
Red	120°	450	620	50	2.1	621	ASMT-QTB0-0AA02	155-4799
Green	120°	900	1200	30	3.2	528		
Blue	120°	224	280	30	3.2	470		
Red	115°	180	315	50	2.1	621	ASMT-QTC0-0AA02	155-4800
Green	115°	285	470	30	3.2	528		
Blue	115°	112.5	140	30	3.2	470		

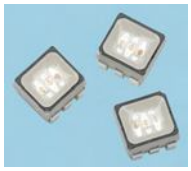
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Colour	Order Code	Price Each 1+	25+	100+	250+	500+
Red, Green, Blue	SMD 155-4799● RL	0.92	0.71	0.59	0.50	0.45
Red, Green, Blue	SMD 155-4800● RL	0.99	0.77	0.63	0.55	0.48

0.35W PLCC-6 RGB LED

AVAGO TECHNOLOGIES

New



H=4.4, W=4.4, D=3.5

- Industry Standard PLCC-6 package (Plastic Leaded Chip Carrier) with individual addressable pin-out for higher flexibility of driving configuration
- High reliability LED package with silicone encapsulation
- Wide viewing angle at 115°
- Compatible with reflow soldering process
- Applications include indoor and outdoor full color display

Viewing Angle 115° Reverse Voltage 4V Operating Temperature -40°C to +110°C

Colour	Forward Current	Optical Efficiency	Luminous Intensity (min)	Luminous Intensity (typ)	Power Dissipation	Forward Voltage (typ)	Dominant Wavelength (typ)
Red	50mA	40lm/W	450mcd	648mcd	120mW	2.1V	621nm
Green	30mA	50lm/W	900mcd	1243mcd	117mW	3.2V	528nm
Blue	30mA	10lm/W	224mcd	238mcd	117mW	3.2V	470nm

515785

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+
ASMT-YTB0-0AA02	SMD 161-8713● RL	0.95	0.66	0.54	0.48

1W Power LEDs

AVAGO TECHNOLOGIES

New



L=7.4, W=7.4, D=4.1

This 1W Power LED Light Source is a high performance energy efficient device which can handle high thermal and high driving current. The exposed pad design enables excellent heat transfer from the package to the motherboard.

- Energy efficient
- Compatible with reflow soldering
- process
- High current operation
- Long operation life
- Silicone encapsulation
- Non-ESD sensitive (threshold > 16 kV)
- Applications include architectural lighting, channel backlighting, contour lighting and retail display lighting
- Viewing angle = 130°
- Forward current = 350mA
- Operating temperature = -40°C to +120°C

Colour	λ peak / (Colour Temp min)	Luminous Intensity (typ)	Power Dissipation	Mftrs. List No.
Red	635nm	43mcd	1085mW	ASMT-AR00-AQR00
Amber	598nm	43mcd	1085mW	ASMT-AA00-AQR00
Green	519nm	65mcd	1400mW	ASMT-AG00-NRS00
Blue	460nm	15lm	1400mW	ASMT-AB00-NKM00
Neutral White	(3500K)	65mcd	1400mW	ASMT-AN00-NRS00
Cool White	(4500K)	65mcd	1400mW	ASMT-AW00-NRS00
Warm White	(2700K)	60mcd	1400mW	ASMT-AY00-NRS00

528928

Colour	Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+
Red	ASMT-AR00-AQR00	168-9386●	2.07	1.66	1.51	1.38
Amber	ASMT-AA00-AQR00	168-9382●	2.07	1.66	1.51	1.38
Green	ASMT-AG00-NRS00	168-9384●	3.29	2.63	2.39	2.20
Blue	ASMT-AB00-NKM00	168-9383●	2.07	1.66	1.51	1.38
Neutral White	ASMT-AN00-NRS00	168-9385●	2.15	1.72	1.57	1.44
Cool White	ASMT-AW00-NRS00	168-9387●	2.15	1.72	1.57	1.44
Warm White	ASMT-AY00-NRS00	168-9388●	2.15	1.72	1.57	1.44

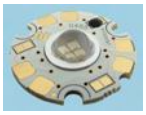
Atlas Power LED Solutions

lamina Bright Lights. Bright Ideas.™

New



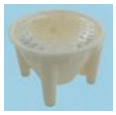
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149-8224
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149-8229
149-8231

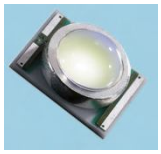
Colour	Luminous Flux (min)	Luminous Flux (typ)	Wavelength (min)	Wavelength (max)	Forward Current	Voltage (typ)	Power (typ)	Mftrs. List No.
Red	69lm	109lm	619nm	629nm	700mA	4.6V	3.2W	NT-41A0-0482
Amber	104lm	131lm	584nm	594nm	700mA	5.1V	3.6W	NT-41E0-0483
Blue	50lm	63lm	460nm	470nm	700mA	6.9V	4.8W	NT-42B1-0484
Green	172lm	216lm	515nm	535nm	700mA	6.9V	4.8W	NT-42C1-0485

498544

Colour	Mftrs. List No.	Order Code	Price Each 1+	10+	50+
Red	NT-41A0-0482	149-8222●	13.96	12.69	11.63
Amber	NT-41E0-0483	149-8223●	13.96	12.69	11.63
Blue	NT-42B1-0484	149-8224●	16.57	15.07	13.81
Green	NT-42C1-0485	149-8225●	16.57	15.07	13.81
Lenses					
For use with:					
Atlas RGB	OP-4LN1-0457	149-8226●	8.71	7.92	7.26
Atlas White	OP-4LN2-0492	149-8227●	8.71	7.92	7.26
Atlas RGB	OP-4FM1-0442	149-8229●	5.01	3.35	2.91
Atlas White / RGB	OP-4FW1-0441	149-8231●	5.01	3.35	2.91

4W XLamp™ XR-E Series

CREE



H=6.8, W=9, L=6.46

Xlamp LEDs combine the brightness of power LED chips with a rugged package capable of operating up to 4 watts.Class leading efficieint brightness and providing a reflow-solderable design that is optimised for ease of use and thermal management. Lighting applications featuring Xlamp LEDs maximise light output and increase design flexibility, while minimising environmental impact.

Applications include:
Portable lighting and flashlights, outdoor and industrial, signaling, architectural, landscaping and entertainment/advertising installations.

Luminous Flux (lm) / (mW)*	Viewing Angle (°)	Colour Temp / λ_D* (K) / (nm)* Min	Max	Voltage, V_F max (V)	Current, I_F max (A)	Mftrs. List No.	Order Code
Cool White							
62	90	5000	10000	3.5	1	XREWHT-L1-0000-00602	144-0707
67.2	90	5000	10000	3.5	1	XREWHT-L1-0000-00701	144-0708
67.2	90	5000	10000	3.5	1	XREWHT-L1-0000-00702	144-0709
67.2	90	5000	10000	3.5	0.7	XREWHT-L1-0000-007F5	144-0721
73.9	90	5000	10000	3.5	1	XREWHT-L1-0000-00802	144-0714
73.9	90	5000	10000	3.5	0.7	XREWHT-L1-0000-00801	134-7816
80	90	5000	10000	3.7	1	XREWHT-L1-0000-00902	157-4559
100	90	5000	10000	3.5	1	XREWHT-L1-0000-00C01	144-0715
100	90	5000	10000	3.7	1	XREWHT-L1-0000-00C02	157-4560
107	90	5000	10000	3.7	1	XREWHT-L1-0000-00D01	157-4561
—	90	—	—	—	—	XREWHT-L1-R250-00C01	164-9040
Neutral White							
62	90	3700	10000	3.5	0.7	XREWHT-L1-0000-006E6	144-0723
73	90	3700	5000	3.7	1	XREWHT-L1-0000-008E4	157-4563
87	90	3700	5000	3.7	1	XREWHT-L1-0000-00AE4	157-4564
Warm White							
51	90	2600	3700	3.5	0.7	XREWHT-L1-0000-004E7	157-4566
56	90	2600	3700	3.5	0.7	XREWHT-L1-0000-005E7	157-4567
73	90	2600	3700	3.5	0.7	XREWHT-L1-0000-008E7	157-4568
—	90	—	—	—	—	XREWHT-L1-R250-008E7	164-9041
White							
—	90	—	—	—	—	XREWHT-L1-R250-009E5	164-9042
Green							
67	100*	520*	535*	3.5	0.7	XREGRN-L1-0000-00P01	157-4558
—	100*	—	—	—	—	XREGRN-L1-R250-00P01	164-9039
Blue							
23.5	100	465*	485*	3.5	0.7	XREBLU-L1-0000-00J03	144-0716
30.6	100	465*	485*	3.5	0.7	XREBLU-L1-0000-00K01	157-4557
—	100	—	—	—	—	XREBLU-L1-R250-00K01	164-9038
Royal Blue							
250*	90	450*	465*	3.5	1	XREROY-L1-0000-00701	144-0717
300*	100	450*	465*	3.5	0.7	XREROY-L1-0000-00801	157-4556

481531

Luminous Flux (lm)	Mftrs. List No.	Order Code	Price Each 1+	25+	100+
Cool White					
62	XREWHT-L1-0000-00602	SMD 144-0707● RL	4.06	3.54	3.26
67.2	XREWHT-L1-0000-00701	SMD 144-0708● RL	3.70	3.23	2.97
67.2	XREWHT-L1-0000-00702	SMD 144-0709● RL	4.20	3.66	3.37
67.2	XREWHT-L1-0000-007F5	SMD 144-0721● RL	4.39	3.82	3.53
73.9	XREWHT-L1-0000-00802	SMD 144-0714● RL	4.75	4.14	3.81
73.9	XREWHT-L1-0000-00801	SMD 134-7816●	4.75	4.51	4.14
80	XREWHT-L1-0000-00902	NEW SMD 157-4559● RL	4.76	4.10	3.75
100	XREWHT-L1-0000-00C01	SMD 144-0715● RL	5.47	4.77	4.40
100	XREWHT-L1-0000-00C02	NEW SMD 157-4560● RL	4.83	4.16	3.80
107	XREWHT-L1-0000-00D01	NEW SMD 157-4561● RL	5.74	4.94	4.52
—	XREWHT-L1-R250-00C01	NEW SMD 164-9040● RL	5.25	4.32	3.94
Neutral White					
62	XREWHT-L1-0000-006E6	SMD 144-0723● RL	4.08	3.55	3.28
73	XREWHT-L1-0000-008E4	NEW SMD 157-4563● RL	4.30	3.70	3.38
87	XREWHT-L1-0000-00AE4	NEW SMD 157-4564● RL	5.21	4.49	4.11

RL Re-reeling available

Farnell

Power LED's - continued

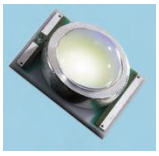
4W XLamp™ XR-E Series - continued

Luminous Flux (lm)	Mftrs. List No.	Order Code	Price Each 1+	25+	100+
Warm White					
51	XREWHT-L1-0000-004E7	NEW SMD 157-4566● RL	3.44	2.97	2.71
56	XREWHT-L1-0000-005E7	NEW SMD 157-4567● RL	3.51	3.01	2.76
73	XREWHT-L1-0000-008E7	NEW SMD 157-4568● RL	5.09	4.38	4.01
—	XREWHT-L1-R250-008E7	NEW SMD 164-9041● RL	4.70	3.88	3.53
White					
—	XREWHT-L1-R250-009E5	NEW SMD 164-9042● RL	4.67	3.85	3.50
Green					
67	XREGRN-L1-0000-00P01	NEW SMD 157-4558● RL	3.96	3.41	3.13
—	XREGRN-L1-R250-00P01	NEW SMD 164-9039● RL	3.87	3.18	2.90
Blue					
23.5	XREBLU-L1-0000-00J03	SMD 144-0716● RL	4.54	3.95	3.64
30.6	XREBLU-L1-0000-00K01	NEW SMD 157-4557● RL	5.43	4.67	4.28
—	XREBLU-L1-R250-00K01	NEW SMD 164-9038● RL	5.10	4.20	3.82
Royal Blue					
250	XREROY-L1-0000-00701	SMD 144-0717● RL	4.08	3.55	3.28
300	XREROY-L1-0000-00801	NEW SMD 157-4556● RL	4.36	3.76	3.43

Compare **Power LED Drivers** on page 857

1W XLamp™ XR & XRC Series

CREE



Xlamp LEDs combine the brightness of power LED chips with a rugged package capable of operating in excess of 1W.Class leading efficient brightness and providing a reflow-solderable design that is optimised for ease of use and thermal management. Lighting applications featuring Xlamp LEDs maximise light output and increase design flexibility, while minimising environmental impact.

H=6.8, W=9, L=6.46

- Surface-mount technology - reflow solderable.
- Wide range of Colours: White, Cool White, Neutral White, Warm White, Royal Blue, Blue, Cyan, Green, Amber, Red-Orange and Red.
- Low operating forward voltage.
- Integrated Lens.
- Small footprint - 7 x 9mm.
- ESD > 2000V
- Lumen Maintenance of greater than 70% on average after 50,000 hours

Applications include:
Portable lighting and flashlights, outdoor and industrial, signaling, architectural, landscaping and entertainment/advertising installations.

Luminous Flux (lm) / (mW)*	Viewing Angle (°)	Colour Temp / λ_D* (K) / (nm)* Min	Max	Voltage, V_F (V)	Current, I_F (A)	Mftrs. List No.	Order Code
Cool White							
51.7	90	5000	10000	3.6	500	XRCWHT-L1-0000-00401	157-4569
62	90	5000	10000	3.6	500	XRCWHT-L1-0000-00601	157-4570
67.2	90	5000	10000	3.6	500	XRCWHT-L1-0000-00701	157-4571
45.7	90	5000	10000	3.6	500	XRCWHT-L1-0000-00301	144-0712
56.8	90	5000	10000	3.6	500	XRCWHT-L1-0000-00501	144-0713
Neutral White							
45.7	90	3700	5000	3.6	500	XRCWHT-L1-0000-003E4	157-4572
51.7	90	3700	5000	3.6	500	XRCWHT-L1-0000-004E4	157-4573
Warm White							
45.7	90	2600	3700	3.6	500	XRCWHT-L1-0000-003E7	157-4574
51.7	90	2600	3700	3.6	500	XRCWHT-L1-0000-004E8	144-0722
White							
39.8	100	2700	10000	4	700	XR7090WT-G1-0001	144-0710
51.7	100	2700	10000	4	700	XR7090WT-G1-0003	144-0711
56.8	90	3700	5000	3.6	500	XRCWHT-L1-0000-005F5	144-0719
—	90	—	—	4	500	XRCWHT-L1-R250-005E7	164-9034
—	90	—	—	4	500	XRCWHT-L1-R250-006E5	164-9035
—	90	—	—	4	500	XRCWHT-L1-R250-00901	164-9037
Red							
40	100	620*	635*	2.25	700	XR7090-RD-L1-0001	134-7807
—	90	—	—	—	700	XRCRED-L1-R250-00M01	164-9033
Amber							
45	100	585*	595*	2.25	350	XR7090-RO-L1-0001	134-7808
Red / Orange							
49	100	610*	620*	2.25	700	XR7090-AM-L1-0001	134-7811
Green							
52	100	520*	535*	3.4	700	XR7090-GR-L1-0001	134-7812
—	100	—	—	—	500	XRCGRN-L1-R250-00N01	164-9032
Cyan							
45	100	500*	510*	3.4	700	XR7090-CN-L1-0001	134-7813
Blue							
15	100	465*	475*	3.4	700	XR7090-BL-L1-0001	134-7814
—	100	—	—	—	500	XRCBLU-L1-R250-00H01	164-9031
Royal Blue							
255*	100	465*	465*	3.4	700	XR7090-RY-L1-0001	134-7815

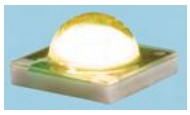
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Luminous Flux (lm)	Mftrs. List No.	Order Code	Price Each 1+	25+	100+
Cool White					
51.7	XRCWHT-L1-0000-00401	NEW SMD 157-4569● RL	2.69	2.31	2.11
62	XRCWHT-L1-0000-00601	NEW SMD 157-4570● RL	3.13	2.69	2.46
67.2	XRCWHT-L1-0000-00701	NEW SMD 157-4571● RL	3.44	2.97	2.71
45.7	XRCWHT-L1-0000-00301	SMD 144-0712● RL	2.62	2.28	2.11
56.8	XRCWHT-L1-0000-00501	SMD 144-0713● RL	3.33	2.90	2.67
Neutral White					
45.7	XRCWHT-L1-0000-003E4	NEW SMD 157-4572● RL	2.70	2.32	2.12
51.7	XRCWHT-L1-0000-004E4	NEW SMD 157-4573● RL	2.98	2.56	2.34
Warm White					
45.7	XRCWHT-L1-0000-003E7	NEW SMD 157-4574● RL	2.70	2.32	2.12
51.7	XRCWHT-L1-0000-004E8	SMD 144-0722● RL	3.36	2.92	2.70
White					
39.8	XR7090WT-G1-0001	SMD 144-0710● RL	3.06	2.66	2.46
51.7	XR7090WT-G1-0003	SMD 144-0711● RL	3.64	3.17	2.92
56.8	XRCWHT-L1-0000-005F5	SMD 144-0719● RL	3.36	2.92	2.70
—	XRCWHT-L1-R250-005E7	NEW SMD 164-9034● RL	3.79	3.13	2.84
—	XRCWHT-L1-R250-006E5	NEW SMD 164-9035● RL	3.92	3.22	2.93
—	XRCWHT-L1-R250-00901	NEW SMD 164-9037● RL	3.44	2.83	2.58
Red					
40	XR7090-RD-L1-0001	SMD 134-7807● RL	3.16	2.66	2.45
—	XRCRED-L1-R250-00M01	NEW SMD 164-9033● RL	2.92	2.40	2.19
Amber					
45	XR7090-RO-L1-0001	SMD 134-7808● RL	3.16	2.66	2.45
Red / Orange					
49	XR7090-AM-L1-0001	SMD 134-7811● RL	3.16	2.66	2.45
Green					
52	XR7090-GR-L1-0001	SMD 134-7812● RL	3.55	3.29	3.02
—	XRCGRN-L1-R250-00N01	NEW SMD 164-9032● RL	3.37	2.78	2.53
Cyan					
45	XR7090-CN-L1-0001	SMD 134-7813● RL	3.55	3.29	3.02
Blue					
15	XR7090-BL-L1-0001	SMD 134-7814● RL	3.55	3.38	3.11
—	XRCBLU-L1-R250-00H01	NEW SMD 164-9031● RL	3.37	2.78	2.53
Royal Blue					
	XR7090-RY-L1-0001	SMD 134-7815● RL	3.55	3.38	3.11
Optics					
10199	1.4mm offset focus tight	134-7827	0.96	0.90	0.84
10200	1.4mm offset focus narrow, frosted	134-7828	0.96	0.90	0.84
10203	1.4mm offset focus elliptical	134-7829	1.24	1.13	1.04
10206	1.4mm offset focus wide, ripple	134-7830●	0.23	0.22	0.21

XPC Series

CREE

New



- Small footprint
- Drive current 500mA max.
- 110° viewing angle
- Low thermal resistance 12°C/W
- Electrically isolated base

Colour	Viewing Angle	Luminous Intensity (typ)	Forward Voltage (max)	Forward Current	Mftrs. List No.	Order Code
Cool White	110°	87.4lm	3.9V	500mA	XPCWHT-L1-R250-00A01	164-9029
Neutral White	110°	73.9lm	3.9V	500mA	XPCWHT-L1-R250-008E5	164-9043
Warm White	110°	62lm	3.9V	500mA	XPCWHT-L1-R250-006E7	164-9046

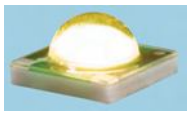
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Colour	Mftrs. List No.	Order Code	Price Each 1+	25+	100+
Cool White	XPCWHT-L1-R250-00A01	164-9029● RL	3.44	2.83	2.58
Neutral White	XPCWHT-L1-R250-008E5	164-9043● RL	3.04	2.50	2.28
Warm White	XPCWHT-L1-R250-006E7	164-9046● RL	3.04	2.50	2.28

XPE Series

CREE

New



- Small footprint
- Drive current 700mA max.
- Wide viewing angle 115°
- Low thermal resistance 9°C/W
- Electrically isolated base

Colour	Viewing Angle	Luminous Intensity (typ)	Forward Voltage (max)	Forward Current	Mftrs. List No.	Order Code
Cool White	115°	100lm	3.9V	700mA	XPEWHT-L1-R250-00C01	164-9030
Neutral White	115°	87.4lm	3.9V	700mA	XPEWHT-L1-R250-00AE5	164-9044
Warm White	115°	73.9lm	3.9V	700mA	XPEWHT-L1-R250-008E7	164-9045

525326

Colour	Mftrs. List No.	Order Code	Price Each 1+	25+	100+
Cool White	XPEWHT-L1-R250-00C01	164-9030● RL	4.67	3.85	3.50
Neutral White	XPEWHT-L1-R250-00AE5	164-9044● RL	5.07	4.17	3.80
Warm White	XPEWHT-L1-R250-008E7	164-9045● RL	4.55	3.75	3.41

Over 480,000 products online QGO

RL Re-reeling available

XPE Series

Additions

Colour	Luminous Intensity (typ)	Mftrs. List No.	Order Code
Cool White	107mcd	XPEWHT-L1-R250-00D01	168-8707
Cool White	114mcd	XPEWHT-L1-R250-00E01	168-8708

528809

Colour	Mftrs. List No.	Order Code	Price Each 1+	25+	100+
Cool White	XPEWHT-L1-R250-00D01	NEW 168-8707●	5.63	5.00	4.59
Cool White	XPEWHT-L1-R250-00E01	NEW 168-8708●	7.23	6.42	5.90

MCE Series

CREE

New



- Industry's first lighting-class multi-chip LED
- Individually addressable LEDs
- Electrically neutral thermal path

L=9, W=7, D=4.48

Viewing Angle 110°
Forward Current 700mA
Forward Voltage 3.9V

Colour	Colour Temperatrue (min)	(max)	Luminous Intensity (typ)	Mftrs. List No.	Order Code
Neutral White	3700K	5000K	320lm	MCE4WT-A2-0000-000JE5	164-9027
Cool White	2600K	3700K	370lm	MCE4WT-A2-0000-000K01	164-9028
Warm White	5000K	10000K	280lm	MCE4WT-A2-0000-000HE7	164-9026

525301

Colour	Mftrs. List No.	Order Code	Price Each 1+	25+	50+
Neutral White	MCE4WT-A2-0000-000JE5	SMD 164-9027● RL	16.21	13.35	12.16
Cool White	MCE4WT-A2-0000-000K01	SMD 164-9028● RL	15.84	13.04	11.88
Warm White	MCE4WT-A2-0000-000HE7	SMD 164-9026● RL	15.05	12.43	11.42

MCE Series

Addition

Colour	Colour Temperatrue (min)	(max)	Luminous Intensity (typ)	Mftrs. List No.	Order Code
Cool White	10000K	5000K	430mcd	MCE4WT-A2-0000-000M01	168-8706

528810

Colour	Mftrs. List No.	Order Code	Price Each 1+	25+	50+
Cool White	MCE4WT-A2-0000-000M01	NEW SMD 168-8706●	17.98	15.69	14.38

Dragoneye™

Single LED

OSRAM

New



- Compact High-Flux LED Minispotlight
- Metallic package for optimum heat dissipation
- Protection IP65 for use in outdoor lighting

Applications

- Small luminaire head for mini spotlights
- Orientation and accent lighting
- Luminaires for single LED

List No.	Colour	I_F	Power, P_D	Viewing Angle	λ_D/(Colour Temp) nm/(K)	Lumininous Intensity (cd)
DE1-W3-854	white	350	1,2	15	(5400)	310
DE1-W3-733	warm white	350	1,2	15	(3300)	230
DE1-A2	red	350	0,8	18	616	380
DE1-Y2	yellow	350	0,8	18	589	265
DE1-T2	green	350	1,2	15	531	135
DE1-B2	blue	350	1,2	15	468	32

496296

Mftrs. List No.	Colour	Order Code	Price Each 1+	5+	10+
DE1-A2	Red	147-2624●	20.43	18.32	17.12
DE1-B2	Blue	147-2625●	20.24	18.14	16.98
DE1-T2	Green	147-2626●	19.11	17.13	16.03
DE1-W3-733	Warm White	147-2627●	22.17	19.87	18.59
DE1-W3-854	White	147-2629●	22.17	19.87	18.59
DE1-Y2	Yellow	147-2631●	17.30	15.51	14.50

DRAGONpuck™ - White

OSRAM

A compact high-intensity LED light source with 3 high-flux Golden DRAGON™ LEDs and an efficient optical system.

- Very low profile, same diameter as QR CBC lamps
- Narrow beam angle for use as a spot source
- M3 screw fixing
- Two-core connecting cable 200 mm with open cable ends
- Light source with long life

496301

Mftrs. List No.	Colour Temp (K)	I_F Max.(mA)	Order Code	Price Each 1+	5+	10+
DP3-W3-733	3300	350	147-2632●	31.45	30.40	29.60
DP3-W3-847	4700	350	147-2633●	31.45	30.40	29.60
DP3-W3-865	6500	350	147-2634●	40.63	38.19	35.34

Z-Power LED Series

SEOUL



Emitter



Star

Z-Power series is designed for high current operation and high flux output applications.Z-Power LED's thermal management perform exceeds other power LED solutions. It incorporates state of the art SMD design and Thermal emission material. Z Power LED is ideal light sources for general illuminationapplications, custom designed solutions, automotive large LCD backlights

- High luminous flux
- Superior reliability characteristics

497750

Mftrs.	Luminous Flux, (lm)	P_D, (W)	V_{Fmax}, (V)	I_{Fmax}, (mA)	Order Code	Price Each 1+	25+	100+
White Emitter								
W42180-T70	4	3.25	1000		149-4486● RL	5.96	4.64	4.01
W42180-U90	4	3.25	1000		149-4488● RL	6.86	5.34	4.61
White Star								
W42182-T80	4	3.8	1000		149-4494●	6.68	5.20	4.50
W42182-U100	4	3.8	1000		149-4495●	7.58	5.90	5.10
Warm White Emitter								
N42180-R 41	3.2	3.25	800		149-4489● RL	5.58	4.34	3.76
N42180-S 54	3.2	3.25	800		149-4490● RL	6.57	5.11	4.42
Warm White Star								
N42182-R 62	3.2	3.8	800		149-4496●	6.30	4.90	4.24
N42182-S 62	3.2	3.8	800		149-4497●	7.30	5.68	4.91
Natural White Emitter								
S42180-S 61	3.2	3.8	800		149-4493● RL	6.57	5.11	4.42
Natural White Star								
S42182-S 61	3.2	3.8	800		149-4500●	7.30	5.68	4.91

1W & 3W Power LEDs

InGaN Power LED Light Sources

Moonstone™ AVAGO TECHNOLOGIES



H=10.6, W=8.5, D=3.3

High power and performance light sources, which redefine new levels of optical efficiency combined with the ability to handle high thermal and high driving currents.
The exposed pad design, allows excellent heat transfer from the package to the PCB.
The low profile package design is suitable for a wide variety of applications especially where height is a contraint.
The package is compatable with SMT reflow solder proccess and manual soldering. This will give more freedom and flexibility to the light source designer.

- Energy efficient
- Exposed pad design, allows heatsink mounting
- Suitable for SMT process
- High current handling
- Long operation life
- Lenses fit onto the flange ring surface of the LED and can be used with all single-colour Moonstone™ LEDs

Colour	Viewing Angle	λ peak / (Colour Temp min)	Luminous Flux typ	Forward Current	Power Dissipation	Mftrs. List No.	Order Code
Red	120°	635nm	40lm	350mA	1050mW	ASMT-MR00-AHJ00	161-8691
Amber	120°	598nm	35lm	350mA	1050mW	ASMT-MA00-AGH00	161-8690
Green	120°	519nm	40lm	350mA	1400mW	ASMT-MG00-NGJ00	124-1245
Blue	120°	460nm	10lm	350mA	1400mW	ASMT-MB00-NAE00	124-1244
White	110°	-	140lm	700mA	3000mW	ASMT-MW20-NNN00	135-1956
Warm White	110°	(2600K)	30lm	350mA	1400mW	ASMT-MY01-NFH00	161-8683
Warm White	110°	(2600K)	50lm	350mA	1400mW	ASMT-MY00-NJK00	161-8685
Warm White	110°	(3000K)	50lm	350mA	1400mW	ASMT-MY00-NJKW0	161-8686
Warm White	110°	(2600K)	46lm	350mA	1400mW	ASMT-MYB1-NJK00	161-8687
Cool White	110°	(4000K)	45lm	350mA	1400mW	ASMT-MW00-NFI00	124-1243
Cool White	110°	(4000K)	55lm	350mA	1400mW	ASMT-MWB1-NJK00	161-8680
Cool White	120°	(4000K)	35lm	350mA	1400mW	ASMT-MW01-NFH00	161-8673
Cool White	120°	(4500K)	60lm	350mA	1400mW	ASMT-MW00-NJKZ0	161-8674
Cool White	120°	(5600K)	60lm	350mA	1400mW	ASMT-MW00-NJKW0	161-8675
Cool White	120°	(4000K)	80lm	350mA	1400mW	ASMT-MW09-NLL00	161-8676
Cool White	120°	(4000K)	80lm	350mA	1400mW	ASMT-MW09-NLLS0	161-8677
Cool White	120°	(5600K)	80lm	350mA	1400mW	ASMT-MW09-NLLW0	161-8678
Cool White	120°	(4500K)	80lm	350mA	1400mW	ASMT-MW09-NLLZ0	161-8679
Cool White	120°	(4000K)	60lm	350mA	1400mW	ASMT-MW00-NKK00	161-8707

448151

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+
ASMT-MR00-AHJ00	NEW SMD 161-8691●	2.84	1.99	1.61	1.46
ASMT-MA00-AGH00	NEW SMD 161-8690●	2.65	1.85	1.49	1.37
ASMT-MG00-NGJ00	SMD 124-1245●	3.54	2.36	1.95	1.69
ASMT-MB00-NAE00	SMD 124-1244●	3.62	2.41	1.96	1.81
ASMT-MW20-NNN00	SMD 135-1956●	4.20	3.12	2.74	2.35
ASMT-MY01-NFH00	NEW SMD 161-8683●	1.62	1.13	0.92	0.83
ASMT-MY00-NJK00	NEW SMD 161-8685●	3.64	2.55	2.06	1.88
ASMT-MY00-NJKW0	NEW SMD 161-8686●	3.77	2.64	2.13	1.95
ASMT-MYB1-NJK00	NEW SMD 161-8687●	3.78	2.65	2.13	1.95
ASMT-MW00-NFI00	SMD 124-1243●	3.86	2.58	2.11	1.84
ASMT-MWB1-NJK00	NEW SMD 161-8680●	3.46	2.42	1.96	1.78
ASMT-MW01-NFH00	NEW SMD 161-8673●	1.53	1.07	0.88	0.79
ASMT-MW00-NJKZ0	NEW SMD 161-8674●	3.60	2.52	2.04	1.85
ASMT-MW00-NJKW0	NEW SMD 161-8675●	3.60	2.52	2.04	1.85
ASMT-MW09-NLL00	NEW SMD 161-8676●	3.83	2.68	2.15	1.97
ASMT-MW09-NLLS0	NEW SMD 161-8677●	4.28	3.01	2.43	2.20

RL Re-reeling available

Farnell

Power LED's - continued

1W & 3W Power LEDs - continued

InGaN Power LED Light Sources - continued

Mftrs. List No.	Order Code	1+	25+	100+	250+
ASMT-MW09-NLLW0	NEW SMD 161-8678	4.28	3.01	2.43	2.20
ASMT-MW09-NLLZ0	NEW SMD 161-8679	3.97	2.79	2.24	2.05
ASMT-MW00-NKK00	NEW SMD 161-8707	3.70	2.58	2.09	1.90
Lens for Moonstone LEDs					
ASMT-M006	133-9022	1.26	1.00	0.88	0.76
ASMT-M015	133-9024	1.11	0.90	0.79	0.68
ASMT-M030	NEW 161-8706	1.23	0.87	0.69	0.63

Moonstone™ 3W Power LED Light Source



Cool White



Warm White

New

Viewing Angle	120°
Forward Current	700mA
Forward Voltage	4.3V
Operating Temperature	-40°C to +95°C

The Moonstone™ 3W Power LED Light Source is a high performance energy efficient device which can handle high thermal and high driving current. The exposed pad design has excellent heat transfer from the package to the motherboard.

- Energy efficient
- Exposed pad for excellent heat transfer
- Suitable for reflow soldering process
- High current operation
- Long operation life
- Wide viewing angle
- Silicone encapsulation

528608

Luminous Intensity (typ)	Mftrs List No.	Order Code	1+	25+	100+	250+
Cool White						
145lm	ASMT-MW22-NNN00	168-6143	3.82	2.67	2.15	1.96
145lm	ASMT-MW22-NNNS0	168-6144	4.32	3.02	2.44	2.22
145lm	ASMT-MW22-NNNU0	168-6145	4.32	3.02	2.44	2.22
145lm	ASMT-MW22-NNNW0	168-6146	4.05	2.84	2.29	2.09
145lm	ASMT-MW22-NNNZ0	168-6147	3.82	2.67	2.15	1.96
Cool White Diffused						
125lm	ASMT-MWE2-NMN00	168-6149	3.90	2.72	2.19	2.00
Warm White						
125lm	ASMT-MY22-NMN00	168-6151	3.90	2.72	2.19	2.00
125lm	ASMT-MY22-NMNU0	168-6152	4.43	3.10	2.50	2.28
125lm	ASMT-MY22-NMNW0	168-6153	4.13	2.90	2.34	2.13
125lm	ASMT-MY22-NMNZ0	168-6154	3.90	2.72	2.19	2.00
Warm White Diffused						
110lm	ASMT-MYE2-NMN00	168-6155	3.99	2.80	2.25	2.05

Moonstone™

0.5W and 1W Power LED Light Source



H=10.6, L=10, D=3.3

New

- Energy efficient
- High current operation
- Long operation life
- Exposed pad for excellent heat transfer
- Suitable for reflow soldering process
- Wide viewing angle
- Silicone encapsulation
- Applications include portable flash light, reading light, architectural lighting, garden lighting, decorative lighting

0.5W

Colour	Viewing Angle	Luminous Intensity (typ)	Forward Current	Forward Current	Mftrs. List No.	Order Code
Cool White	110°	30lm	150mA	4V	ASMT-MW62-NFH00	163-4775
Cool White	120°	25lm	150mA	4V	ASMT-MWH2-NFH00	163-4776
Warm White	110°	25lm	150mA	4V	ASMT-MY62-NEG00	163-4777
Warm White	120°	20lm	150mA	4V	ASMT-MYH2-NEG00	163-4778

Colour	Mftrs. List No.	Order Code	1+	25+	100+	250+
Cool White	ASMT-MW62-NFH00	SMC 163-4775	1.49	1.09	0.95	0.85
Cool White	ASMT-MWH2-NFH00	SMC 163-4776	1.60	1.17	1.02	0.90
Warm White	ASMT-MY62-NEG00	SMC 163-4777	1.68	1.22	1.07	0.95
Warm White	ASMT-MYH2-NEG00	SMC 163-4778	1.81	1.32	1.15	1.03

1W

Colour	Viewing Angle	Luminous Intensity (typ)	Forward Current	Forward Current	Mftrs. List No.	Order Code
Warm White	120°	73lm	350mA	4V	ASMT-MY09-NKL00	163-4771
Warm White	120°	73lm	350mA	4V	ASMT-MY09-NKLU0	163-4772
Warm White	120°	73lm	350mA	4V	ASMT-MY09-NKLW0	163-4773
Warm White	120°	73lm	350mA	4V	ASMT-MY09-NKLZ0	163-4774

521878

Colour	Mftrs. List No.	Order Code	1+	25+	100+	250+
Warm White	ASMT-MY09-NKL00	SMD 163-4771	3.06	2.23	1.95	1.72
Warm White	ASMT-MY09-NKLU0	SMD 163-4772	3.60	2.62	2.29	2.03
Warm White	ASMT-MY09-NKLW0	SMD 163-4773	3.60	2.62	2.29	2.03
Warm White	ASMT-MY09-NKLZ0	SMD 163-4774	3.60	2.62	2.29	2.03

1W Power LEDs

InGaN Power LED Light Sources



New

- Energy efficient
- High current operation
- Long operation life
- Wide viewing angle
- Silicone encapsulation
- Applications include portable flash light, bicycle head light, architectural, garden and decorative lighting

Viewing Angle	110°	Forward Voltage (max)	4V
Power Dissipation	1400mW	Operating Temperature	-40°C to +85°C
Forward Current	350mA		

Colour	Colour Temperature min	Colour Temperature max	Luminous Flux min	Luminous Flux typ	Luminous Flux max	Luminous Efficiacy	Mftrs. List No.	Order Code
Warm White	2600K	4000K	43lm	46lm	56lm	37lm/W	ASMT-MYL1-NJJ00	161-8689
Warm White	2600K	4000K	56lm	56lm	73lm	40lm/W	ASMT-MYK0-NKK00	161-8688
Cool White	4000K	10000K	43lm	55lm	56lm	44lm/W	ASMT-MWL1-NJJ00	161-8682
Cool White	4000K	10000K	56lm	60lm	73lm	48lm/W	ASMT-MWK0-NKK00	161-8681
Cool White	4000K	10000K	56lm	60lm	73lm	48lm/W	ASMT-MWA0-NKK00	161-8708

515751

Mftrs. List No.	Order Code	1+	25+	100+	250+
ASMT-MYL1-NJJ00	SMD 161-8689	4.61	3.22	2.60	2.38
ASMT-MYK0-NKK00	SMD 161-8688	4.49	3.14	2.53	2.32
ASMT-MWL1-NJJ00	SMD 161-8682	4.40	3.08	2.48	2.26
ASMT-MWK0-NKK00	SMD 161-8681	4.29	3.01	2.43	2.21
ASMT-MWA0-NKK00	SMD 161-8708	4.78	3.35	2.70	2.46

Moonstone™

1W Power LED Light Source on MCPCB



1634766



1634767, 1634769

New

Forward Current	350mA
Operating Range	-40°C to +85°C

- Energy efficient
- High current operation
- Long operation life
- Wide viewing angle
- Silicone encapsulation
- Applications include portable (flash light, bicycle head light), reading light, architectural lighting, garden lighting and decorative lighting

Colour	Viewing Angle	Luminous Intensity (typ)	Forward Voltage (max)	Mftrs. List No.	Order Code
Warm White	110°	50lm	4V	ASMT-MYA0-NJK00	163-4766
Amber	120°	35lm	3V	ASMT-MAK0-AGH00	163-4767
Red	120°	40lm	3V	ASMT-MRK0-AHJ00	163-4769

523171

Colour	Mftrs. List No.	Order Code	1+	25+	100+	250+
Warm White	ASMT-MYA0-NJK00	163-4766	4.41	3.21	2.81	2.49
Amber	ASMT-MAK0-AGH00	163-4767	3.41	2.48	2.16	1.92
Red	ASMT-MRK0-AHJ00	163-4769	3.57	2.60	2.28	2.02

V-LEDs

New



LED / Lamp Size	7.57mm
Operating Temperature	-40°C to +85°C

- Solder-Free mechanical attachment for easy installation and replacement
- Annular contact arrangement eliminates need for radial alignment
- Excellent thermal coupling to lighting system
- Large LED chip allows high drive current
- Outstanding light output
- Wide viewing angle
- UV resistant cover lens

Colour	Viewing Angle	Wavelength / (Colour Temp) nm / (K)	Luminous Intensity (lm)	Forward Voltage (V)	Forward Current (mA)	Mftrs. List No.	Order Code
Red	130°	625	40	3	500	9900-1201-12	164-9497
Red	130°	625	95	3	750	9900-1201-13	164-9499
Amber	130°	590	40	3	500	9900-1201-22	164-9500
Amber	130°	590	75	3	750	9900-1201-23	164-9501
White	110°	(5500)	52	4.1	350	9900-1201-37	164-9502
White	110°	(5500)	80	4.1	350	9900-1201-371	164-9503
Blue	120°	470	12	4.1	350	9900-1201-47	164-9505
Green	120°	525	50	4.1	350	9900-1201-77	164-9506

524090

Mftrs. List No.	Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
Red	9900-1201-12	164-9497●	1.72	1.41	1.29	1.19	1.11
Red	9900-1201-13	164-9499●	2.76	2.27	2.08	1.92	1.78
Amber	9900-1201-22	164-9500●	1.72	1.41	1.29	1.19	1.11
Amber	9900-1201-23	164-9501●	2.73	2.25	2.05	1.90	1.77
White	9900-1201-37	164-9502●	3.26	2.67	2.45	2.26	2.11
White	9900-1201-371	164-9503●	3.44	2.83	2.58	2.39	2.23
Blue	9900-1201-47	164-9505●	2.84	2.34	2.13	1.96	1.84
Green	9900-1201-77	164-9506●	2.87	2.36	2.16	1.99	1.86

OMC Power LEDs and Lens



- Excellent heat transfer from LED chip
- High Luminous Output
- High flux and low cost
- No UV

These power leds have the advantage of comming in an industry standard package with easy to attach lens and high output luminous flux.

H=15.7, W=9.9, D=4.37,
pin spacing=5.08
Anode=pin 1, pin 2 & tab=Cathode

Emitted Colour	Luminous Flux (lm) (min)	(typ)	Foward Voltage, V_F (V) (typ)	(max)	Viewing Angle	Mftrs. List No.	Order Code
I_F=300 mA							
Red	10.7	20	2.2	2.8	120°	T21R1	122-6704
Blue	5	8	3.5	4	120°	T21B1	122-6706
Daylight White	30	35	3.5	4	120°	T21D1	122-6709
I_F=700 mA							
Daylight White	51.6	60	3.5	4	120°C	T23D1	122-6712
Warm White	18	25	3.5	4	120°	T21W1	122-6711

457885

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+
I_F=300 mA					
T21R1	122-6704●	3.01	2.64	2.35	2.12
T21B1	122-6706●	5.31	3.84	3.44	3.18
T21D1	122-6709●	6.06	4.39	3.91	3.64
I_F=700 mA					
T23D1	122-6712●	11.34	8.21	7.33	6.80
T21W1	122-6711●	6.06	4.39	3.91	3.64

1 W Power RGB

120 ° Viewing Angle

- 3 high power colours in one package
- Small size RGB source
- Excellant thermal transfer from LED chip
- High flux and cost effectiveness
- No UV radiation

Typical Applications:
- Signaling
- Up and down lighters
- Colour changing lights
- General illumination
- Mood Lighting

Luminosity	Colour R, G, B	Wavelength, typ	I_F 350 mA	V_F, typ	Mftrs List No.	Order Code
					P3RGB1H	122-6714

A 1-Watt energy efficient LED source that offers high luminance, low thermal resistance and a long operating lifespan.

491133

Mftrs. List No.	Order Code	Price Each 1+	25+	50+	100+	+
P3RGB1H	122-6714●	12.37	10.85	9.66	8.70	– –

For an efficient lighting solution see:
Thermal Interface Materials on page 764
LED Drivers on page 441
Power LED Accessories on page 855

0.5 W Z-Power LEDs



Z-Power Series is designed for high current operation and high flux output applications. Thermal management perform exceeds other power LED Solutions. Featuring state of the art SMD design and thermal emission material, making it the ideal light source for most lighting applications.

- Super high flux output.
- High current operation
- Low thermal resistance
- SMT solderable

Luminous Flux	VF	IF	PD	Viewing Angle
28 lm	3.65 V	0.2 A	0.8 W	123

490778

Mftrs. List No.	Colour	Order Code	Price Each 1+	25+	100+
R92050	Red	SMD 149-4484● RL	1.93	1.50	1.30
B92050	Blue	SMD 149-4485● RL	2.67	2.09	1.81
W92050	White	SMD 149-4481● RL	1.93	1.50	1.30

Mftrs. List No.	Colour	Order Code	Price Each 1+	25+	100+
N92050	Natural White	SMD 149-4482● RL	1.93	1.50	1.30
S92050	Soft White	SMD 149-4483● RL	1.93	1.50	1.30

Z-Power-P3 LED Series

Z-Power series is designed for high current operation and high flux output applications. Z-Power LED's thermal management perform exceedsother power LED solutions. It incorporates state of the art SMD design and thermal emission material.Z Power LED is ideal light sources for general illumination applications, custom designed solutions, automotive large LCD backlights

- Super high Flux output and high Luminance
- Designed for high current operation
- Low thermal resistance (7.5°C/W)
- SMT solderbility

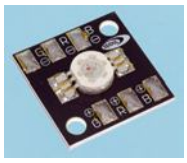
498131

Mftrs. List No.	Colour	Flux lum, (lm)	P_D, (W)	V_{Fmax}, (V)	IFMax, (mA)	Order Code	Price Each 1+	25+	100+
R32182	Red	33	1.6	3	400	149-4515●	3.23	2.50	2.17
R32180	Red	—	1.6	—	400	149-4506●	2.49	1.94	1.68
G32180	Green	48	1.6	4	400	149-4509●	4.22	3.28	2.84
B32180	Blue	11	1.6	4	400	149-4507●	3.88	3.02	2.62
B32182	Blue	11	1.6	4	400	149-4516●	4.60	3.58	3.09
W32180	White	52	1.6	4	400	149-4503●	4.08	3.18	2.75
W32182	White	52	1.6	4	400	149-4511●	4.82	3.75	3.24
N32180	White-Warm	35	1.6	4	400	149-4504●	4.08	3.18	2.75
N32182	White-Warm	35	1.6	4	400	149-4512●	4.82	3.75	3.24

Z-Power-P5 RGB LED Series



Emitter



Square PCB

Z-Power series is designed for high current operation and high flux output applications. Z-Power LED's thermal management perform exceedsother power LED solutions. It incorporates state of the art SMD design and thermal emission material.Z Power LED is ideal light sources for general illumination applications, custom designed solutions, automotive large LCD backlights

- Super high Flux output and high Luminance
- Designed for high current operation
- Low thermal resistance (7.5°C/W)
- SMT solderbility

498132

Mftrs. List No.	Package	Lum Flux, (lm) per LED	P_D, R.G.B (W)	V_{Fmax}, (V)	I_{Fmax}, (mA)	Order Code	Price Each 1+	25+
F50380	Emitter	78	1.2, 1.6, 1.6	2.5, 3.4, 3.7	350	SMD 149-4501●	12.37	9.62
F50381	Square PCB	78	1.2, 1.6, 1.6	2.5, 3.4, 3.7	350	149-4502●	13.08	10.18

PointLED®



Viewing Angle 120°
Operating Temperature -40°C to +100°C

Colour	Luminous Intensity min (mcd)	max (mcd)	Forward Current (mA)	Forward Voltage max (V)	Power Dissipation (mW)	Wavelength peak (nm)	Mftrs. List No.	Order Code
Amber	900	2800	50	2.4	130mW	624nm	LAP47F-V2BB-24-1	157-3454
Green	2.24	5.6	20	2.2	50mW	572nm	LGP47K-G2J1-24	157-3464
White	560	1400	20	3.7	75mW	—	LWP4SG-U2AA-5K8L-1	157-3478
Yellow	560	1800	50	2.55	135mW	597nm	LYP47F-U2AB-36-1	157-3487

516679

Order Multiple=1 Order Code	Price Each 1+	25+	100+	250+	500+
SMD 157-3454● RL	0.250	0.193	0.172	0.155	0.149
SMD 157-3464● RL	0.092	0.072	0.064	0.058	0.056
SMD 157-3478● RL	0.520	0.410	0.360	0.330	0.320
SMD 157-3487● RL	0.270	0.210	0.188	0.170	0.162

Golden Dragon™

High Power LEDs



- High power light source
- Point lightsource with high luminous efficiency and low space
- Applications include traffic signaling, backlighting, interior and exterior automotive lighting, substitution of micro incandescent lamps, portable

RL Re-reeling available

Power LED's - continued

Golden Dragon™ - continued

High Power LEDs - continued

light souce, decorative and entertainment lighting and LCD backlighting

Colour	Viewing Angle	Luminous Flux min (lm)	Luminous Flux max (lm)	Wavelength / (Colour Temp) typ nm / (K)	Forward Voltage max (V)	Mftrs. List No.	Order Code
1.4W							
Yellow	120	21	45	590	2.6	LYW5SM-GYHZ-45-Z	124-4099
2.2W							
Blue	120	8.2	21	455	3.8	LBW5SM-EYGX-35	124-2028
White	120	33	61	()	3.8	LWW5SM-HYJY-5K8L-0	124-2029

448291

Colour	Mftrs. List No.	Order Code	Price Each 1+	10+	25+	50+
1.4W						
Yellow	LYW5SM-GYHZ-45-Z	SMD 124-4099 RL	4.02	2.82	2.54	2.33
2.2W						
Blue	LBW5SM-EYGX-35	SMD 124-2028 RL	2.77	2.50	2.43	2.37
White	LWW5SM-HYJY-5K8L-0	SMD 124-2029 RL	5.54	3.88	3.49	3.21

Golden Dragon™ with Lens

OSRAM

New



20°



40°



ARGUS®

- White SMD package
- Primary optics with a variety of beam angles including ARGUS® for backlighting and Oval ARGUS® for street lighting
- Lightsource with high luminous efficiency

Forward Current, If 400mA
Operating Temperature -40°C to +85°C

Colour	Forward Voltage max (V) @ 350mA (V)	Luminous Luminous Flux (350mA) min (lm)	Luminous Luminous Flux (350mA) max (lm)	Dominant Wavelength / (Colour Temp.) peak / (typ) nm / (K)	Mftrs. List No.	Order Code
Viewing Angle: 20°						
Red	2.6	28	61	632	LRW51M-HXJY-1	157-3465
Amber	2.6	33	71	624	LAW51M-HYJZ-24	157-3455
Yellow	2.6	28	61	597	LYW51MHXJY-36	160-3327
True Green	3.8	33	71	520	LTW51M-HYJZ-36	157-3474
Blue	3.8	9.7	21	465	LBW51M-EZGX-35	157-3459
White	3.8	39	82	(5600)	LWW51M-HZKX-5K8L	157-3480
Viewing Angle: 40°						
Red	2.6	33	71	632	LRW55M-HXJZ-1	157-3466
Blue	3.8	11.2	24	465	LBW55M-FXGY-35	157-3460
White	3.8	39	82	(5600)	LWW55M-HZKX-5K8L	157-3481
ARGUS® for backlighting						
Red	2.6	28	52	632	LRW5KM-HXJX-1	157-3467
Blue	3.8	9.7	24	465	LBW5KM-EZGY-35	157-3461
Deep Blue	3.8			449	LDW5KM-1S2T-35	160-3326
True Green	3.8	39	82	520	LTW5KM-HZKX-25	157-3475
White	3.8	39	82	(5600)	LWW5KM-HYJZ-5K8L	157-3484
Viewing Angle: 120° / 80°						
Yellow	2.6	33	71	597	LYW5JM-HYJZ-36	157-3489
White	3.8	39	82	(5600)	LWW5JM-HZKX-5K8L	157-3483

516701

Colour	Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+
Viewing Angle: 20°						
Red	LRW51M-HXJY-1	SMD 157-3465	2.48	1.93	1.72	1.55
Amber	LAW51M-HYJZ-24	SMD 157-3455	2.48	1.93	1.72	1.55
Yellow	LYW51MHXJY-36	SMD 160-3327 RL	2.93	2.06	1.87	1.72
True Green	LTW51M-HYJZ-36	SMD 157-3474	4.28	3.32	2.96	2.68
Blue	LBW51M-EZGX-35	SMD 157-3459	4.28	3.32	2.96	2.68
White	LWW51M-HZKX-5K8L	SMD 157-3480	4.28	3.32	2.96	2.68
Viewing Angle: 40°						
Red	LRW55M-HXJZ-1	SMD 157-3466	2.48	1.93	1.72	1.55
Blue	LBW55M-FXGY-35	SMD 157-3460	4.28	3.32	2.96	2.68
White	LWW55M-HZKX-5K8L	SMD 157-3481	4.28	3.32	2.96	2.68
ARGUS® for backlighting						
Red	LRW5KM-HXJX-1	SMD 157-3467	2.44	1.90	1.69	1.53
Blue	LBW5KM-EZGY-35	SMD 157-3461	4.28	3.32	2.96	2.68
Deep Blue	LDW5KM-1S2T-35	SMD 160-3326 RL	5.29	3.70	3.36	3.09
True Green	LTW5KM-HZKX-25	SMD 157-3475	4.28	3.32	2.96	2.68
White	LWW5KM-HYJZ-5K8L	SMD 157-3484	4.28	3.32	2.96	2.68
Viewing Angle: 120° / 80°						
Yellow	LYW5JM-HYJZ-36	SMD 157-3489	2.48	1.93	1.72	1.55
White	LWW5JM-HZKX-5K8L	SMD 157-3483	4.28	3.32	2.96	2.68

Over 480,000 products online GO

Platinum Dragon™ 4 Watt Power LEDs

Lambertian Emitters

OSRAM

SMD



Viewing Angle 120°
Forward Current 1000mA
Operatng Temperature -40°C to +125°C

- High power light source
- Point lightsource with high luminous efficiency and low space
- Applications include traffic signaling, backlighting, interior and exterior automotive lighting, substitution of micro incandescent lamps, portable light source, decorative and entertainment lighting and LCD backlighting

Colour	Luminous Flux (700mA) min (lm)	Luminous Flux (700mA) max (lm)	Dominant Wavelength / (Colour Temp) typ nm / (K)	Forward Voltage max (V) @ 700mA (V)	Mftrs. List No.	Order Code
3.4W						
Red	45	82	625	3.3	LRW5SN	124-4088
Amber	52	97	617	3.3	LAW5SN	124-4086
4.6W						
Yellow	39	82	590	3.3	LYW5SN	124-4089
Green	52	112	528	4.3	LTW5SN	124-4091
Blue	6.1	24	455	4.3	LBW5SN	124-4092
White	52	112	(5600)	4.3	LWW5SN	124-4093

522379

Colour	Mftrs. List No.	Order Code	Price Each 1+	10+	25+	50+
3.4W						
Red	LRW5SN	SMD 124-4088 RL	4.55	3.19	2.88	2.64
Amber	LAW5SN	SMD 124-4086 RL	5.78	4.05	3.65	3.35
White	LWW5SN-JYKY-5K8L	SMD 124-2025 RL	9.55	6.69	6.04	5.53
4.6W						
Yellow	LYW5SN	SMD 124-4089 RL	5.78	4.05	3.65	3.35
Green	LTW5SN	SMD 124-4091 RL	8.27	5.79	5.23	4.79
Blue	LBW5SN	SMD 124-4092 RL	6.11	4.28	3.86	3.54
White	LWW5SN	SMD 124-4093 RL	6.52	4.56	4.12	3.78

Diamond Dragon™

9 Watt Power LED

OSRAM

New

SMD



Viewing Angle 140°
Forward Current 2000mA
Operatng Temperature -40°C to +150°C

- The unique high performance Thin Film two square millimetre die can be driven up to 2000mA
- It offers great design flexibility due to availability of all colors and solderpad compatibility with the DRAGON Family
- Brightest single chip LED
- Excellent thermal resistance
- Binned at 1400mA
- Reflow solderable
- Applications include indoor and outdoor lighting, emergency lighting, signal and symbol luminaire, decorative lighting, indoor and outdoor commercial and residential architectural lighting, spot light and glass cabinet lighting

Colour	Luminous Flux (1400mA) min (lm)	Luminous Flux (1400mA) max (lm)	Dominant Wavelength / (Colour Temp) typ nm / (K)	Forward Voltage max (V) @ 1400mA (V)	Mftrs. List No.	Order Code
7.5W						
Red	97	210	625	2.9	LRW5AP-KZMX-1	160-3315
Amber	112	240	617	2.9	LAW5AP-LXMY-24	160-3314
Yellow	82	180	590	2.9	LYW5AP-KYLZ-36	160-3316
8.6W						
White	150	280	5600	4.3	LWW5AP-LZMZ-5K8L	160-3321
10W						
Green	130	280	528	4.3	LTW5AP-LYMZ-25	160-3320
Deep Blue	(900mW)	(1800mW)	455	4.3	LDW5AP-3V8A-35	160-3317
Blue	39	82	470	4.3	LBW5AP-HZKX-23	160-3318
Blue	52	97	470	4.3	LBW5AP-JYKY-35	160-3319

518240

Colour	Mftrs. List No.	Order Code	Price Each 1+	5+	10+	25+
7.5W						
Red	LRW5AP-KZMX-1	SMD 160-3315 RL	7.20	6.54	6.00	5.81
Amber	LAW5AP-LXMY-24	SMD 160-3314 RL	7.20	6.54	6.00	5.81
Yellow	LYW5AP-KYLZ-36	SMD 160-3316 RL	7.20	6.54	6.00	5.81
8.6W						
White	LWW5AP-LZMZ-5K8L	SMD 160-3321 RL	8.22	7.47	6.85	6.63
10W						
Green	LTW5AP-LYMZ-25	SMD 160-3320 RL	8.22	7.47	6.85	6.63
Deep Blue	LDW5AP-3V8A-35	SMD 160-3317 RL	7.20	6.54	6.00	5.81
Blue	LBW5AP-HZKX-23	SMD 160-3318 RL	8.22	7.47	6.85	6.63
Blue	LBW5AP-JYKY-35	SMD 160-3319 RL	8.22	7.47	6.85	6.63

£ € 40,000 PRICES REDUCED

RL Re-reeling available

Farnell

Golden Dragon™ Plus

4 Watt High Power LED

OSRAM

New

SMD



Viewing Angle 170°
Forward Current 1000mA
Operatng Temperature -40°C to +110°C

- The Golden DRAGON® Plus comes with a silicone dome for increased efficiency and brightness
- Ideal for general lighting due to high reliability and availability in the full white color temperature range
- Excellent thermal management
- Applications include room lighting, flood light, effect and accent lighting, specialty lighting, architectural lighting and reading lamps

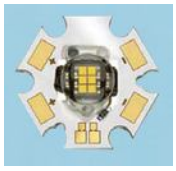
Colour	Luminous Flux (350mA) min (lm)	max (lm)	Colour Temperature typ (K)	Forward Voltage max @ 350mA (V)	Mftrs. List No.	Order Code
3.8W						
Cool White	71	112	—	3.8	LUWW5AM-KXKZ-5P7R	160-3284
Cool White	71	112	5700	3.8	LUWW5AM-KXKZ-5F8G	160-3285
Cool White	71	112	6500	3.8	LUWW5AM-KXKZ-4C8E	160-3286
Cool White	82	130	—	3.8	LUWW5AM-KYLX-6P7Q	160-3287
4W						
Cool White	71	97	—	3.8	LWW5AM-KXKY-6K7L	160-3295
Warm White	39	71	2700	3.8	LCWW5AM-HZJZ-4U9X	160-3291
Warm White	39	61	3000	3.8	LCWW5AM-HZJY-4R9T	160-3293
Warm White	45	82	3500	3.8	LCWW5AM-JXKX-4O9Q	160-3290
Neutral White	52	82	4000	3.8	LCWW5AM-JYKX-4L8N	160-3289
Neutral White	61	82	4000	3.8	LCWW5AM-JZKX-4L8N	160-3294
Neutral White	52	97	4500	3.8	LCWW5AM-JYKY-4J8K	160-3288

522396

Colour	Mftrs. List No.	Order Code	Price Each 1+	10+	25+	50+
3.8W						
Cool White	LUWW5AM-KXKZ-5P7R	SMD 160-3284 RL	7.34	5.14	4.67	4.28
Cool White	LUWW5AM-KXKZ-5F8G	SMD 160-3285 RL	7.34	5.14	4.67	4.28
Cool White	LUWW5AM-KXKZ-4C8E	SMD 160-3286 RL	7.34	5.14	4.67	4.28
Cool White	LUWW5AM-KYLX-6P7Q	SMD 160-3287 RL	8.22	5.76	5.23	4.80
4W						
Cool White	LWW5AM-KXKY-6K7L	SMD 160-3295 RL	5.88	4.11	3.74	3.43
Warm White	LCWW5AM-HZJZ-4U9X	SMD 160-3291 RL	5.29	3.70	3.36	3.09
Warm White	LCWW5AM-HZJY-4R9T	SMD 160-3293 RL	5.29	3.70	3.36	3.09
Warm White	LCWW5AM-JXKX-4O9Q	SMD 160-3290 RL	5.58	3.91	3.55	3.26
Neutral White	LCWW5AM-JYKX-4L8N	SMD 160-3289 RL	5.88	4.11	3.74	3.43
Neutral White	LCWW5AM-JZKX-4L8N	SMD 160-3294 RL	5.88	4.11	3.74	3.43
Neutral White	LCWW5AM-JYKY-4J8K	SMD 160-3288 RL	5.88	4.11	3.74	3.43

OSTAR™ High Power White LEDs

OSRAM



- Outstanding brightness and luminance due to pure surface emission and low R_{th}
- ESD-withstand voltage: up to 2kV acc. to JESD22-A114-B
- Applications include general lighting, microscope illumination, VMS (Variable Message Signs), high end strobe light

Forward Current 100mA 1000mA
Operating Temperature -40°C to +100°C

Without Optics - Lambertian Beam Pattern

Colour	Viewing Angle	Colour Temp.	Luminous Intensity (cd)	Luminous Flux min (lm)	max (lm)	Voltage, Vf max (V)	Power Dissipation (W)	Order Code
White	120°	5600K	95	210lm	520lm	24.5	27	124-2023
Warm White	120°	3500K	67	130lm	280lm	16.4	18	160-3296
Warm White	120°	4200K	70	130lm	280lm	16.4	18	160-3297
Warm White	120°	2700K	55	97lm	210lm	16.4	18	160-3298
Warm White	120°	3000K	95	180lm	390lm	24.5	27	160-3299
Warm White	120°	3500K	100	210lm	450lm	24.5	27	160-3300
Warm White	120°	4200K	110	210lm	450lm	24.5	27	160-3301
Warm White	120°	2700K	85	150lm	330lm	24.5	27	160-3302

Mftrs. List No.	Order Code	Price Each 1+	5+	10+	25+
LEWE3A-MYPX-6K8L	124-2023	30.33	29.51	28.74	28.00
LECWE2A-LYMZ-L3M5	NEW 160-3296 RL	28.93	18.41	16.88	16.33
LECWE2A-LYMZ-H3K5	NEW 160-3297 RL	20.25	18.41	16.88	16.33
LECWE2A-KZMX-Q3R5	NEW 160-3298 RL	20.25	18.41	16.88	16.33
LECWE3A-MXNY-N3P5	NEW 160-3299 RL	30.38	27.62	25.32	24.50
LECWE3A-MYNZ-L3M5	NEW 160-3300 RL	30.38	27.62	25.32	24.50
LECWE3A-MYNZ-H3K5	NEW 160-3301 RL	30.38	27.62	25.32	24.50
LECWE3A-LZNX-Q3R5	NEW 160-3302 RL	30.38	27.62	25.32	24.50

With Optics

Colour	Viewing Angle	Colour Temp.	Luminous Intensity (cd)	Luminous Flux min (lm)	max (lm)	Voltage, Vf max (V)	Power Dissipation (W)	Order Code
White	120°	5600K	70	180lm	520lm	17.2	18	124-2022
White	120°	5600K	104	280lm	820lm	25.8	27	124-2024
Warm White	130°	4200K	120	240lm	610lm	16.4	18	160-3303
Warm White	130°	2700K	90	180lm	450lm	16.4	18	160-3304
Warm White	130°	3500K	110	210lm	520lm	16.4	18	160-3305
Warm White	130°	3000K	100	210lm	450lm	16.4	18	160-3306
Warm White	130°	4200K	175	390lm	820lm	24.5	27	160-3307
Warm White	130°	2700K	130	280lm	610lm	24.5	27	160-3308
Warm White	130°	3000K	140	330lm	710lm	24.5	27	160-3311
Warm White	130°	3500K	160	330lm	710lm	24.5	27	160-3312
Warm White	130°	6500K	830	310lm	1120lm	24.5	27	160-3313

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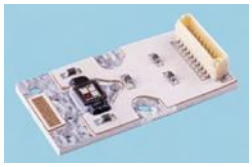
Mftrs. List No.	Order Code	Price Each 1+	5+	10+	25+
LEWE2B-MXPX-6K8L	124-2022	85.82	78.01	70.98	65.52
LEWE3B-NXQX-6K8L	124-2024	66.78	60.71	55.23	50.98
LECWE2B-MZPY-H3K5	NEW 160-3303 RL	22.28	20.25	18.57	17.97
LECWE2B-MXNZ-Q3R5	NEW 160-3304 RL	22.28	20.25	18.57	17.97
LECWE2B-MYPX-L3M5	NEW 160-3305 RL	22.28	20.25	18.57	17.97
LECWE2B-MYNZ-N3P5	NEW 160-3306 RL	22.28	20.25	18.57	17.97
LECWE3B-NZQX-H3K5	NEW 160-3307 RL	32.40	29.46	27.00	26.13
LECWE3B-NXPY-Q3R5	NEW 160-3308 RL	32.40	29.46	27.00	26.13
LECWE3B-NYPZ-N3P5	NEW 160-3311 RL	32.40	29.46	27.00	26.13
LECWE3B-NYPZ-L3M5	NEW 160-3312 RL	32.40	29.46	27.00	26.13
LEUWE3B-PZQZ-4C8F	NEW 160-3313 RL	35.97	32.70	29.98	29.01

Ostar Projection

OSRAM

New

SMD



Applications:
- Projectors
- Medical lighting: surgery light
- Microscope illumination
- Spotlights
- VMS (variable message signs)
- High end strobe light

Colour Amber / Green / Blue
Viewing Angle 120°
Beam Pattern Lambertian
Operating Temperature -40°C to +85°C

Colour	Luminous Flux (typ)	Luminous Intensity (typ)	Forward Current (If)	Forward Voltage (typ)	Mftrs. List No.	Order Code
Amber	55lm	18cd	750mA	2.9V		
Green	86lm	28cd	700mA	3.5V	LEATBA2A	160-3323
Blue	10.5lm	3.5cd	700mA	3.5V		

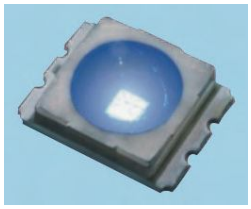
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Colour	Mftrs. List No.	Order Code	Price Each 1+	5+	10+	25+
AGB	LEATBA2A	SMD 160-3323 RL	22.61	20.55	18.85	18.24

1 Watt surface Mount LEDs

X-Lamp Series

forge EUROPA



H=4, W=7, D=9mm

Features include:
- High power LED emitter
- Wide range of colours including white
- Integrated Lambertian pattern lens
- Suitable for infrared reflow
- Class II ESD rating

Applications include:
- Reading lamps
- Backlighting
- Automotive lighting
- Signalling
- Advertising signs
- Architectural lighting

Colour	Viewing Angle	Colour Temperature (min)	(max)	Luminous Flux (max)	Foward Voltage (Vf)	Mftrs. List No.	Order Code
White	100°	4500K	8000K	42lm	4V	FEL-SM1WWWC	873-9072

383807

Colour	Mftrs. List No.	Order Code	Price Each 1+	10+	25+	50+	100+
White	FEL-SM1WWWC	SMD 873-9072	9.29	8.26	7.58	6.90	6.33

Power LED's - CMDA Series

Emitter and Star versions with flat or dome lens

CML INNOVATIVE TECHNOLOGIES WHERE INNOVATION COMES TO LIGHT



- Super high flux output
- High luminance
- Designed for high current operation
- Low thermal resistance
- SMT solder compatible
- RGB Versions available

Colour	Wavelength/ Colour Temp. (Typ.)	Mounting Type	Lens Style	Luminous Flux (Typ.) lm	Forward Voltage (Typ.) V	Forward Current mA	Mftrs List No.
1 Watt - Square Body							
Cool White	6500K	Emitter	Flat	52	3.5	400	CMDA30CW15D13L
White-Warm	3000K	Emitter	Flat	35	3.5	400	CMDA30WW15D13L
Blue	460nm	Emitter	Flat	11	3.5	400	CMDA30CB15D13L
Green	527nm	Emitter	Flat	48	3.5	400	CMDA30AG15D13L
Red	625nm	Emitter	Flat	30	2.5	400	CMDA30AR15D13L
Amber	590nm	Emitter	Flat	38	2.5	400	CMDA30DY15D13L

RL Re-reeling available

Farnell

Power LED's - continued

Power LED's - CMDA Series - continued

Emitter and Star versions with flat or dome lens - continued

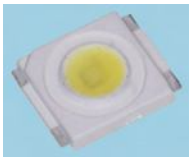
Colour	Wavelength/ Colour Temp. (Typ.)	Mounting Type	Lens Style	Luminous Flux (Typ.) lm	Forward Voltage (Typ.) V	Forward Current mA	Mftrs List No.
1 Watt - Square Body							
Cool White	6500K	Star	Flat	52	3.5	400	CMDA31CW15D13L
White-Warm	3000K	Star	Flat	35	3.5	400	CMDA31WW15D13L
Green	527nm	Emitter	Dome	48	3.5	400	CMDA33AG15D13L
5 Watt - Square Body							
Cool White	6500K	Emitter	Flat	178	3.5	1600	CMDA51CW15D13L

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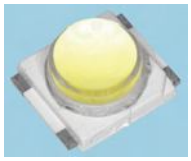
Mftrs. List No.	Colour	Order Code	Price Each 1+	10+	50+	100+
1 Watt - Square Body						
CMDA30CW15D13L	Cool White	**122-8944** RL	3.67	3.38	3.11	2.90
CMDA30WW15D13L	White-Warm	**122-8945** RL	3.73	3.41	3.14	2.95
CMDA30CB15D13L	Blue	**122-8946** RL	2.98	2.72	2.52	2.34
CMDA30AG15D13L	Green	**122-8947** RL	2.98	2.72	2.52	2.34
CMDA30AR15D13L	Red	**122-8949** RL	1.44	1.33	1.24	1.13
CMDA30DY15D13L	Amber	**122-8951** RL	1.60	1.47	1.38	1.27
CMDA31CW15D13L	Cool White	**122-8952**	4.46	4.09	3.77	3.51
CMDA31WW15D13L	White-Warm	**122-8953** RL	4.46	4.09	3.77	3.51
CMDA33AG15D13L	Green	**122-8962** RL	2.47	2.25	2.09	1.94
5 Watt - Square Body						
CMDA51CW15D13L	Cool White	**122-8998** RL	10.75	9.87	9.10	8.44

SMD LED Lamp

6mm Square



Flat



Dome

- Robust energy efficient design
- Long operating life
- Low thermal resistance
- Exeptional spatial uniformity

Lens Shape	Chip Colour	λD Typ. (nm)	Lens Colour	Luminous Intensity (Typ. cd)	Flux (Typ. lm)	Viewing Angle	Mftrs List No.	Order Code
Dome	Red	625	Water Clear	9	8	40°	OVS5R4CR44	149-7992
Dome	Yellow	589	Water Clear	14	11	40°	OVS5Y4CR44	149-7994
Flat	White		Water Clear	8.5	21	120°	OVS5WBCR4	149-7993
Dome	Red	625	Water Clear	40	30	40°	OVSPRBCR44	149-8001
Dome	Yellow	589	Water Clear	45	35	40°	OVSPYBCR44	149-8006
Dome	White		Water Clear	42	52	60°	OVSPWBCR44	149-8004
Flat	Blue	470	Water Clear	3.4	9	120°	OVSPBBCR4	149-7998
Flat	Green	530	Water Clear	18.2	48	120°	OVSPGBCR4	149-7999
Flat	Red	625	Water Clear	9	26	120°	OVSPRBCR4	149-8000
Flat	Yellow	587	Water Clear	11.25	35	120°	OVSPYBCR4	149-8005
Flat	White		Water Clear	18	48	120°	OVSPWBCR4	149-8003
Flat	Red	619/625	Water Clear	21	7	130°	OVSPRGBCR4	149-8002
Flat	Green	530	Water Clear	32	11	130°	OVSPRGBCR4	149-8002
Flat	Blue	465	Water Clear	7.5	2.8	130°	OVSPRGBCR4	149-8002

497724

Colour	Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+
½-Watt - Dome						
Red	OVS5R4CR44	SMD **149-7992** RL	0.74	0.56	0.51	0.47
Yellow	OVS5Y4CR44	SMD **149-7994** RL	0.74	0.56	0.51	0.47
½-Watt - Flat						
White	OVS5WBCR4	SMD **149-7993** RL	1.19	0.93	0.84	0.77
1-Watt - Dome						
Red	OVSPRBCR44	SMD **149-8001** RL	1.69	1.32	1.18	1.09
Yellow	OVSPYBCR44	SMD **149-8006** RL	1.69	1.32	1.18	1.09
White	OVSPWBCR44	SMD **149-8004** RL	2.74	2.12	1.92	1.74
1-Watt - Flat						
Blue	OVSPBBCR4	SMD **149-7998** RL	3.27	2.12	1.74	1.55
Green	OVSPGBCR4	SMD **149-7999** RL	4.93	3.19	2.61	2.32
Red	OVSPRBCR4	SMD **149-8000** RL	1.97	1.28	1.05	0.93
Yellow	OVSPYBCR4	SMD **149-8005** RL	1.97	1.28	1.05	0.93
White	OVSPWBCR4	SMD **149-8003** RL	3.56	2.31	1.90	1.68
RGB - Flat						
R, G, B	OVSPRGBCR4	SMD **149-8002** RL	5.44	4.23	3.80	3.46

Right Angle Surface Mount ChipLED

0.4mm Low Profile



Operating Temperature -30°C to +85°C

Viewing Angle	Colour	Luminous Intensity (typ)	Peak Wavelength	Forward Current	Voltage Vf (max)	Mftrs. List No.	Order Code
150°	Amber	90mcd	595nm	25mA	2.4V	ASMT-CA00	165-2070
150°	Blue	18mcd	469nm	10mA	3.15V	ASMT-CB00	165-2071
170°	White	35mcd	–	10mA	3.15V	ASMT-CW00	165-2073

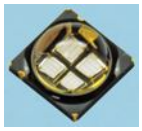
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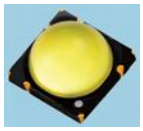
Order Multiple=1 Colour	Order Code	Price Each 1+	25+	100+	250+	500+
Amber	**165-2070** RL	0.164	0.117	0.098	0.083	0.074
Blue	**165-2071** RL	0.230	0.164	0.137	0.115	0.105
White	**165-2073** RL	0.400	0.290	0.240	0.197	0.180

High Luminous Efficacy LED Emitters

5W







- General lighting
- Office lighting
- Accent and task lighting
- Commercial refrigeration
- Display lighting
- Architectural detail lighting

LED / Lamp Size 4.4 x 4.4mm Operating Temperature -40°C to +125°C
Forward Current 1.5A

Colour	Viewing Angle	Luminous Intensity (typ)	Forward Voltage (max)	Mftrs. List No.	Order Code
Deep Red	90°	–	3.1V	LZ1-00R205	167-8950
Red	90°	106lm	2.8V	LZ1-00R105	167-8949
Amber	90°	80lm	3V	LZ1-00A105	167-8943
Green	80°	175lm	3.8V	LZ1-00G105	167-8947
Blue	80°	52lm	3.8V	LZ1-00B205	167-8944
Dental Blue	80°	–	3.8V	LZ1-00DB05	167-8946
Cool White	95°	209lm	3.8V	LZ1-00CW05	167-8945
Neutral White	85°	180lm	3.8V	LZ1-00NW05	167-8948
Warm White	95°	130lm	3.8V	LZ1-00WW05	167-8952

528619

Colour	Mftrs. List No.	Order Code	Price Each 1+	10+	50+	100+
Deep Red	LZ1-00R205	**167-8950** RL	6.33	5.99	5.64	5.36
Red	LZ1-00R105	**167-8949** RL	4.55	4.30	4.04	3.79
Amber	LZ1-00A105	**167-8943** RL	4.55	4.30	4.04	3.79
Green	LZ1-00G105	**167-8947** RL	5.18	4.89	4.61	4.32
Blue	LZ1-00B205	**167-8944** RL	5.18	4.89	4.61	4.32
Dental Blue	LZ1-00DB05	**167-8946** RL	14.97	14.13	13.42	12.75
Cool White	LZ1-00CW05	**167-8945** RL	5.18	4.89	4.61	4.32
Neutral White	LZ1-00NW05	**167-8948** RL	5.18	4.89	4.61	4.32
Warm White	LZ1-00WW05	**167-8952** RL	5.18	4.89	4.61	4.32

Emitter on Miniature MCPCB Option

5W



- 11.5mm diameter Miniature MCPCB
- Typical Thermal Resistance for MCPCB adds only 2°C/W
- MCPCB contains Zener Diode for enhanced ESD protection

LED / Lamp Size 4.4 x 4.4mm Operating Temperature -40°C to +150°C
Forward Current 1.5A

528620

Colour	Mftrs. List No.	Order Code	Price Each 1+	10+	50+	100+
Dental Blue	LZ1-30DB05	**167-8964**	21.25	19.32	18.32	17.14
Deep Red	LZ1-30R205	**167-8965**	9.38	8.52	8.08	7.56

Emitter on Serially Connected MCPCB Option

10W



- Typical Thermal Resistance for MCPCB adds only 2°C/W
- Multiple mounting and attachment options
- MCPCB contains Zener Diode for ESD protection

LED / Lamp Size 7 x 7mm Operating Temperature -40°C to +150°C
Forward Current 1A

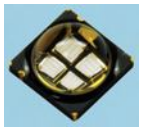
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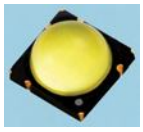
Colour	Luminous Intensity (typ)	Mftrs. List No.	Order Code	Price Each 1+	10+	50+	100+
Deep Red	–	LZ4-40R210	**167-9000**	20.79	19.75	18.76	17.82
Red	430lm	LZ4-40R110	**167-8999**	17.40	16.31	15.49	14.72
Amber	350	LZ4-40A110	**167-8993**	21.25	19.32	18.32	17.14
Green	530lm	LZ4-40G110	**167-8997**	26.30	24.79	23.55	22.37
Blue	160lm	LZ4-40B210	**167-8994**	24.57	23.03	21.55	20.16
Dental Blue	–	LZ4-40DB10	**167-8996**	77.50	70.45	66.81	62.50
Cool White	810lm	LZ4-40CW10	**167-8995**	20.47	19.19	18.23	17.32
Neutral White	570	LZ4-40NW10	**167-8998**	20.47	19.19	18.23	17.32
Warm White	450lm	LZ4-40WW10	**167-9002**	20.47	19.19	18.23	17.32

High Luminous Efficacy LED Emitters

10W







RL Re-reeling available

- Architectural lighting
- Automotive and marine lighting
- Stage and studio lighting
- Emergency lighting
- Buoys
- Beacons
- Airfield lighting and signs

LED / Lamp Size 7 x 7mm
Forward Current 1A
Operating Temperature -40°C to +125°C

Colour	Viewing Angle	Luminous Intensity (typ)	Forward Voltage (max)	Mftrs. List No.	Order Code
Deep Red	95°	–	11.4V	LZ4-00R210	167-8985
Red	90°	317lm	10V	LZ4-00R110	167-8983
Amber	95°	250lm	10.9V	LZ4-00A110	167-8968
Green	95°	530lm	15V	LZ4-00G110	167-8975
Blue	110°	145lm	14.6V	LZ4-00B210	167-8970
Dental Blue	110°	–	14.6V	LZ4-00DB10	167-8974
Cool White	105°	700lm	14.6V	LZ4-00CW10	167-8972
Neutral White	95°	570lm	14.6V	LZ4-00NW10	167-8981
Warm White	105°	360lm	14.6V	LZ4-00WW10	167-8988

528500

Colour	Mftrs. List No.	Order Code	Price Each 1+	10+	50+	100+
Deep Red	LZ4-00R210	167-8985● RL	18.42	17.30	16.44	15.62
Red	LZ4-00R110	167-8983● RL	15.36	14.40	13.68	13.00
Amber	LZ4-00A110	167-8968● RL	15.36	14.40	13.79	13.10
Green	LZ4-00G110	167-8975● RL	23.54	22.07	20.97	19.92
Blue	LZ4-00B210	167-8970● RL	18.42	17.27	16.41	15.59
Dental Blue	LZ4-00DB10	167-8974● RL	51.18	47.97	45.57	– –
Cool White	LZ4-00CW10	167-8972● RL	18.42	17.27	16.41	15.59
Neutral White	LZ4-00NW10	167-8981● RL	18.42	17.20	16.34	15.52
Warm White	LZ4-00WW10	167-8988● RL	18.42	17.27	16.41	15.59

High Luminous Efficacy LED Emitters - RGB

LedEngin, Inc.

10W



LED / Lamp Size 7 x 7mm
Forward Current 1A
Operating Temperature -40°C to +150°C

New

- Architectural lighting
- Retail spot and display lighting
- Stage and studio lighting
- Hospitality lighting
- Museum lighting
- Dental and medical illumination
- Microscope illumination
- Video walls and full color displays

Colour	Viewing Angle	Luminous Intensity (typ)	Forward Voltage (max)	Mftrs. List No.	Order Code
Red / Green / Blue / Amber	95°	140lm	3.8V	LZ4-00MA10	167-8977
Red / Green / Blue	95°	280lm	7.5V	LZ4-00MC10	167-8979

528500

Colour	Mftrs. List No.	Order Code	Price Each 1+	10+	50+	100+
RGBA	LZ4-00MA10	167-8977● RL	18.42	17.20	16.34	15.52
RGB	LZ4-00MC10	167-8979● RL	18.42	17.20	16.34	15.52
On Standard MCPCB Option						
RGBA	LZ4-20MA10	167-8990●	20.47	19.19	18.23	17.32
RGB	LZ4-20MC10	167-8992●	20.47	19.19	18.23	17.32

Sunnix

SMD

New

SAMSUNG ELECTRONICS

Colour	Viewing Angle	Case Style	Luminous Intensity (typ)	Forward Current	Forward Current	Mftrs. List No.	Order Code
Cool White	120°	7 x 7mm	75lm	350mA	4.2V	SLHNNWH511N0	168-6046
Cool White	120°	7 x 7mm	130lm	700mA	4.5V	SLHNNWH531N0	168-6047
Warm White	120°	7 x 7mm	60lm	350mA	4.2V	SLHNNWW511N0	168-6049
Warm White	120°	7 x 7mm	100lm	700mA	4.5V	SLHNNWW531N0	168-6050
				Lensed			
Cool White	55°	7 x 7mm	80lm	350mA	4.1V	SLHNNWH511T0	168-6051
Cool White	55°	7 x 7mm	140lm	700mA	4.5V	SLHNNWH531T0	168-6052
Warm White	55°	7 x 7mm	65lm	350mA	4.1V	SLHNNWW511T0	168-6053
Warm White	55°	7 x 7mm	110lm	700mA	4.5V	SLHNNWW531T0	168-6054
Cool White	120°	8 x 8mm	140lm	180mA	11V	SLHNNWH629T0	168-6055

528864

Mftrs. List No.	Order Code	Price Each 1+	10+	25+	100+	250+
SLHNNWH511N0	168-6046●	3.18	2.65	2.22	2.02	1.85
SLHNNWH531N0	168-6047●	4.36	3.64	3.05	2.78	2.55
SLHNNWW511N0	168-6049●	3.57	2.98	2.50	2.27	2.08
SLHNNWW531N0	168-6050●	4.96	4.13	3.47	3.16	2.89
Lensed						
SLHNNWH511T0	168-6051●	3.18	2.65	2.22	2.02	1.85
SLHNNWH531T0	168-6052●	4.36	3.64	3.05	2.78	2.55
SLHNNWW511T0	168-6053●	3.57	2.98	2.50	2.27	2.08
SLHNNWW531T0	168-6054●	4.96	4.13	3.47	3.16	2.89
SLHNNWH629T0	168-6055●	3.97	3.31	2.78	2.53	2.31

Lednium Series Optimal X

TT electronics OPTEK Technology



This revolutionary package design allows the lighting designer to reduce the number of LEDs required and provide a more uniform and unique illuminated appearance than with other LED solutions. This package LEDs are designed for high current operation and high flux output application. But the package's design features better thermal management characteristics than other LED solutions. Because of these advantages, this product have many applications.

Such as automotive tail, stop and turn signal lamps, and electronic signs etc.

- High flux output and high luminance
- Designed for high current operation
- Uniform color
- Low profile and low thermal resistance
- Packaged in tubes for use with automatic insertion equipment

Colour	Luminous flux, typ.(lm)	VF, typ (V)	IF (A)	Viewing Angle	Mftrs. List No.
Amber	270	6.9	1.05	120	OVTL09LG3A
Daylight White	275	10.2	1.05	120	OVTL09LG3WD
White-Warm	230	10.2	1.05	120	OVTL09LG3WW
R, G, B	221(each)	9.2(each)	1.05(each)	120	OVTL09LG3M

490851

Mftrs. List No.	Order Code	Price Each 1+	25+	100+
OVTL09LG3A	149-8018●	30.60	23.80	21.43
OVTL09LG3M	149-8021●	30.60	23.80	21.43
OVTL09LG3WD	149-8025●	36.16	28.13	25.30
OVTL09LG3WW	149-8026●	36.16	28.13	25.30

Power LEDs

SHARP

New



Forward Voltage (min) 8.5V (typ) 10.2V (max) 11.5V
Operating Temperature -30°C to +90°C

H=1.5, W=18, D=18

Colour	Colour Temp. (typ)	Luminous Flux (min)	Luminous Flux (typ)	Forward Current	Power Dissipation	Reverse Voltage	Mftrs. List No.	Order Code
Normal White	5000K	220lm	280lm	400mA	4.4W	-5V	GW5BWC15L02	163-1564
Warm White	2800K	150lm	200lm	400mA	4.4W	-5V	GW5BDC15L02	163-1565
Hi Colour	5000K	135lm	190lm	400mA	4.4W	-5V	GW5BNC15L02	163-1566
Hi Colour	6500K	135lm	190lm	400mA	4.4W	-5V	GW5BNC15L12	163-1567
Normal White	5000K	400lm	540lm	700mA	8W	-15V	GW5BWF15L00	163-1568
Warm White	2800K	300lm	400lm	700mA	8W	-15V	GW5BDF15L00	163-1569
Hi Colour	5000K	260lm	350lm	700mA	8W	-15V	GW5BNF15L00	163-1570
Hi Colour	6500K	260lm	350lm	700mA	8W	-15V	GW5BNF15L10	163-1571

519034

Colour	Mftrs. List No.	Order Code	Price Each 1+	10+	25+
Normal White	GW5BWC15L02	163-1564●	13.27	11.94	10.86
Warm White	GW5BDC15L02	163-1565●	13.27	11.94	10.86
Hi Colour	GW5BNC15L02	163-1566●	13.27	11.94	10.86
Hi Colour	GW5BNC15L12	163-1567●	13.27	11.94	10.86
Normal White	GW5BWF15L00	163-1568●	21.80	19.63	17.84
Warm White	GW5BDF15L00	163-1569●	21.80	19.63	17.84
Hi Colour	GW5BNF15L00	163-1570●	21.80	19.63	17.84
Hi Colour	GW5BNF15L10	163-1571●	21.80	19.63	17.84

Luxeon® - Power Light Source

LUMILEDS LIGHT FROM SILICON VALLEY

Luxeon® is a revolutionary, energy efficient and ultra compact new light source, combining the lifetime and reliability advantages of Light Emitting Diodes with the brightness of conventional lighting.
The Luxeon® range features one or more power light sources mounted onto an aluminium-core printed circuit board, allowing for ease of assembly, optimum cooling and accurate light centre positioning. The discrete emitters are also available separately as are the optics.
The range includes 1 watt and 5 watt power emitters.

Features:
- Highest Flux per LED family in the world
- Very long operating life (up to 10,000 hours)
- Available in White, Green, Blue, Royal Blue, Cyan, Red, Red-Orange and Amber
- Lambertian, Batwing, Side Emitting or Collimated Distribution Pattern
- More Energy Efficient than Incandescent and most Halogen lamps
- Low voltage DC operated
- Cool beam, safe to the touch
- Instant light (<100ns)
- Fully Dimmable
- No UV
- Superior ESD protection

Typical Applications:
- Reading Lamps (car, bus, aircraft)
- Portable (flashlight, bicycle)
- Decorative
- Advertising Signs
- Architectural Detail Lighting (uplighters and downlighters)
- Cove Lighting
- Automotive Lighting (Stop-tail-turn)
- Edge-lit signs (Exit, point of sale)
- Medical Applications
- Power Signaling / Airfield / Taxiway Lighting
- Edge-Lit Signs (Exit, Point Of Sale)
- Bollards, Security and Garden Lighting
- Traffic Signaling, Beacons and Rail Crossing
- LCD Backlights / Light Guides
- Fibre Optic Alternative

248825

Luxeon® LED Emitters

LUMILEDS LIGHT FROM SILICON VALLEY

Luxeon® Version



Batwing
H = 4.8, Dia. = 8mm



Side Emitting
H = 6.09, Dia. = 9mm



Lambertian
H = 5.86, Dia. = 8mm

LUXEON® is a revolutionary, energy efficient and ultra compact light source, combining the lifetime and reliability advantages of Light Emitting Diodes with the brightness of conventional lighting.

RL Re-reeling available

Farnell

Power LED's - continued

Luxeon® LED Emitters - continued

Luxeon® Version - continued

- Long operating life - up to 100k hours
- More energy efficient than incandescent and most halogen lamps
- Low voltage DC operation
- Cool beam, safe to touch
- Instant light, less than 100ns
- Fully dimmable
- No UV
- Superior ESD protection

Colour	Luminous Flux / (Radiometric Power) (min)	(typ)	Wavelength / (Colour Temp.) (typ)	Forward Voltage (typ)	(max)	Order Code
Batwing						
Green	30.6lm	53lm	530nm	3.42V	3.99V	110-6541
Red	13.9lm	27lm	625nm	2.85V	3.27V	110-6546
White-Warm	13.9lm	20lm	(3300K)	3.42V	3.99V	110-6628
White	23.5lm	40.5lm	(5500K)	3.42V	3.99V	110-6643
Red	30.6lm	42lm	625nm	2.95V	3.51V	110-9087
Royal Blue	(145mW)	(220mW)	455nm	3.42V	3.99V	110-9089
Lambertian						
White	30.6lm	45lm	(5500K)	3.42V	3.99V	110-6548
Green	30.6lm	53lm	530nm	3.42V	3.99V	110-6549
Blue	8.2lm	16lm	470nm	3.42V	3.99V	110-6551
Royal Blue	(145mW)	(220mW)	455nm	3.42V	3.99V	110-6552
Red	30.6lm	44lm	627nm	2.95V	3.51V	110-6553
Red / Orange	39.8lm	55lm	617nm	2.95V	3.51V	110-6554
Amber	23.5lm	42lm	590nm	2.95V	3.51V	110-6555
Side Emitting						
Amber	23.5lm	38lm	590nm	2.95V	3.51V	110-9090
Blue	8.2lm	14.5lm	470nm	3.42V	3.99V	110-9092
Cyan	23.5lm	40.5lm	505nm	3.42V	3.99V	110-9093
Green	23.5lm	48lm	530nm	3.42V	3.99V	110-9094
Red	30.6lm	40lm	627nm	2.95V	3.51V	110-9095
Royal Blue	(145mW)	(220mW)	455nm	3.42V	3.99V	110-9097
White	23.5lm	40.5lm	(5500K)	3.42V	3.99V	110-9098

423090

Colour	Mftrs. List No.	Order Code	Price Each 1+	10+	50+
Batwing					
Green	LXHL-BM01	SMD 110-6541	2.57	2.37	2.20
Red	LXHL-BD01	SMD 110-6546	1.39	1.28	1.19
White-Warm	LXHL-BW03	SMD 110-6628	3.18	2.95	2.74
White	LXHL-BW02	110-6643	3.18	2.95	2.74
Red	LXHL-BD03	SMD 110-9087	2.08	1.93	1.78
Royal Blue	LXHL-BR02	SMD 110-9089	2.57	2.37	2.20
Lambertian					
White	LXHL-PW01	SMD 110-6548	3.18	2.95	2.74
Green	LXHL-PM01	SMD 110-6549	2.57	2.37	2.20
Blue	LXHL-PB01	SMD 110-6551	2.57	2.37	2.20
Royal Blue	LXHL-PR03	SMD 110-6552	2.57	2.37	2.20
Red	LXHL-PD01	SMD 110-6553	2.08	1.93	1.78
Red / Orange	LXHL-PH01	SMD 110-6554	2.08	1.93	1.78
Amber	LXHL-PL01	SMD 110-6555	2.08	1.93	1.78
Side Emitting					
Amber	LXHL-DL01	SMD 110-9090	2.08	1.93	1.78
Blue	LXHL-DB01	SMD 110-9092	2.57	2.37	2.20
Cyan	LXHL-DE01	SMD 110-9093	2.57	2.37	2.20
Green	LXHL-DM01	SMD 110-9094	2.57	2.37	2.20
Red	LXHL-DD01	SMD 110-9095	2.08	1.93	1.78
Royal Blue	LXHL-DR01	SMD 110-9097	2.57	2.37	2.20
White	LXHL-DW01	SMD 110-9098	3.18	2.95	2.74

OSTAR™ - Lighting

OSRAM



4 LEDs without optics



4 LEDs with optics



6 LEDs without optics



6 LEDs with optics

Applications:

- General lighting
- Microscope illumination
- VMS (variable message signs)
- High end strobe light

New

Forward Current 700mA Operating Temperature -40°C to +100°C

Colour	Viewing Angle	Luminous Intensity (typ)	Forward Voltage (max)	Mftrs. List No.	Order Code
4 LEDs - Without Optics					
Warm White	120°	315lm	16.4V	LECWE2A-MXNZ-MRNU	168-0587
Warm White	120°	230lm	16.4V	LECWE2A-LYNX-URVU	168-0588
6 LEDs - Without Optics					
Warm White	120°	210lm	24.5V	LECWE3A-MYPY-SRTU	168-0589
Warm White	120°	240lm	24.5V	LECWE3A-MZPY-MRNU	168-0590
Warm White	120°	180lm	24.5V	LECWE3A-MXPX-URVU	168-0591
4 LEDs - With Optics					
Warm White	130°	240lm	16.4V	LECWE2B-MZPY-MRNU	168-0592
Warm White	130°	315lm	16.4V	LECWE2B-MXNZ-URVU	168-0593
Warm White	130°	210lm	16.4V	LECWE2B-MYPX-QRRU	168-0594
Warm White	130°	210lm	16.4V	LECWE2B-MYNZ-SRTU	168-0595
6 LEDs - With Optics					
Warm White	130°	390lm	24.5V	LECWE3B-NZQX-MRNU	168-0597
Warm White	130°	280lm	24.5V	LECWE3B-NXPY-URVU	168-0598
Warm White	130°	520lm	24.5V	LECWE3B-NYPZ-SRTU	168-0599
Warm White	130°	330lm	24.5V	LECWE3B-NYPZ-QRRU	168-0601
Ultra White	130°	278lm	24.5V	LEUWE3B-PZQZ-ERFT	168-0603

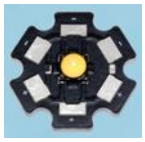
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Mftrs. List No.	Order Code	Price Each 1+	5+	10+	25+
4 LEDs - Without Optics					
LECWE2A-MXNZ-MRNU	168-0587	22.13	19.92	17.47	14.23
LECWE2A-LYNX-URVU	168-0588	22.13	19.92	17.47	14.23
6 LEDs - Without Optics					
LECWE3A-MYPY-SRTU	168-0589	33.20	27.89	24.46	19.92
LECWE3A-MZPY-MRNU	168-0590	33.20	27.89	24.46	19.92
LECWE3A-MXPX-URVU	168-0591	33.20	27.89	24.46	19.92
4 LEDs - With Optics					
LECWE2B-MZPY-MRNU	168-0592	27.39	21.91	19.22	15.65
LECWE2B-MXNZ-URVU	168-0593	27.39	21.91	19.22	15.65
LECWE2B-MYPX-QRRU	168-0594	27.39	21.91	19.22	15.65
LECWE2B-MYNZ-SRTU	168-0595	27.39	21.91	19.22	15.65
6 LEDs - With Optics					
LECWE3B-NZQX-MRNU	168-0597	27.39	21.91	19.22	15.65
LECWE3B-NXPY-URVU	168-0598	31.79	28.73	26.21	21.34
LECWE3B-NYPZ-SRTU	168-0599	31.79	28.73	26.21	21.34
LECWE3B-NYPZ-QRRU	168-0601	31.79	28.73	26.21	21.34
LEUWE3B-PZQZ-ERFT	168-0603	36.89	33.20	29.12	23.71

Emitter on Standard MCPCB Option

LedEngin, Inc.

5W



- Typical Thermal Resistance for MCPCB adds only 2°C/W
- Multiple mounting and attachment options
- MCPCB contains Zener Diode for ESD protection

New

LED / Lamp Size 4.4 x 4.4mm Operating Temperature -40°C to +150°C
Forward Current 1.5A

528500

Colour	Luminous Intensity (typ)	Mftrs. List No.	Order Code	Price Each 1+	10+	50+	100+
Deep Red	–	LZ1-10R205	167-8961	7.48	7.07	6.65	6.32
Red	150lm	LZ1-10R105	167-8960	5.70	5.38	5.07	4.75
Amber	140lm	LZ1-10A105	167-8953	5.70	5.38	5.07	4.75
Green	175lm	LZ1-10G105	167-8958	6.91	6.52	6.13	5.82
Blue	50lm	LZ1-10B205	167-8955	6.33	5.99	5.64	4.75
Dental Blue	–	LZ1-10DB05	167-8957	13.55	12.80	12.16	11.55
Cool White	220lm	LZ1-10CW05	167-8956	6.33	5.99	5.64	5.36
Neutral White	180lm	LZ1-10NW05	167-8959	6.33	5.99	5.64	5.36
Warm White	135lm	LZ1-10WW05	167-8963	6.33	5.99	5.64	5.36

Luxeon® 1W Star (Mounted) Emitters

LUMILEDS™ LIGHT FROM SILICON VALLEY



Luxeon® Star (with optic)



Luxeon® Star (with connector)



Luxeon® Star

A range of modules incorporate the Luxeon® emitters on a preformed heatsinking PCB base. This makes the devices easier to use, the assemblies feature suitable mounting points and electrical connections.
The range includes the "batwing", "lambertian" and "side" emitting variants together with a version carrying a collimating optic lens.

Parameter	White / Green / Cyan / Blue / Royal Blue	Red / Amber / Red-Orange
DC Forward Current	350mA	385mA
Peak Pulsed Forward Current	500mA	550mA
LED Junction Temperature	120°C	120°C
Storage and Operating Temperature		
Luxeon® Star:	-40°C to +105°C	-40°C to +105°C
Luxeon® Star (with connector):	-40°C to +75°C	-40°C to +75°C
Luxeon® Star (with optic):	-40°C to +75°C	-40°C to +75°C

Luxeon® Star

Colour	Voltage Vf max	Luminous Flux (Radiometric Power) min	Wavelength typ (Colour temp.)	Viewing Angle	Mftrs. List No.	Order Code
Side Emitter						
Red	3.51V	30.6lm	625nm	110°	LXHL-FD1C	110-6592
Amber	3.51V	23.5lm	590nm	110°	LXHL-FL1C	110-6593
Green	3.99V	23.5lm	530nm	85°	LXHL-FM1C	110-6588
Blue	3.99V	8.2lm	470nm	110°	LXHL-FB1C	110-6590
White	3.99V	23.5lm	(5500K)	85°	LXHL-FW1C	110-6587
White	3.99V	23.5lm	(5500K)	110°	LXHL-BW02	110-6643
Batwing						
Red	3.27V	13.9lm	625nm	110°	LXHL-MD1C	110-6561
Red	3.51V	30.6lm	625nm	110°	LXHL-MDAC	110-9152
Cyan	3.99V	30.6lm	505nm	110°	LXHL-ME1C	110-6558
Green	3.99V	30.6lm	530nm	110°	LXHL-MM1C	110-6556
Blue	8.2V	8.2lm	470nm	110°	LXHL-MB1C	110-6559
White	3.99V	30.6lm	(5500K)	110°	LXHL-MWEC	110-6644
White-Warm	3.99V	30.6lm	(3300K)	110°	LXHL-MWGC	110-6627
Lambertian						
Red	3.51V	30.6lm	625nm	110°	LXHL-MD1D	110-6567
Red / Orange	3.51V	39.8lm	617nm	110°	LXHL-MH1D	110-6568
Amber	3.51V	23.5lm	590nm	110°	LXHL-ML1D	110-6571
Green	3.99V	30.6lm	530nm	140°	LXHL-MM1D	110-6564
Blue	3.99V	8.2lm	470nm	140°	LXHL-MB1D	110-6566
Royal Blue	3.99V	(145mW)	455nm	140°	LXHL-MRRD	110-9154
White	3.99V	30.6lm	(5500K)	140°	LXHL-MW1D	110-6563

RL Re-reeling available

Farnell

Colour	Mftrs. List No.	Order Code	Price Each 1+	10+	50+
Side Emitter					
Red	LXHL-FD1C	110-6592●	2.75	2.54	2.35
Amber	LXHL-FL1C	110-6593●	2.75	2.54	2.35
Green	LXHL-FM1C	110-6588●	3.21	2.98	2.76
Blue	LXHL-FB1C	110-6590●	3.21	2.98	2.76
White	LXHL-FW1C	110-6587●	3.85	3.55	3.30
White	LXHL-BW02	110-6643●	3.18	2.95	2.74
Batwing					
Red	LXHL-MD1C	110-6561●	2.05	1.89	1.75
Red	LXHL-MDAC	110-9152●	2.75	2.54	2.35
Cyan	LXHL-ME1C	110-6558●	3.15	3.03	2.93
Green	LXHL-MM1C	110-6556●	3.15	3.03	2.93
Blue	LXHL-MB1C	110-6559●	3.15	3.03	2.93
White	LXHL-MWEC	110-6644●	3.85	3.55	3.30
White-Warm	LXHL-MWGC	110-6627●	3.85	3.55	3.30
Lambertian					
Red	LXHL-MD1D	110-6567●	2.75	2.54	2.35
Red / Orange	LXHL-MH1D	110-6568●	2.75	2.54	2.35
Amber	LXHL-ML1D	110-6571●	2.75	2.54	2.35
Green	LXHL-MM1D	110-6564●	3.21	2.98	2.76
Blue	LXHL-MB1D	110-6566●	3.21	2.98	2.76
Royal Blue	LXHL-MRRD	110-9154●	3.21	2.98	2.76
White	LXHL-MW1D	110-6563●	3.85	3.55	3.30

Luxeon® Star (with connector)

Colour	Voltage Vf max	Luminous Flux (Radiometric Power) min	Wavelength typ (Colour temp.)	Viewing Angle	Mftrs. List No.	Order Code
Batwing						
Royal Blue	3.99V	(145mW)	455nm	110°	LXHL-MRRA	110-6575
Green	3.99V	30.6lm	530nm	110°	LXHL-MM1A	110-6572
Lambertian						
Red	3.51V	30.6lm	625nm	110°	LXHL-MD1B	110-6584
White	3.99V	30.6lm	(5500K)	140°	LXHL-MW1B	110-6578

Colour	Mftrs. List No.	Order Code	Price Each 1+	10+	50+
Batwing					
Royal Blue	LXHL-MRRA	110-6575●	3.88	3.48	3.17
Green	LXHL-MM1A	110-6572●	3.88	3.48	3.17
Lambertian					
Red	LXHL-MD1B	110-6584●	3.66	3.29	2.99
White	LXHL-MW1B	110-6578●	5.13	4.62	4.21

Luxeon® Star (with optic)

Colour	Voltage Vf max	Luminous Flux (Radiometric Power) min	Wavelength typ (Colour temp.)	Viewing Angle	Mftrs. List No.	Order Code
Batwing						
Red	3.27V	-	625nm	110°	LXHL-ND98	110-6601
Amber	3.27V	-	590nm	110°	LXHL-NL98	110-6602
Green	3.99V	30.6lm	530nm	110°	LXHL-NM98	110-6595
Blue	3.99V	8.2lm	470nm	110°	LXHL-NB98	110-6597
Royal Blue	3.99V	(145mW)	455nm	110°	LXHL-NRR8	110-6599
White	3.99V	30.6lm	(5500K)	110°	LXHL-NWE8	110-6646
White-Warm	3.99V	13.9lm	(3300K)	25°	LXHL-NWG8	110-9160
Lambertian						
Red / Orange	3.51V	39.8lm	617nm	140°	LXHL-NH94	110-9159
Amber	3.51V	23.5lm	590nm	140°	LXHL-NL94	110-9158

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Colour	Mftrs. List No.	Order Code	Price Each 1+	10+	50+
Batwing					
Red	LXHL-ND98	SMD 110-6601●	4.21	3.80	3.44
Amber	LXHL-NL98	SMD 110-6602●	4.21	3.80	3.44
Green	LXHL-NM98	SMD 110-6595●	5.25	4.73	4.28
Blue	LXHL-NB98	SMD 110-6597●	5.78	5.20	4.71
Royal Blue	LXHL-NRR8	SMD 110-6599●	4.27	3.85	3.49
White	LXHL-NWE8	SMD 110-6646●	6.60	5.95	5.41
White-Warm	LXHL-NWG8	SMD 110-9160●	4.96	4.58	4.26
Lambertian					
Red / Orange	LXHL-NH94	SMD 110-9159●	3.85	3.55	3.30

Luxeon® LED Emitters

LUMILEDS™ LIGHT FROM SILICON VALLEY

Luxeon® III Version



Lambertian
H = 5.86, Dia. = 8mm



Side Emitting
H = 6.09, Dia. = 9mm

- Long operating life - up to 100k hours
- More energy efficient than incandescent and most halogen lamps
- Low voltage DC operation
- Cool beam, safe to touch
- Instant light, less than 100 ns
- Fully dimmable
- No UV
- Superior ESD protection

LUXEON® III is a revolutionary, energy efficient and ultra compact light source, combining the lifetime and reliability advantages of Light Emitting Diodes with the brightness of conventional lighting. LUXEON® III is rated for up to 1400mA operation, delivering increased lumens per package.

Colour	Luminous Flux / (Radiometric Power) (min)	(typ)	Wavelength / (Colour Temp.) (typ)	Forward Voltage (typ)	(max)	Order Code
Lambertian						
White	60lm	65lm	(5500K)	3.7V	4.47V	110-6629
Green	51.7lm	64lm	530nm	3.7V	4.47V	110-6630
Cyan	51.7lm	64lm	505nm	3.7V	4.47V	110-6631
Blue	13.9lm	23lm	470nm	3.7V	4.47V	110-6632
Royal Blue	(275mW)	(340mW)	455nm	3.7V	4.47V	110-6633
Amber	70lm	110lm	590nm	2.95V	3.51V	110-9117
Red	90lm	140lm	627nm	2.95V	3.51V	110-9118
Red / Orange	120lm	190lm	617nm	3.7V	4.47V	110-9119
Side Emitting						
White	51.7lm	58lm	(5500K)	3.7V	4.47V	110-6634
Red / Orange	120lm	170lm	617nm	2.95V	3.51V	110-9123

423138

Colour	Mftrs. List No.	Order Code	Price Each 1+	10+	50+
Lambertian					
White	LXHL-PW09	SMD 110-6629●	3.66	3.39	3.14
Green	LXHL-PM09	SMD 110-6630●	3.05	2.81	2.62
Cyan	LXHL-PE09	SMD 110-6631●	3.05	2.81	2.62
Blue	LXHL-PB09	SMD 110-6632●	3.05	2.81	2.62
Royal Blue	LXHL-PR09	SMD 110-6633●	3.05	2.81	2.62
Amber	LXHL-PL09	SMD 110-9117●	4.30	3.96	3.70
Red	LXHL-PD09	SMD 110-9118●	4.30	3.96	3.70
Red / Orange	LXHL-PH09	SMD 110-9119●	4.30	3.96	3.70
Side Emitting					
White	LXHL-DW09	SMD 110-6634●	3.66	3.39	3.14
Red / Orange	LXHL-DH09	SMD 110-9123●	4.30	3.96	3.70

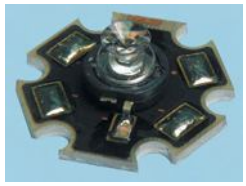
Luxeon® III Star

LUMILEDS™ LIGHT FROM SILICON VALLEY

Light Source



Lambertian



Side Emitting

- Long operating life - up to 100k hours
- Energy efficient
- Low voltage DC operation
- Cool beam, safe to touch
- Instant light, less than 100 ns
- Fully dimmable
- No UV
- Superior ESD protection

Luxeon® Star hexagonal modules can be connected and powered in a close packed hexagonal configuration for tight spacing and increased light output per unit area. Available in white, green, cyan, blue, royal blue, red, red-orange, and amber.

Colour	Luminous Flux / (Radiometric Power) (min)	(typ)	Wavelength / (Colour Temp.) (typ)	Forward Voltage (typ)	(max)	Order Code
Lambertian Beam Pattern						
White	60lm	65lm	(5500K)	3.7V	4.47V	110-6635
Green	51.7lm	64lm	530nm	3.7V	4.47V	110-6637
Cyan	51.7lm	64lm	505nm	3.7V	4.47V	110-6638
Blue	13.9lm	23lm	470nm	3.7V	4.47V	110-6639
Royal Blue	(275mW)	(340mW)	455nm	3.7V	4.47V	110-6640
Red	90lm	140lm	627nm	2.95V	3.51V	110-9125
Red / Orange	120lm	190lm	617nm	2.95V	3.51V	110-9126
Amber	70lm	110lm	590nm	2.95V	3.51V	110-9124
Side Emitting Beam Pattern						
White	51.7lm	58lm	(5500K)	3.7V	3.90V	110-6641
Green	51.7lm	58lm	530nm	3.7V	4.47V	110-6642
Blue	13.9lm	21lm	470nm	3.7V	4.47V	110-6647
Red	90lm	125lm	627nm	2.95V	3.51V	110-9128
Amber	70lm	100lm	590nm	2.95V	3.51V	110-9127

423166

Colour	Mftrs. List No.	Order Code	Price Each 1+	10+	50+
Lambertian Beam Pattern					
White	LXHL-LW3C	SMD 110-6635●	4.32	3.99	3.72
Green	LXHL-LM3C	SMD 110-6637●	3.72	3.42	3.17
Cyan	LXHL-LE3C	SMD 110-6638●	3.72	3.42	3.17
Blue	LXHL-LB3C	SMD 110-6639●	3.72	3.42	3.17
Royal Blue	LXHL-LR3C	SMD 110-6640●	3.72	3.42	3.17
Red	LXHL-LD3C	SMD 110-9125●	4.96	4.58	4.26
Red / Orange	LXHL-LH3C	SMD 110-9126●	4.96	4.58	4.26
Amber	LXHL-LL3C	SMD 110-9124●	4.96	4.58	4.26
Side Emitting Beam Pattern					
White	LXHL-FW3C	SMD 110-6641●	4.32	3.99	3.72
Green	LXHL-FM3C	SMD 110-6642●	3.72	3.42	3.17
Blue	LXHL-FB3C	SMD 110-6647●	3.72	3.42	3.17
Red	LXHL-FD3C	SMD 110-9128●	4.96	4.58	4.26
Amber	LXHL-FL3C	SMD 110-9127●	4.96	4.58	4.26

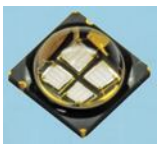
RL Re-reeling available

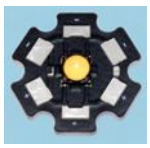
£ € 40,000 PRICES REDUCED

Power LED's - continued

High Efficacy UV LED Emitter

LedEngin, Inc.







New

- Dental curing and teeth whitening
- DNA gel
- Sterilization and medical

Operating Temperature -40°C to +150°C

	Output Power	LED / Lamp Size	Forward Current	Mftrs. List No.	Order Code
LED, 5W, UV	5W	4.4 x 4.4mm	1.5A	LZ1-00UA05	167-8951
LED, 5W, STAR, UV	5W	4.4 x 4.4mm	1.5A	LZ1-10UA05	167-8962
LED, 5W, MCPCB, UV	5W	4.4 x 4.4mm	1.5A	LZ1-30UA05	167-8967
LED, 10W, UV	10W	7 x 7mm	1A	LZ4-00UA10	167-8986
LED, 10W, STAR, UV	10W	7 x 7mm	1A	LZ4-40UA10	167-9001
LED, 15W, UV	15W	7 x 7mm	1.5A	LZ4-00UA15	167-8987

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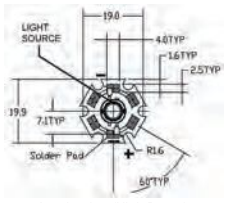
	Mftrs. List No.	Order Code	Price Each 1+	10+	50+	100+
LED, 5W, UV	LZ1-00UA05	**167-8951**	18.42	17.40	16.53	15.70
LED, 5W, STAR, UV	LZ1-10UA05	**167-8962**	19.57	18.49	17.57	16.69
LED, 5W, MCPCB, UV	LZ1-30UA05	**167-8967**	25.00	22.73	21.55	20.16
LED, 10W, UV	LZ4-00UA10	**167-8986**	61.41	58.34	55.42	52.65
LED, 10W, STAR, UV	LZ4-40UA10	**167-9001**	83.75	76.14	72.20	67.54
LED, 15W, UV	LZ4-00UA15	**167-8987**	59.49	56.52	53.69	51.01

Luxeon® 5 Watt Star (Mounted) Emitters

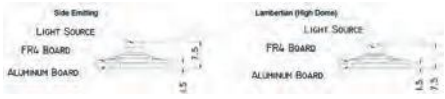
LUMILEDS™ LIGHT FROM SILICON VALLEY

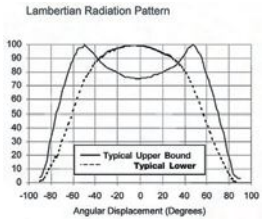


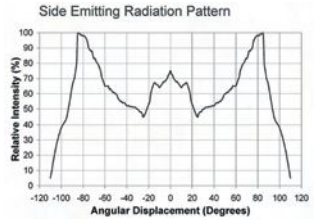
Side Emitting



Lambertian (High Dome)







A range of Luxeon® 5 Watt discrete emitters and modules which incorporate the emitters on a preformed heatsinking PCB base. The range includes the "lambertian" and "side" emitting variants. This range of devices represent the highest flux per LED currently available, with a flux density twenty times the lm/mm^2 of standard through hole LEDs.

DC Forward Current 700mA
Peak Pulsed Forward Current 1000
Reverse Voltage >5V
LED Junction Temp 120°C
Operating Temperature -40°C to +120°C

Colour	Forward Voltage	Luminous Flux / (Radiometric Power)	Peak Wavelength / (Colour Temp.)	Viewing Angle	Mftrs. List No.	Order Code
Lambertian						
White	8.31V	120lm	(5500K)	120°	LXHL-LW6C	110-6615
Green	8.31V	160lm	530nm	150°	LXHL-LM5C	110-6616
Cyan	8.31V	160lm	505nm	150°	LXHL-LE5C	110-6617
Blue	8.31V	48lm	470nm	150°	LXHL-LB5C	110-6618
Royal Blue	8.31V	(700mW)	455nm	150°	LXHL-LR5C	110-6619
Side Emitting						
White	8.31V	105lm	(5500K)	75°	LXHL-FW6C	110-6620

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Colour	Mftrs. List No.	Order Code	Price Each 1+	10+	50+
Lambertian					
White	LXHL-LW6C	SMD **110-6615**	20.35	18.32	16.64
Green	LXHL-LM5C	SMD **110-6616**	17.04	15.35	13.94
Cyan	LXHL-LE5C	SMD **110-6617**	17.04	15.35	13.94
Blue	LXHL-LB5C	SMD **110-6618**	17.04	15.35	13.94
Royal Blue	LXHL-LR5C	SMD **110-6619**	17.04	15.35	13.94
Side Emitting					
White	LXHL-FW6C	SMD **110-6620**	20.35	18.32	16.64

Luxeon® V Portable Emitters

LUMILEDS™ LIGHT FROM SILICON VALLEY



H = 5.86, Dia. = 8mm

- Extreme luminous density, 20 times the lm/mm^2 of through hole LED
- Long operating life - up to 100k hours
- More energy efficient than incandescent and most halogen lamps
- Low voltage DC operation
- Cool beam, safe to touch
- Instant light, less than 100 ns
- Fully dimmable
- No UV
- Superior ESD protection

LUXEON® V is a revolutionary, energy efficient and ultra compact light source, combining the lifetime and reliability advantages of Light Emitting Diodes with the brightness of conventional lighting. LUXEON® V offers extreme luminous density, up to 50 times that of alternative solid-state light sources creating new opportunities for solid-state lighting to displace conventional lighting technologies.
LUXEON® V Portable is designed for portable lighting products such as flashlights, "miner" head-mounted lights, emergency lighting and other battery-operated devices. This device offers ruggedness, low power consumption and lifetimes greater than 50 times that of flashlight sources.

Colour	Beam Pattern	Luminous Flux (min)	Luminous Flux (typ)	Colour Temperature	Forward Voltage (typ)	Forward Voltage (max)	Order Code
White	Lambertian	87.4lm	120lm	5500K	6.84V	8.31V	110-6604

423143

Colour	Mftrs. List No.	Order Code	Price Each 1+	10+	50+
White	LXHL-PW03	SMD **110-6604**	19.54	17.59	15.99

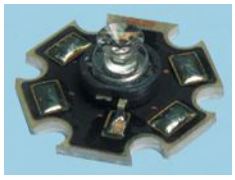
Luxeon® V Star

LUMILEDS™ LIGHT FROM SILICON VALLEY

Light Source



Lambertian



Side Emitting

- Long operating life - up to 100k hours
- Energy efficient
- Low voltage DC operation
- Cool beam, safe to touch
- Instant light, less than 100 ns
- Fully dimmable
- No UV
- Superior ESD protection

LUXEON® V is a revolutionary, energy efficient and ultra compact light source, combining the lifetime and reliability advantages of Light Emitting Diodes with the brightness of conventional lighting. LUXEON® V offers extreme luminous density, up to 50 times that of alternative solid-state light sources creating new opportunities for solid-state lighting to displace conventional lighting technologies. These hexagonal modules can be connected and powered in a close packed hexagonal configuration for tight spacing and increased light output per unit area.
LUXEON® V Portable is designed for portable lighting products such as flashlights, "miner" head-mounted lights, emergency lighting and other battery-operated devices. This device offers ruggedness, low power consumption and lifetimes greater than 50 times that of flashlight sources - over 500 hours compared to the typical 20 hour life of an incandescent bulb.

Colour	Luminous Flux / (Radiometric Power) (min)	(typ)	Wavelength / (Colour Temp.) (typ)	Forward Voltage (typ)	(max)	Order Code
Lambertian Beam Pattern						
Green	67.2lm	160lm	530nm	6.84V	8.31V	110-6616
Cyan	67.2lm	160lm	505nm	6.84V	8.31V	110-6617
Blue	23.5lm	48lm	470nm	6.84V	8.31V	110-6618
Royal Blue	(275mW)	(700mW)	455nm	6.84V	8.31V	110-6619
LUXEON® V Portable						
White - Lambertian	87.4lm	120lm	(5500K)	(6.84V)	(8.31V)	110-6615
White - Star	87.4lm	105lm	(5500K)	(6.84V)	(8.31V)	110-6620

423175

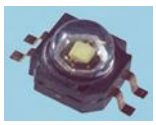
Colour	Mftrs. List No.	Order Code	Price Each 1+	10+	50+
Lambertian Beam Pattern					
Green	LXHL-LM5C	SMD **110-6616**	17.04	15.35	13.94
Cyan	LXHL-LE5C	SMD **110-6617**	17.04	15.35	13.94
Blue	LXHL-LB5C	SMD **110-6618**	17.04	15.35	13.94
Royal Blue	LXHL-LR5C	SMD **110-6619**	17.04	15.35	13.94
LUXEON® V Portable - White					
Lambertian	LXHL-LW6C	SMD **110-6615**	20.35	18.32	16.64
Star	LXHL-FW6C	SMD **110-6620**	20.35	18.32	16.64

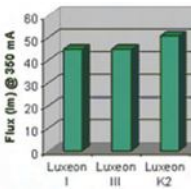
RL Re-reeling available

Luxeon® K2 Emitter

LUMILEDS™ LIGHT FROM SILICON VALLEY

140 ° Viewing Angle





Colour	Wavelength Type (nm) Colour Temperature (K)	Radiometric Power (mW) ϕ min [1]	Typ [2]	Test Current mA	Forward Voltage (V) @ 350 mA, 25 °C Min	Typ	Max	Mftrs. List No.
White	6500 K	39.8	45	350	2.79	3.42	4.23	LXK2-PW12-R00
White	6500 K	80	85	350	2.79	3.42	4.23	LXK2-PW14-T00
White	6500 K	87.4	100	350	2.79	3.42	4.23	LXK2-PW14-U00
Green	530 nm	39.8	45	350	2.79	3.42	4.23	LXK2-PM12-R00
Green	530 nm	87.4	100	350	2.79	3.42	4.23	LXK2-PM14-U00
Cyan	505 nm	30.6	35	350	2.79	3.42	4.23	LXK2-PE12-Q00
Cyan	505 nm	67.2	80	350	2.79	3.42	4.23	LXK2-PE14-T00
Blue	470 nm	8.2	9.5	350	2.79	3.42	4.23	LXK2-PB12-K00
Blue	470 nm	18.1	21	350	2.79	3.42	4.23	LXK2-PB14-N00
Blue	455 nm	175	200	350	2.79	3.42	4.23	LXK2-PR12-L00
Blue	nm 455	435	475	350	2.79	3.42	4.23	LXK2-PR14-Q00
Red	627 nm	30.6	35	350	2.31	2.95	3.51	LXK2-PD12-Q00
Red	627 nm	39.8	45	350	2.31	2.95	3.51	LXK2-PD12-R00
Red	627 nm	51.7	60	350	2.31	2.95	3.51	LXK2-PH12-S00
Red-Orange	617 nm	39.8	45	350	2.31	2.95	3.51	LXK2-PH12-R00
Amber	590 nm	23.5	27	350	2.31	2.95	3.51	LXK2-PL12-P00
Amber	590 nm	30.6	35	350	2.31	2.95	3.51	LXK2-PL12-Q00

1. Miniumum luminous flux or radiometric power performance guaranteed within published operating conditions. Tolerance ± 10 % on flux and power measurements.
2. Typical luminous flux or radiometric power performance when device is operated within published operating conditions.

440299

Mftrs. List No.	Colour	Order Code		Price Each 1+	10+	50+	100+
LXK2-PW12-R00	White	122-5059●	RL	3.60	3.38	3.20	2.85
LXK2-PW14-T00	White	122-5060●	RL	3.60	3.23	3.20	2.67
LXK2-PW14-U00	White	122-5061●	RL	3.60	3.38	3.20	2.85
LXK2-PM12-R00	Green	122-5062●	RL	3.00	2.82	2.67	2.37
LXK2-PM14-U00	Green	122-5063●	RL	3.00	2.82	2.67	2.37
LXK2-PE12-Q00	Cyan	122-5064●	RL	2.85	2.68	2.54	2.28
LXK2-PE14-T00	Cyan	122-5065●	RL	3.00	2.82	2.67	2.37
LXK2-PB12-K00	Blue	122-5067●	RL	3.00	2.82	2.67	2.37
LXK2-PB14-N00	Blue	122-5068●	RL	3.00	2.82	2.67	2.37
LXK2-PR12-L00	Blue	122-5069●	RL	3.00	2.82	2.67	2.37
LXK2-PR14-Q00	Blue	122-5070●	RL	3.00	2.82	2.67	2.37
LXK2-PD12-Q00	Red	122-5071●	RL	2.46	2.31	2.19	1.94
LXK2-PD12-R00	Red	122-5072●	RL	2.70	2.54	2.40	2.13
LXK2-PH12-R00	Red / Orange	122-5073●	RL	2.46	2.31	2.19	1.94
LXK2-PH12-S00	Red	122-5074●	RL	2.70	2.54	2.40	2.13
LXK2-PL12-P00	Amber	122-5075●	RL	2.46	2.31	2.19	1.94
LXK2-PL12-Q00	Amber	122-5076●	RL	2.70	2.50	2.40	2.07

High Power Rebel Series

LUXEON™ LUMILEDS™ LIGHT FROM SILICON VALLEY

FRAEN

SMD

140 ° Viewing Angle



H=4.61, W=3.17, D=2.1



20 mm Range (101xx and 102xx series)



Fraen Lenses

LUXEON® Rebel is the smallest surface mountable power LED available today. With the industry's best lumens per package, highest light density (lumens per mm^2), and the highest packing density, LUXEON Rebel is ideal for both space-constrained and conventional solid-state lighting applications.

- 150°C Junction Temperature-
- Industry leading lumen performance
- 80 lumens in cool white at 350mA
- 350mA - 1000mA drive current
- High efficacy, flux density and lumens per package
- Industry best moisture sensitivity level - JEDEC Level 1 unlimited floor life no need for reconditioning
- Autoclave compliant - JESD22 A-102
- 350mA - 1000mA drive current
- Industry best lumen maintenance - 50,000 hours life at 700 mA with 70% lumen maintenance

Colour	Wavelength(nm) or Colour Temp(K) Min, Typ, Max	Luminous Flux or Radiometric Power Lm, (mW) min, typ	Voltage Forward, V_F V	Order Code
Cool White	4500K, 6500K, 10000K	40, 80	3.15	137-6601
Cool White	4500K, 6500K, 10000K	50, 95	3.15	137-6602
Cool White	4500K, 6500K, 10000K	70, 130	3.15	137-6604
Cool White	4500K, 6500K, 10000K	80, 145	3.15	137-6605
Cool White	4500K, 6500K, 10000K	90, 160	3.15	155-5332
Cool White	4500K, 6500K, 10000K	100, 180	3.15	155-5331
White / Natural	3500K, 4100K, 4500K	40, 80	3.15	137-6606
White / Natural	3500K, 4100K, 4500K	50, 95	3.15	137-6607
White / Natural	3500K, 4100K, 4500K	70, 130	3.15	137-6608
White / Natural	3500K, 4100K, 4500K	80, 145	3.15	137-6609
White-Warm	2670K, 3100K, 3500K	40, 80	3.15	137-6610
White-Warm	2670K, 3100K, 3500K	50, 95	3.15	137-6611
White-Warm	2670K, 3100K, 3500K	60, 110	3.15	137-6612
Green	520nm, 530nm, 550nm	40, 80	3.15	137-6613
Green	520nm, 530nm, 550nm	60, 95	3.15	137-6614
Green	520nm, 530nm, 550nm	70, 130	3.15	137-6616
Green	520nm, 530nm, 550nm	80, 145	3.15	137-6617
Cyan	490nm, 505nm, 520nm	30, 65	3.15	155-5333
Cyan	490nm, 505nm, 520nm	40, 80	3.15	137-6618
Cyan	490nm, 505nm, 520nm	60, 110	3.15	137-6619
Cyan	490nm, 505nm, 520nm	70, 130	3.15	137-6620
Blue	460nm, 470nm, 490nm	8.2, 19	3.15	137-6621
Blue	460nm, 470nm, 490nm	10.7, 22	3.15	137-6622
Blue	460nm, 470nm, 490nm	13.9, 27	3.15	137-6623
Blue	460nm, 470nm, 490nm	18.1, 38	3.15	137-6624
Blue	460nm, 470nm, 490nm	23.5, 48	3.15	137-6625
Royal Blue	440nm, 455nm, 460nm	(175, 325)	3.15	137-6626
Royal Blue	440nm, 455nm, 460nm	(225, 400)	3.15	137-6628
Royal Blue	440nm, 455nm, 460nm	(275, 525)	3.15	137-6629
Red	620.5nm, 627nm, 645nm	40, 85	2.9	137-6631
Red / Orange	613.5nm, 617nm, 620.5nm	40, 85	2.9	137-6632
Red / Orange	613.5nm, 617nm, 620.5nm	50, 100	2.9	137-6633
Amber	584.5nm, 617nm, 620.5nm	23.5, 50	2.9	137-6634
Amber	584.5nm, 617nm, 620.5nm	30, 65	2.9	137-6635

Lenses

Lens Type	Mftr.	Order Code
Narrow	FRAEN	137-6636
Medium	FRAEN	137-6637
Wide	FRAEN	137-6638
Elliptic	FRAEN	137-6641
Narrow	CARCLO OPTICS	137-6645
Tight Frosted	CARCLO OPTICS	137-6646
Medium Frosted	CARCLO OPTICS	137-6647
Wide Frosted	CARCLO OPTICS	137-6648
Elliptic	CARCLO OPTICS	137-6649
Elliptic Orth	CARCLO OPTICS	137-6650
Wide	CARCLO OPTICS	137-6651
Wide Ripple	CARCLO OPTICS	137-6653

475072

LED Colour	Mftrs. List No.		Order Code		Price Each 1+	10+	50+
Cool White	LXML-PWC1-0040		SMD 137-6601●		2.09	1.51	1.39
Cool White	LXML-PWC1-0050		SMD 137-6602●		2.54	1.84	1.69
Cool White	LXML-PWC1-0070		SMD 137-6604●		2.92	2.13	1.95
Cool White	LXML-PWC1-0080		SMD 137-6605●		3.21	2.34	2.14
Cool White	LXML-PWC1-0090	NEW	SMD 155-5332●		4.26	3.10	2.84
Cool White	LXML-PWC1-0100	NEW	SMD 155-5331●		5.41	3.93	3.60
White / Natural	LXML-PWN1-0040		SMD 137-6606●		2.09	1.51	1.39
White / Natural	LXML-PWN1-0050		SMD 137-6607●		2.54	1.84	1.69
White / Natural	LXML-PWN1-0070		SMD 137-6608●		2.92	2.13	1.95
White / Natural	LXML-PWN1-0080		SMD 137-6609●		3.21	2.34	2.14
White-Warm	LXML-PWW1-0040		SMD 137-6610●		2.54	1.84	1.69
White-Warm	LXML-PWW1-0050		SMD 137-6611●		2.46	1.80	1.65
White-Warm	LXML-PWW1-0060		SMD 137-6612●		3.66	2.66	2.44
Green	LXML-PM01-0040		SMD 137-6613●		2.07	1.50	1.38
Green	LXML-PM01-0050		SMD 137-6614●		2.54	1.84	1.69
Green	LXML-PM01-0070		SMD 137-6616●		2.92	2.13	1.95
Green	LXML-PM01-0080		SMD 137-6617●		3.21	2.34	2.14
Cyan	LXML-PE01-0030	NEW	SMD 155-5333●		2.08	1.51	1.39
Cyan	LXML-PE01-0040		SMD 137-6618●		2.54	1.84	1.69
Cyan	LXML-PE01-0060		SMD 137-6619●		2.92	2.13	1.95
Cyan	LXML-PE01-0070		SMD 137-6620●		3.21	2.34	2.14
Blue	LXML-PB01-0008		SMD 137-6621●		2.14	1.55	1.42
Blue	LXML-PB01-0010		SMD 137-6622●		2.54	1.84	1.69
Blue	LXML-PB01-0013		SMD 137-6623●		3.80	2.76	2.54
Blue	LXML-PB01-0018		SMD 137-6624●		3.23	2.36	2.16
Blue	LXML-PB01-0023		SMD 137-6625●		3.80	2.76	2.54
Royal Blue	LXML-PR01-0175		SMD 137-6626●		2.04	1.48	1.36
Royal Blue	LXML-PR01-0225		SMD 137-6628●		2.51	1.82	1.67
Royal Blue	LXML-PR01-0275		SMD 137-6629●		3.23	2.36	2.16
Red	LXML-PD01-0030		SMD 137-6630●		1.64	1.20	1.10
Red	LXML-PD01-0040		SMD 137-6631●		1.92	1.40	1.29
Red / Orange	LXML-PH01-0040		SMD 137-6632●		1.64	1.20	1.10
Red / Orange	LXML-PH01-0050		SMD 137-6633●		1.92	1.40	1.29
Amber	LXML-PL01-0023		SMD 137-6634●		1.64	1.20	1.10
Amber	LXML-PL01-0030		SMD 137-6635●		1.90	1.38	1.27

Lenses

Type					
Narrow	FLP-N1-RE-HR	137-6636	1.23	0.89	0.82
Medium	FLP-M1-RE-HR	137-6637	1.23	0.89	0.82
Wide	FLP-W1-RE-HR	137-6638	1.23	0.89	0.82
Elliptic	FLP-E1-RE-HR	137-6641	1.23	0.89	0.82
Narrow	10193	137-6645	1.88	1.37	1.25
Tight Frosted	10194	137-6646	1.88	1.37	1.25
Medium Frosted	10195	137-6647	1.88	1.37	1.25
Wide Frosted	10196	137-6648	1.88	1.37	1.25
Elliptic	10197	137-6649	1.88	1.37	1.25
Elliptic Orth	10198	137-6650	1.88	1.37	1.25
Wide	10208	137-6651	1.88	1.37	1.25
Wide Ripple	10209	137-6653	3.42	2.48	2.28

Lens Holders

Single	180	137-6643	0.56	0.41	0.37
Tri-Lens	181	137-6644	8.24	5.98	5.48

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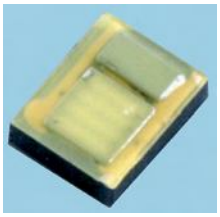
RL Re-reeling available

Power LED's - continued

Luxeon® Flash

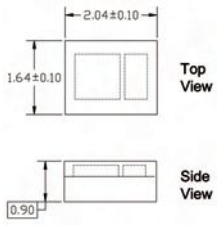
LUMILEDS™ LIGHT FROM SILICON VALLEY

Power Light Source



H = 0.9, W = 2.04, D = 1.64mm

Luxeon® Flash is an ultra compact small form factor light source specifically designed and tested for use as a camera flash in space constrained, portable digital imaging applications or for use as a flashlight lamp. The Luxeon® Flash device is based on proven Luxeon® technology and provides the highest level of light output available for a solid state light source.
Featuring a 1.0mm profile this surface mount device has a 2.0mm x 1.6mm footprint and provides a useful life of 100,000 flashes at 1 amp, or 168 hours of DC (flashlight/torch mode) at 350mA.



- High Flash Luminance from a single LED
- Compact SMD package
- "Flash" or "Torch" modes of operation
- Smallest power LED available
- 63 Lumen output @ 2.0 A
- LED junction temp. (Absolute Max.) 150°C

Electrical Characteristics @ 1000mA, T_j = 25°C

Current	V_{Min}	V_{Typ}	V_{Max}
1000mA	3.2V	3.8V	4.8V

NB - Higher currents (up to 2000mA) are possible through proper thermal management

Colour Temperature (White) for Flash & Totch Modes

Min	Typ	Max	Viewing Angle
5000K	7000K	10000K	120°

Typical Flux Output vs. Drive Current		Typical Flux Output vs. Drive Current	
Current	Flux (Lumens)	Current	Flux (Lumens)
100mA	7 LM	700mA	34 LM
200mA	12 LM	1000mA	43 LM
300mA	18 LM	1500mA	53 LM
350mA	20 LM	2000mA	63 LM
500mA	26 LM		

386111/405979

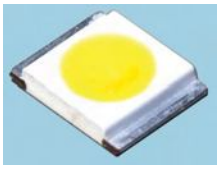
LUXEON™ Flash Emitter Colour	Mftrs. List No.	Order Code	Price Each 1+	10+	50+
	LXCL-PWF1	879-9873●	4.75	4.35	3.95

White Flash Emitter

SEOUL

New

SMD



- Operating temperature range: -30°C to +80°C
- Luminous flux: 55lm @ 300mA
- Flash mode of operation

LED Ø=2.1mm, Length=3.5mm, Width=2.8mm, Depth=0.6mm

Colour	Viewing Angle	Luminous Intensity @ 300mA (typ)	Voltage, Vf (typ)	Current, If	Mftrs. List No.	Order Code
White	120°	20cd	3.2V	300mA	FCW301Z	155-4096

508258

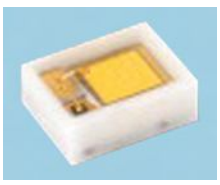
Order Code	Mftrs. List No.	Price Each 1+	25+	100+	250+	+
155-4096●	FCW301Z	5.84	5.12	4.64	4.47	– –

Flash LED

OSRAM

New

SMD



Operating Temperature: -40°C to +110°C

L=2.2, W=1.75, D=0.85

Colour	Colour Temperature (typ)	Current (If)	Luminous Intensity (min)	(max)	Voltage, Vf (min)	(typ)	(max)	Mftrs. List No.	Order Code
White	5600K	500mA	12.5cd	22.4cd	2.8V	3.4V	4V	LWC9SP-F0GA-58-0-500-R18-Z	157-3477

511525

Order Code	Price Each 1+	25+	100+	250+	500+
SMD 157-3477●	2.71	2.10	1.88	1.70	1.62

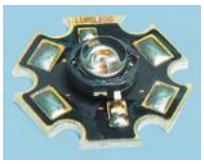
Over 480,000 products online GO

Luxeon® Dental Blue

LUMILEDS™ LIGHT FROM SILICON VALLEY



Emitter



Star

- Low voltage DC operated
- Cool beam, safe to touch
- Instant light (<100ns)
- Fully dimmable
- No UV
- Radiometric power levels and peak wavelength specifications matched to the response curves of many dental resins.
- Extreme radiometric power results in short curing times, <10 seconds for the Luxeon devices and on the order of 5 seconds for the Luxeon V devices.
- Low voltage DC operation allows for handheld cordless curing wand designs.
- Directed light from the source of the desired wavelength eliminates the need for inefficient colour filters.
- Long life eliminates the need for maintenance and repair operations.

Luxeon® Dental Solutions include both Luxeon® and Luxeon® V alternatives, offering two high power-curing options. Luxeon® Dental is available in both emitter and star configurations, providing flexibility in curing system design.
Luxeon® Dental products are selected from the peak wavelength range most effective for short curing times, and are produced to elevated minimum power levels to deliver the powerful short wavelength blue power required to reduce curing times while enabling handheld curing wands. This revolutionary product line is specifically tailored to the dental curing industry to provide the source most effective for this application.

Order Code	Product Type	Wavelength Typical	Voltage V_f Typical	Viewing Angle	Radiometric Power (Typ.)	Beam Pattern
110-9161	Emitter	460nm	6.84V	150°	600mW	Lambertian
110-9162	Star	460nm	6.84V	150°	600mW	Lambertian

422991

Mftrs. List No.	Order Code	Price Each 1+	10+	50+
LXHL-PRD5	SMD 110-9161●	30.69	28.33	26.30
LXHL-LRD5	SMD 110-9162●	28.17	25.98	24.13

Power LED Modules

Secondary Lens with Holder

TT electronics OPTEK Technology

New



These water-clear polycarbonate lenses with black holders are specifically designed to mate with Optek's 6x6mm power surface mount LEDs (OVSxxxCR4 Series) to provide a more narrow beam angle. Lenses are available in both 15° and 23° viewing angles. The lenses and holders sit firmly over the LED component and is easily attached to the PCB/MCPCB with adhesive.

Viewing Angle	Colour Lens	Colour Holder	Diameter Lens	Diameter External	Depth External	Mftrs List No.	Order Code
15°	Water Clear	Black	20mm	21.6mm	13.5mm	OVLENS154	167-8690
23°	Water Clear	Black	20mm	21.6mm	13.5mm	OVLENS234	167-8691

528774

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
OP245A	167-8540●	0.74	0.69	0.42	0.40	0.39
OP233W	167-8555●	2.27	2.08	1.33	1.27	1.22

HL11 and HL16 LED Lamps

Dialight Lumidrives



MR11 Lamp: Dia=34.7, L=31



MR16 Lamp: Dia = 50, L= 37.5

Common Features:
- Operating lifetime: 50,000 hours
- Op Temp: -10°C to 70°C

MR16 Lamp:
- I_F=350mA
- Power consumption: 3.6 W

:

MR11 Lamps (all Colours except Warm White):
- IF=700mA
- Power consumption: 2.4 W

:

MR11 Warm White Lamp:
- IF=350mA
- Power consumption: 1.2 W





The HL Series incorporate a newly developed lens which is available in a choice of beam angles by means of an interchangeable sub-lens system.

477832

RL Re-reeling available

Farnell

Mftrs. List No.	Colour	Order Code	Price Each 1+	5+	10+
HL16 LEDs					
HL16-W	White	**133-3827**	33.23	25.09	22.98
HL16-WW	White-Warm	**133-3828**	22.46	18.15	17.67
HL16-R	Red	**133-3829**	23.96	18.15	17.67
HL16-B	Blue	**133-3830**	33.23	25.09	22.98
HL16-G	Green	**133-3832**	23.96	18.15	17.67
HL16-RGB	R, G, B	**133-3833**	31.76	23.97	21.96
HL11 LEDs					
HL11-R	Red	**133-3820**	12.62	10.45	10.18
HL11-G	Green	**133-3821**	12.16	9.20	8.96
HL11-B-005	Blue	**133-3822**	16.86	12.72	11.66
HL11-W	White	**133-3824**	16.86	12.72	11.66
HL11-WW	White-Warm	**133-3825**	16.86	12.72	11.66
PSUs	**Max No. LEDs**				
MDU-9-SC-35/70	3	**124-2355**	18.15	15.94	14.70
MDE16-C-VRL	4	**124-2353**	27.11	24.82	23.89

Titan LED Light Engines

White, Bright, Compact and Reliable



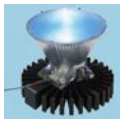
H=44.45, W=31.75, D=6.4



Cable assembly



Heatsink



Narrow Beam Lens + LED and heatsink

- High brightness and reliability
- High radiant power and intensity
- 1050mA and 1400mA drive current options
- Integral connector for easy connection and isolated base plate
- ESD protection upto 4kV

Lamina's LED light engines are manufactured by combining high brightness LED from industry-leading manufacturers with Lamina's proprietary packaging technology. This technology faciliates class leading thermal performance from multiple LEDs within a tight cluster arrangement.

First choose the LED colour needed, then add heatsink, constant current source (Connector is type: MOLEX 87438-1043).Options include, Narrow Beam lens and cable complete with connector.

RGB LED Specification

Colour	Luminous Intensity (lm) min.	typ.	Test Current, I_F (mA)	I_F max. (mA)	$\lambda_{Dominant}$ min.	V_F typ.	Viewing Angle
Red	198	276	1050	1400	619	7.1	130
Green	230	307	1050	1400	515	10.8	130
Blue	58	78	1050	1400	460	11.4	130

White LED Specification

Luminous Intensity @ I_F (lm), typ.	Test I_F (mA)	I_F max. (mA)	Colour Temperature min.	max.	C.R.I min.	C.R.I typ.	Viewing Angle	Mftrs. List No.	Order Code
878	1050	1400	3950	6200	62	78	122	NT-52D0-0429	132-9069
539	1050	1400	2750	3550	70	78	120	NT-52D1-0430	132-9070

457856

Description	Mftrs. List No.	Order Code	Price Each 1+	10+	50+	+
Daylight White LED	NT-52D0-0429	**132-9069**	68.72	54.27	47.55	– –
Warm White LED	NT-52D1-0430	**132-9070**	68.72	54.27	47.55	– –
RGB LED	NT-53F0-0428	**132-9071**	71.46	56.44	49.46	– –
Heatsink	HS-5100-0346	**132-9074**	26.05	23.01	20.13	– –
Narrow Beam Lens	OP-5LN2-0445	**132-9073**	16.93	11.92	10.38	– –
Cable Assembly	NT-50WH-0427	**132-9072**	5.92	5.22	4.59	– –
LED Driver, 1050mA	LP1040-36-C1050	**132-9075**	28.10	25.96	25.04	– –
LED Driver, 1400mA	LP1040-24-C1400	**132-9076**	28.10	25.96	25.04	– –

TitanTurbo LED Light Engines



Manufactured by combining high brightness LED from industry-leading LED manufacturers with our own proprietry packaging technology. This technology is a breakthrough in thermal performance for LED packaging, achieving high luminous intensity in very small footprints.

- Integral EZConnector eliminates the need for soldering
- Isolated metal base
- Long-life and high lumen maintenance

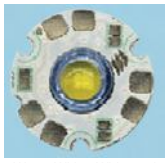
Luminous Flux, typ.	VF	Drive Current	PD	Viewing Angle	Mftrs. List No.
1138 lm	10.8 to 12.9 V	5 A	54 W	70	NT-54D1-0486
1138 lm	10.8 to 12.9 V	5 A	54 W	60	NT-54D0-0487

490799

Mftrs. List No.	Colour	Order Code	Price Each 1+	10+	50+
NT-54D1-0486	Warm White	**149-8220**	127.70	113.95	108.92
NT-54D0-0487	Daylight White	**149-8221**	127.70	113.95	108.92
Lenses					
OP-5LN2-0445	Narrow Beam	**132-9073**	16.93	11.92	10.38
OP-5LM3-0455	Medium Beam	**149-8232**	17.82	11.92	10.38
OP-5LW4-0456	Wide Beam	**149-8233**	17.82	11.92	10.38

Power Light Engines

Lenses, LEDs, PCB, Power Supply Solution



Warm White, White and RGB LEDs



Heatsink



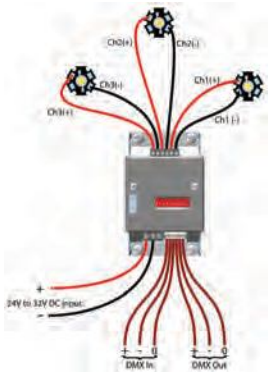
350mA, 700mA, 1 A Regulator

Custom power LED light engine solutions, facilitates easer solutions to lighting projects. These range of 'light engines' provide PCB, heatsink and power supplies to quickly impliment your design.

LED Options

The Warm white LED is suitable in applications where the brightness of a Halogen is needed, using upto 50% less power and 3-4 times greater reliability. 'Warm' light is often preferable to cool white light for illuminating the more intimate interior spaces of home and leasure.

The daylight LED rivals the quality of natural sunlight, being designed for many arcitectual and office lighting applications, task lamps, machine vision and high powered flashlights.



3 ch LED driver Wiring

Colour	Luminous Flux ϕ	P_D (W)	Colour Temp (K)	Colour Rendering Index Min / Typ	Forward Current, I_F (A)	Forward Voltage, V_F (V), typ	Mftrs. List No.
White-Warm	120	8.61	3050	70 / 88	1050	7.5	NT-42D1-0425
Daylight White	175	8.61	4700	62 / 66	1050	7.5	NT-42D0-0426

RGB LEDs can 'tune' to any colour in the spectrum by varying the 3 LED currents until the right colour is achieved. This is ideal in office or recreational applications where colour balance can be adjusted dynamically by using the DMX controllers or your own circuit.

Colour	Viewing Angle	Luminous Flux ϕ typ R / G / B	Forward Current, I_F R / G / B (mA)	P_D R / G / B (W)	Mftrs. List No.
R, G, B	120°	52 / 59 / 14	350 / 350 / 350	1.6 / 2.3 / 2.7	NT-43F0-0424

Lens Options

The BL-4000 range are designed to produce homogeneous beam distributions with high collection efficiencies in either Narrow Beam (FHS-HNB1-LC01-H), Medium Beam (FHS-HMB1-LC01-H) and Wide Beam (FHS-HWB1-LC01-H).The optic holders are designed to attach to Lamina's EZConnect Board.

Driver Options

The CC4036 Series are constant current regulators, ideal for consistant light output.

The Alto350 and Alto700 are super compact 3 channel DMX512 drivers especially designed to drive strings of LEDs, making it ideal for use with RGB LEDs.

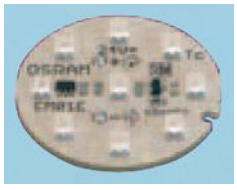
- 3 Constant Current Output Channels
- Power Supply Range 24V to 32 VDC
- LED Dimming using PWM
- Auto Running Modes available through DIP switch
- High Efficiency
- Easy to Install
- Alto350 (350mA) and Alto700 (700mA) output current versions available

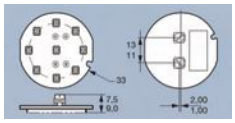
440314

Mftrs. List No.	Order Code	Price Each 1+	10+	50+	+
LEDs					
NT-42D1-0425	**122-5174**	9.54	9.20	8.89	– –
NT-42D0-0426	**122-5173**	12.69	11.72	11.11	– –
NT-43F0-0424	**122-5175**	19.78	15.94	13.07	– –
Heat Sinks					
800-0345-1	**122-5185**	7.34	6.78	6.44	– –
LED Drivers - Single Colour					
CC4036DP-0350	**122-5186**	11.30	10.43	10.08	– –
CC4036DP-0700	**122-5187**	11.30	10.43	10.08	– –
CC4036DP-1000	**122-5188**	11.30	10.43	10.08	– –
LED Drivers - R,G,B					
LT-ALTO350-C	**122-5189**	54.49	50.30	48.59	– –
LT-ALTO700-C	**122-5190**	52.65	48.60	46.95	– –
Cable assembly					
EZ-46WH-0354	**122-5179**	3.36	3.10	2.94	– –

CoinLight™

High Flux Series





Because of their compact dimensions the COINlight™ modules are ideal for use, e.g. in luminaires for walkway marking.

Special features:

- Low height for low-profile enclosed fittings

RL Re-reeling available

Power LED Modules - continued

CoinLight™ - continued

High Flux Series - continued

- Connected with screw terminals
- Dimmable by pulse width modulation (PWM)

Mftrs. List No.	Colour	Voltage DC	Power P_D	Viewing Angle	Colour Temp.	λ_p
CM01E-W2-854	white	24 V	1.2 W	120°	5400 K	-
CM01E-A1	red	24 V	1.2 W	120°	-	617 nm
CM01E-Y1	yellow	24 V	1.2 W	120°	-	587 nm
CM01E-T1	green	24 V	1.2 W	120°	-	525 nm
CM01E-B1	blue	24 V	1.2 W	120°	-	470 nm

497745

Mftrs. List No.	Colour	Order Code	Price Each 1+	5+	10+
CM01E-A1	Red	**147-2618●**	8.01	7.53	6.97
CM01E-B1	Blue	**147-2619●**	14.63	13.74	12.72
CM01E-T1	Green	**147-2620●**	15.48	14.54	13.46
CM01E-W2-854	White	**147-2621●**	15.48	14.69	13.52
CM01E-Y1	Yellow	**147-2622●**	7.56	7.11	6.58

Guida Lamps



Eyelid Bezel



Domed Bezel



Flush Bezel

- Power Consumption: 1.2 W
- Light Output:35lm
- Construction:Aluminium body and snap on cover

Ultra slim design
Guida is an ultra compact light source which can integrate seamlessly within architectural features or even furniture.

Improved safety
Guida modules run on a low voltage current making them safer and easier to work with.

UV and IR safe
The Light from a Guida module contains no UV or IR radiation, so it's safe for use on food and light - sensitive materials.

Maximum visual effect
Guida modules are available in deep saturated colours and a range of warm and cool white colour options.

IP67 rated
All Guida modules are sealed to IP67 and so can be used in interior and exterior applications.

Low maintenance costs
The Guida is virtually maintenance free and offers long life up to 50,000 operating hours. High reliability Guida modules are extremely robust - resistant to vibrations and contain no glass parts.

Immediate start-up
The Guida starts in an instant, even at temperatures as low as -20°C

490888

Colours	Mftrs. List No.	Order Code	Price Each 1+	5+	10+
Lamps, 5° Viewing Angle, 350mA Forward Current					
White	GU-W	**124-2387●**	20.15	15.21	13.93
Fixings					
Eyelid	G-CE-A	**124-2388●**	11.93	9.00	8.25

3W LED Module

5° and 25° Beam Pattern



LED Module - Dia. = 44.2, Depth = 15.29mm

- 1 x High power LED
- Consistent unit-to-unit colour temperature
- May be driven up to 1000mA
- Operating life of 50,000 hours
- Metal Clad PCB Substrate
- 8" power leads

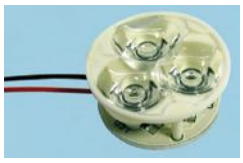
Colour	Wavelength Colour Temp. (Typical)	Design Current	Power Consumption	Beam Pattern	Mftrs List No.
Red	625nm	700mA	3W	5°	ILL3B0001G
Green	530nm	700mA	3W	5°	ILL3A0001E
Blue	470nm	700mA	3W	5°	ILL3A0001C
Cool White	6000K	700mA	3W	5°	ILL3A0001A
White-Warm	3300K	700mA	3W	5°	ILL3A0001B
Cool White	6000K	700mA	3W	25°	ILL3A0001H
White-Warm	3300K	700mA	3W	25°	ILL3B0001I

451523

Mftrs. List No.	Order Code	Price Each 1+	5+	10+
5° Beam Pattern				
ILL3B0001G	**122-8878●**	13.93	12.94	12.58
ILL3A0001E	**122-8879●**	12.21	11.34	11.03
ILL3A0001C	**122-8883●**	12.21	11.34	11.03
ILL3A0001A	**122-8884●**	13.08	12.15	11.82
ILL3A0001B	**122-8885●**	12.89	11.99	11.63
25° Beam Pattern				
ILL3A0001H	**122-8891●**	13.08	12.15	11.82
ILL3B0001I	**122-8892●**	12.89	11.99	11.63

4W LED Module

11° and 24° Beam Pattern



LED Module - Dia. = 35, Depth = 13.8mm

- Each unit contains 3 high power LED's
- Consistent unit-to-unit colour temperature
- Compact round (35mm) light source
- Operating life of 50,000 hours
- Metal Clad PCB Substrate
- 200mm (8") power leads

Colour	Wavelength Colour Temp. (Typical)	Design Current	Power Consumption	Beam Pattern	Mftrs List No.
Cool White	5500K	350mA	4W	11°	ILL3A0003A
Cool White	5500K	350mA	4W	24°	ILL3A0003H
White-Warm	3800K	350mA	4W	24°	ILL3A0003I

451554

Mftrs. List No.	Order Code	Price Each 1+	5+	10+
11° Beam Pattern				
ILL3A0003A	**122-8901●**	38.63	35.88	34.88
24° Beam Pattern				
ILL3A0003H	**122-8908●**	38.63	35.88	34.88
ILL3A0003I	**122-8909●**	34.25	31.80	30.93

9W LED Module

6° and 25° Beam Pattern



LED Module - Dia. = 38.1, Depth = 13.37mm

- Each unit contains 3 high power LED's
- Consistent unit-to-unit colour temperature
- Compact round (38.1mm) light source
- May be driven up to 1000mA
- Operating life of 50,000 hours
- Metal Clad PCB Substrate
- 200mm (8") power leads

Colour	Wavelength Colour Temp. (Typical)	Design Current	Power Consumption	Beam Pattern	Mftrs List No.
Amber	589nm	700mA	9W	6°	ILL3A0004F
Cool White	6000K	700mA	9W	6°	ILL3A0004A
White-Warm	3300K	700mA	9W	6°	ILL3A0004B
Cool White	6000K	700mA	9W	25°	ILL3A0004H
White-Warm	3300K	700mA	9W	25°	ILL3A0004I

451620

Mftrs. List No.	Order Code	Price Each 1+	5+	10+
6° Beam Pattern				
ILL3A0004F	**122-8913●**	46.51	43.20	42.01
ILL3A0004A	**122-8916●**	43.10	40.02	38.90
ILL3A0004B	**122-8917●**	42.33	39.30	38.20
25° Beam Pattern				
ILL3A0004H	**122-8925●**	43.10	40.02	38.90
ILL3A0004I	**122-8926●**	42.33	39.30	38.20

14W LED Module

6° and 25° Beam Pattern



LED Module - Dia. = 44.2, Depth = 15.37mm

- Each unit contains 5 high power LED's
- Consistent unit-to-unit colour temperature
- Compact round (44.2mm) light source
- May be driven up to 1000mA
- Operating life of 50,000 hours
- Metal Clad PCB Substrate
- 8" power leads

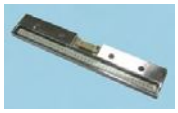
Colour	Wavelength Colour Temp. (Typical)	Design Current	Power Consumption	Beam Pattern	Mftrs List No.
Amber	589nm	700mA	14W	6°	ILL3A0002F
Cool White	6000K	700mA	14W	6°	ILL3A0002A
White-Warm	3300K	700mA	14W	6°	ILL3A0002B
Cool White	6000K	700mA	14W	25°	ILL3A0002H
White-Warm	3300K	700mA	14W	25°	ILL3A0002I

451621

Mftrs. List No. / List No.	Order Code	Price Each 1+	5+	10+
6° Beam Pattern				
ILL3A0002F	**122-8929●**	70.04	65.06	63.25
ILL3A0002A	**122-8932●**	64.34	59.74	58.08
ILL3A0002B	**122-8933●**	63.06	58.55	56.93
25° Beam Pattern				
ILL3A0002H	**122-8940●**	64.34	59.74	58.08
ILL3A0002I	**122-8941●**	63.06	58.55	56.93

RGB High Power LEDs

24W, RGB Power LED Light Sources



Top Emitting: H=100, W=18, D=3.6



Side Emitting: H=100, W=18, D=8

These RGB light sources are high performance devices, which can be operated at high driving currents.
Each unit comes with a plug and play connector for easy assembly and removal, as well as a built in heatsink and mechanical fixings.The optimized reflector cavity ensures maximized light intensity as well as more natural colour blending, making this unit ideal for a whole host of applications.

- Energy efficient, high flux output
- Built in Heatsinks
- Compact footprint for ease of stacking horizontally
- Long operation life

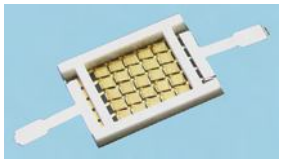
Applications include:
- Architectual lighting
- Speciality Lighting
- Decorative lighting

Colour	Luminous Flux (lm)	Dominant Wavelength, typ (nm)	Forward Current I_F, typ (mA)	Forward Voltage Voltage V_F, typ (V)
R, G, B	200 , 125 , 30	617 , 522 , 465	300 , 150 , 150	29 , 35 , 35

451852

Style	Mftrs. List No.	Order Code	Price Each 1+	5+	10+	+
Top Emitting	ADJD-MJ50	**124-1246●**	43.92	39.55	35.95	– –
Side Emitting	ADJD-MJ60	**124-1247●**	43.92	39.55	35.95	– –

Uno Tag Array



- Intense, high-power spot source
- Ultra-high power density
- Long-life and reliable, high-performance due to excellent thermal conductivity
- Simple integration via lead frame
- Application include entertainment lighting, architectural lighting, neo-natal, dental applications, forensic investigation, back lighting and effect lighting

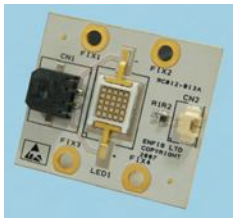
Colour	Current Rating	Luminous Flux (typ)	Radiant Flux (typ)	Wavelength / (Colour Temp.) peak / (typ)	Voltage Vf (typ)	Mftrs. List No.	Order Code
Blue	2350mA	350lm	6,070mW	458nm	16V	* BLUE	160-6794
Green	2350mA	980lm	2100mW	517nm	16V	* GREEN	160-6795
Amber	3200mA	625lm	1400mW	600nm	12V	* AMBER	160-6796
Red	3200mA	680lm	4300mW	640nm	12V	* RED	160-6798
White	2350mA	1000lm	—	(4250K)	16V	* WHITE	160-6799
Infrared	4300mA	—	4500mW	870nm	9V	* NIR	160-6800
SUVA	1000mA	—	500mW	365nm	19V	* SUVA	160-6801
UVA	1000mA	—	500mW	375nm	19V	* UVA	160-6802
Violet	2000mA	—	5100mW	405nm	19V	* VIOLET	160-6804

* ENFIS UNO TAG ARRAY...

516003

Colour	Order Code	Price Each 1+	3+	+	+	+
Blue	**160-6794●**	78.28	75.14	– –	– –	– –
Green	**160-6795●**	78.28	75.14	– –	– –	– –
Amber	**160-6796●**	78.28	75.14	– –	– –	– –
Red	**160-6798●**	78.28	75.14	– –	– –	– –
White	**160-6799●**	87.48	83.98	– –	– –	– –
Infrared	**160-6800●**	110.50	106.08	– –	– –	– –
SUVA	**160-6801●**	110.50	106.08	– –	– –	– –
UVA	**160-6802●**	110.50	106.08	– –	– –	– –
Violet	**160-6804●**	110.50	106.08	– –	– –	– –

Uno Tile Array



- Intense, high-power spot source
- Ultra-high power density
- Long-life and reliable, high-performance due to excellent thermal conductivity
- Simple integration via connectorised PCB with mounting holes
- Applications include entertainment lighting, architectural lighting, neo-natal, dental applications, forensic investigation, back lighting and effect lighting

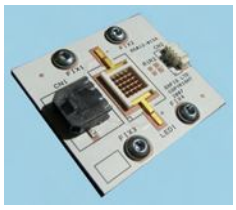
Colour	Current Rating	Luminous Flux (typ)	Radiant Flux (typ)	Wavelength / (Colour Temp.) peak / (min)	Voltage Vf (typ)	Mftrs. List No.	Order Code
Blue	2350mA	350lm	6,070mW	458nm	16V	* BLUE	160-6805
Green	2350mA	980lm	2100mW	517nm	16V	* GREEN	160-6806
Amber	3200mA	625lm	1400mW	600nm	12V	* AMBER	160-6807
Red	3200mA	680lm	4300mW	640nm	12V	* RED	160-6808
White	2350mA	1000lm	—	(4250K)	16V	* WHITE	160-6809
Infrared	4300mA	—	4500mW	870nm	9V	* NIR	160-6810
SUVA	1000mA	—	500mW	365nm	19V	* SUVA	160-6811
UVA	1000mA	—	500mW	375nm	19V	* UVA	160-6812
Violet	2000mA	—	5100mW	405nm	19V	* VIOLET	160-6813

* ENFIS UNO TILE ARRAY...

515963

Colour	Order Code	Price Each 1+	3+	+	+	+
Blue	**160-6805●**	78.28	75.14	– –	– –	– –
Green	**160-6806●**	78.28	75.14	– –	– –	– –
Amber	**160-6807●**	78.28	75.14	– –	– –	– –
Red	**160-6808●**	78.28	75.14	– –	– –	– –
White	**160-6809●**	87.48	83.98	– –	– –	– –
Infrared	**160-6810●**	87.48	83.98	– –	– –	– –
SUVA	**160-6811●**	110.50	106.08	– –	– –	– –
UVA	**160-6812●**	110.50	106.08	– –	– –	– –
Violet	**160-6813●**	110.50	106.08	– –	– –	– –

Uno LE



- Smart, compact, efficient, high-power LED spot source
- Embedded thermal protection
- Long-life and reliable performance
- Applications include entertainment lighting, neo-natal, operating room lighting, dental applications and forensic investigation

Colour	Luminous Flux typ	Total Radiant Flux (typ)	Wavelength / (Colour Temp.) peak / (typ)	Mftrs. List No.	Order Code
Blue	200lm	4600mW	465nm	* BLUE	160-6838
Green	800lm	1700mW	520nm	* GREEN	160-6841
Amber	300lm	680mW	595nm	* AMBER	160-6842
Red	340lm	1900mW	630nm	* RED	160-6843
White	850lm	—	(4250K)	* WHITE	160-6844
NIR	—	1900mW	870nm	* NIR	160-6845
SUVA	—	480mW	365nm	* SUVA	160-6846
UVA	—	480mW	375nm	* UVA	160-6847
Violet	—	4800mW	405nm	* VIOLET	160-6848

* ENFIS UNO LE...

515994

Colour	Order Code	Price Each 1+	3+	+	+	+
Blue	**160-6838●**	101.66	97.75	– –	– –	– –
Green	**160-6841●**	101.66	97.75	– –	– –	– –
Amber	**160-6842●**	101.66	97.75	– –	– –	– –
Red	**160-6843●**	101.66	97.75	– –	– –	– –
White	**160-6844●**	110.50	106.25	– –	– –	– –
NIR	**160-6845●**	163.54	157.25	– –	– –	– –
SUVA	**160-6846●**	163.54	157.25	– –	– –	– –
UVA	**160-6847●**	163.54	157.25	– –	– –	– –
Violet	**160-6848●**	163.54	157.25	– –	– –	– –

Uno Plus LE



- Compact size
- Smart thermal protection system
- Superior colour mixing with dense packaging and interleaving of colours
- Applications include entertainment lighting, architectural lighting, retail lighting, fibre optics

Colour	Luminous Flux (typ)	Total Radiant Flux (typ)	Wavelength / (Colour Temp.) peak / (typ)	Mftrs. List No.	Order Code
Blue	—	5400mW	465nm	* BLUE	160-6849
Green	1000lm	1450mW	520nm	* GREEN	160-6850
Amber	700lm	1500mW	595nm	* AMBER	160-6851
Red	600lm	4800mW	630nm	* RED	160-6853
White	1100lm	—	(4250K)	* WHITE	160-6854
NIR	—	4200mW	870nm	* NIR	160-6855
UVA	—	490mW	375nm	* UVA	160-6856
Violet	—	5400mW	405nm	* Violet	160-6857
RGBA	700lm	—	—	* RGBA	160-6858
RGBW	762lm	—	—	* RGBW	160-6859
HI CRI	805lm	—	—	* HI CRI	160-6860

* ENFIS UNO PLUS LE...

RL Re-reeling available

Power LED Modules - continued

Uno Plus LE - continued

519009

Colour	Order Code	Price Each 1+	3+	+	+	+
Blue	160-6849●	137.02	131.75	– –	– –	– –
Green	160-6850●	137.02	131.75	– –	– –	– –
Amber	160-6851●	137.02	131.75	– –	– –	– –
Red	160-6853●	137.02	131.75	– –	– –	– –
White	160-6854●	150.28	144.50	– –	– –	– –
NIR	160-6855●	203.32	195.50	– –	– –	– –
UVA	160-6856●	203.32	195.50	– –	– –	– –
Violet	160-6857●	203.32	195.50	– –	– –	– –
RGBA	160-6858●	260.78	250.75	– –	– –	– –
RGBW	160-6859●	260.78	250.75	– –	– –	– –
HI CRI	160-6860●	260.78	250.75	– –	– –	– –

Uno Air LE



- Mounted on air-cooled heat-sink
- Smart, compact, efficient, high-power LED spot source
- Embedded thermal protection
- Long-life and reliable performance
- Applications include entertainment lighting, neo-natal, operating room lighting, dental applications and forensic investigation

Colour	Luminous flux (typ)	Radiant Flux (typ)	Wavelength / (Colour Temp.) peak / (typ)	Mftrs. List No.	Order Code
Blue	200lm	4600mW	465nm	* BLUE	160-6873
Green	800lm	1700mW	520nm	* GREEN	160-6874
Amber	300lm	680mW	595nm	* AMBER	160-6875
Red	340lm	1900mW	630nm	* RED	160-6877
White	850lm	—	(4250K)	* WHITE	160-6878
NIR	—	1900mW	870nm	* NIR	160-6879
UVA	—	480mW	365nm	* SUVA	160-6880
UVA	—	480mW	375nm	* UVA	160-6881
Violet	—	4800mW	405nm	* Violet	160-6882

* ENFIS UNO AIR LE...

519014

Colour	Order Code	Price Each 1+	3+	+	+	+
Blue	160-6873●	119.34	114.75	– –	– –	– –
Green	160-6874●	119.34	114.75	– –	– –	– –
Amber	160-6875●	119.34	114.75	– –	– –	– –
Red	160-6877●	119.34	114.75	– –	– –	– –
White	160-6878●	128.18	123.25	– –	– –	– –
NIR	160-6879●	203.32	195.50	– –	– –	– –
UVA	160-6880●	203.32	195.50	– –	– –	– –
UVA	160-6881●	203.32	195.50	– –	– –	– –
Violet	160-6882●	203.32	195.50	– –	– –	– –

UNO Air Cooled Light Engine

Single Colour - Ultra High Power Density



- In-built Thermal Sensing
- Optical Feedback Capability for Auto Power Control
- High Thermal Conductivity System <2 C/W
- Array Aperture: 7mm x 7mm - Emitting Area: 0.5cm^2
- Low Input Voltage 9 Volt Operation
- Typical Ambient Operating Temperature: +10 to +45 C

High power LED assembly incorporates leading edge design techniques, utilising switch mode technologies and active cooling to produce a compact highly efficient design.
Full temperature monitoring and control is integrated into the design, as well as an RS-232 interface to ease connectivity.

Colour LED	Wavelength typ.(nm)	Light (mW)	Luminous flux, (lm)	Mftrs. List No.	Order Code
Ultraviolet	375	310	—	ENFIS UNO18 AIR UVA	133-3708
Violet	410	4680	—	ENFIS UNO36 AIR VIOLET	133-3709
Blue	465	4680	252	ENFIS UNO36 AIR BLUE	133-3710
Green	520	1980	792	ENFIS UNO36 AIR GREEN	133-3711
Amber	595	770	360	ENFIS UNO18 AIR AMBER	133-3712
Red	630	1760	288	ENFIS UNO18 AIR RED	133-3713
Infrared	870	2250	—	ENFIS UNO18 AIR NIR	133-3714
White	6500K*	—	337	ENFIS UNO18 AIR WHITE	133-3715

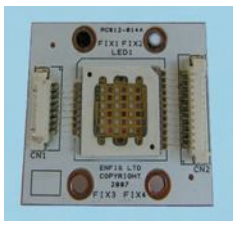
*Colour Temperature

468858

Colour	Mftrs. List No.	Order Code	Price Each 1+	3+	+	+
Ultraviolet	ENFIS UNO18 AIR UVA	133-3708●	359.90	277.95	– –	– –
Violet	ENFIS UNO36 AIR VIOLET	133-3709●	308.38	296.04	– –	– –
Blue	ENFIS UNO36 AIR BLUE	133-3710●	205.62	168.65	– –	– –
Green	ENFIS UNO36 AIR GREEN	133-3711●	205.62	168.65	– –	– –
Amber	ENFIS UNO18 AIR AMBER	133-3712●	139.82	126.23	– –	– –
Red	ENFIS UNO18 AIR RED	133-3713●	205.62	168.65	– –	– –
Infrared	ENFIS UNO18 AIR NIR	133-3714●	359.90	277.95	– –	– –
White	ENFIS UNO18 AIR WHITE	133-3715●	205.62	181.25	– –	– –

Over 480,000 products online GO

Uno Plus Array



- Intense, high-power spot source
- Ultra-high power density
- Long-life and reliable, high-performance due to excellent thermal conductivity
- Simple integration via connectorised PCB with mounting holes
- Application include entertainment lighting, architectural lighting, neo-natal, dental applications, forensic investigation, back lighting and effect lighting

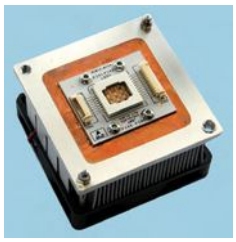
Colour	Current Rating	Luminous Flux (typ)	Radiant Flux (typ)	Wavelength / (Colour Temp.) peak / (typ)	Voltage Vf (typ)	Mftrs. List No.	Order Code
Blue	1550mA	400lm	6500mW	458nm	32V	* BLUE	160-6814
Green	1760mA	1060lm	2350mW	517nm	28V	* GREEN	160-6816
Amber	2160mA	1000lm	2100mW	595nm	23V	* AMBER	160-6817
Red	2400mA	800lm	5780mW	630nm	21V	* RED	160-6818
White	1880mA	1300lm	—	(4250K)	29V	* WHITE	160-6819
NIR	2950mA	—	5000mW	870nm	17V	* NIR	160-6820
UVA	750mA	—	570mW	375nm	34V	* UVA	160-6821
Violet	1600mA	—	5500mW	405nm	31V	* VIOLET	160-6822
RGBA	—	910lm **	—	—	—	* RGBA	160-6823
RGBW	—	990lm **	—	—	—	* RGBW	160-6824
HI CRI	—	1045lm **	—	—	—	* HI CRI	160-6825

* ENFIS UNO PLUS ARRAY...
** Theoretical combined flux - Please see data sheet for individual values

516001

Colour	Order Code	Price Each 1+	3+	+	+	+
Blue	160-6814●	110.50	106.08	– –	– –	– –
Green	160-6816●	110.50	106.08	– –	– –	– –
Amber	160-6817●	110.50	106.08	– –	– –	– –
Red	160-6818●	110.50	106.08	– –	– –	– –
White	160-6819●	119.71	114.92	– –	– –	– –
NIR	160-6820●	138.13	132.60	– –	– –	– –
UVA	160-6821●	138.13	132.60	– –	– –	– –
Violet	160-6822●	138.13	132.60	– –	– –	– –
RGBA	160-6823●	110.50	106.08	– –	– –	– –
RGBW	160-6824●	110.50	106.08	– –	– –	– –
HI CRI	160-6825●	110.50	106.08	– –	– –	– –

Uno Plus Air LE



- Mounted on air-cooled heat-sink
- Compact size
- Smart thermal protection system
- Superior colour mixing with dense packaging and interleaving of colours
- Applications include entertainment lighting, architectural lighting, retail lighting, fibre optics

Colour	Luminous Flux (typ)	Radiant Flux (typ)	Wavelength / (Colour Temp.) peak / (typ)	Mftrs. List No.	Order Code
Blue	—	5400mW	465nm	* BLUE	160-6883
Green	1000lm	1450mW	520nm	* GREEN	160-6884
Amber	700lm	1500mW	595nm	* AMBER	160-6885
Red	600lm	4800mW	630nm	* RED	160-6886
White	(4250K)	—	(4250K)	* WHITE	160-6887
NIR	—	4200mW	870nm	* NIR	160-6889
UVA	—	490mW	375nm	* UVA	160-6891
Violet	—	5400mW	405nm	* VIOLET	160-6892
RGBA	700lm	—	—	* RGBA	160-6893
RGBW	762lm	—	—	* RGBW	160-6894
HI CRI	805lm	—	—	* HI CRI	160-6895

* ENFIS UNO AIR PLUS LE...

519858

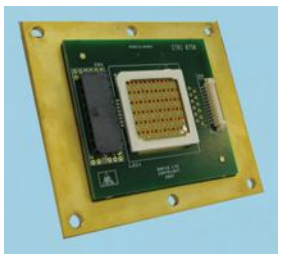
Colour	Order Code	Price Each 1+	3+	+	+	+
Blue	160-6883●	154.70	148.75	– –	– –	– –
Green	160-6884●	154.70	148.75	– –	– –	– –
Amber	160-6885●	154.70	148.75	– –	– –	– –
Red	160-6886●	154.70	148.75	– –	– –	– –
White	160-6887●	163.54	157.25	– –	– –	– –
NIR	160-6889●	238.68	229.50	– –	– –	– –
UVA	160-6891●	238.68	229.50	– –	– –	– –
Violet	160-6892●	238.68	229.50	– –	– –	– –
RGBA	160-6893●	291.72	280.50	– –	– –	– –
RGBW	160-6894●	291.72	280.50	– –	– –	– –
HI CRI	160-6895●	291.72	280.50	– –	– –	– –

REACH - SVHCs

Products containing **Substances** of **Very High Concern** under REACH can now be easily identified online. Look for this logo to access supporting safety datasheets at **www.farnell.co.uk**

RL Re-reeling available

Quattro Mini Array



- Array mounted on connectorised PCB
- Drop-in capability into existing luminaires
- Incorporating thermal measurement device
- Designed for passive or active cooling
- Applications include entertainment lighting, architectural lighting, fibre optic illumination, medical treatment and industrial / scientific lighting

Colour	Current Rating	Flux (typ)	Luminous Flux (typ)	(Colour Temp.) peak / (typ)	Voltage Vf (typ)	Mftrs. List No.	Order Code
Blue	6200mA	1250lm	20000mW	458nm	32V	* BLUE	160-6826
Green	7040mA	4230lm	9300mW	517nm	29V	* GREEN	160-6828
Amber	8640mA	3050lm	7100mW	596nm	23V	* AMBER	160-6829
Red	9600mA	2393lm	14595mW	630nm	22V	* RED	160-6830
White	7520mA	4813lm	—	(4250K)	29V	* WHITE	160-6831
Infrared	5900mA	—	9000mW	870nm	17V	* NIR	160-6832
UVA	3000mA	—	2200mW	375nm	34V	* UVA I	160-6833
Violet	6400mA	—	21600mW	405nm	31V	* VIOLET	160-6834
RGBA	—	3185lm **	—	—	—	* RGBA	160-6835
RGBW	—	3485lm **	—	—	—	* RGBW	160-6836
HI CRI	—	3985lm **	—	—	—	* HI CRI	160-6837

* ENFIS QUATTRO MINI ARRAY...
** Theoretical combined flux - Please see data sheet for individual values

515864

Colour	Order Code	Price Each 1+	+	+	+	+
Blue	160-6826	395.25	– –	– –	– –	– –
Green	160-6828	395.25	– –	– –	– –	– –
Amber	160-6829	395.25	– –	– –	– –	– –
Red	160-6830	395.25	– –	– –	– –	– –
White	160-6831	420.75	– –	– –	– –	– –
Infrared	160-6832	607.75	– –	– –	– –	– –
UVA	160-6833	607.75	– –	– –	– –	– –
Violet	160-6834	607.75	– –	– –	– –	– –
RGBA	160-6835	420.75	– –	– –	– –	– –
RGBW	160-6836	420.75	– –	– –	– –	– –
HI CRI	160-6837	420.75	– –	– –	– –	– –

Quattro Mini Air LE



- Array on connectorised PCB mounted on air-cooled heat-sink
- Separate housed driver module
- Smart thermal protection system
- Applications include entertainment lighting, architectural lighting, fibre optic illumination, retail lighting

Colour	Luminous Flux (typ)	Total Radiant Flux (typ)	Wavelength / (Colour Temp.) peak / (typ)	Mftrs. List No.	Order Code
Blue	1050lm	20000mW	465nm	* BLUE	160-6896
Green	4230lm	9100mW	520nm	* GREEN	160-6897
Amber	2810lm	6750mW	595nm	* AMBER	160-6898
Red	3100lm	14000mW	630nm	* RED	160-6899
White	—	—	(4250K)	* WHITE	160-6900
NIR	—	14000mW	870nm	* NIR	160-6901
UVA	—	2200mW	375nm	* UVA	160-6902
Violet	—	18000mW	405nm	* VIOLET	160-6903
RGBA	1600lm	—	—	* RGBA	160-6904
RGBW	1700lm	—	—	* RGBW	160-6905
HI CRI	2000lm	—	—	* HI CRI	160-6907

* ENFIS QUATTRO MINI AIR LE...

519859

Colour	Order Code	Price Each 1+	+	+	+	+
Blue	160-6896	807.50	– –	– –	– –	– –
Green	160-6897	807.50	– –	– –	– –	– –
Amber	160-6898	807.50	– –	– –	– –	– –
Red	160-6899	807.50	– –	– –	– –	– –
White	160-6900	828.75	– –	– –	– –	– –
NIR	160-6901	871.25	– –	– –	– –	– –
UVA	160-6902	871.25	– –	– –	– –	– –
Violet	160-6903	871.25	– –	– –	– –	– –
RGBA	160-6904	871.25	– –	– –	– –	– –
RGBW	160-6905	871.25	– –	– –	– –	– –
HI CRI	160-6907	871.25	– –	– –	– –	– –

Quattro Mini LE



- Array on connectorised PCB with mounting holes
- Separate housed driver module
- Smart thermal protection system
- Applications include entertainment lighting, architectural lighting, fibre optic illumination, retail lighting

Colour	Luminous Flux (typ)	Total Radiant Flux (typ)	Wavelength / (Colour Temperature) peak / (typ)	Mftrs. List No.	Order Code
Blue	1050lm	20000mW	465nm	* BLUE	160-6861
Green	4230lm	9100mW	520nm	* GREEN	160-6862
Amber	2810lm	6750mW	595nm	* AMBER	160-6863
Red	3100lm	14000mW	630nm	* RED	160-6865
White	3875lm	—	(4250K)	* WHITE	160-6866
NIR	—	14000mW	870nm	* NIR	160-6867
UVA	—	2200mW	375nm	* UVA	160-6868
Violet	—	18000mW	405nm	* VIOLET	160-6869
RGBA	1600lm	—	—	* RGBA	160-6870
RGBW	1700lm	—	—	* RGBW	160-6871
HI CRI	2000lm	—	—	* HI CRI	160-6872

* ENFIS QUATTRO MINI LE...

518795

Colour	Order Code	Price Each 1+	+	+	+	+
Blue	160-6861	556.75	– –	– –	– –	– –
Green	160-6862	556.75	– –	– –	– –	– –
Amber	160-6863	556.75	– –	– –	– –	– –
Red	160-6865	556.75	– –	– –	– –	– –
White	160-6866	578.00	– –	– –	– –	– –
NIR	160-6867	850.00	– –	– –	– –	– –
UVA	160-6868	850.00	– –	– –	– –	– –
Violet	160-6869	850.00	– –	– –	– –	– –
RGBA	160-6870	573.75	– –	– –	– –	– –
RGBW	160-6871	573.75	– –	– –	– –	– –
HI CRI	160-6872	573.75	– –	– –	– –	– –

Power LED Arrays

High Power Light Strip



Viewing Angle	110°
Forward Current	350mA
Forward Voltage (max)	4V
Operating Temperature	-40°C to +85°C

Colour	Colour Temperature min	max	Luminous Flux min	typ	max
Warm White	2600K	3000K	43lm	50lm	56lm
Cool White	4500K	5600K	56lm	60lm	73lm

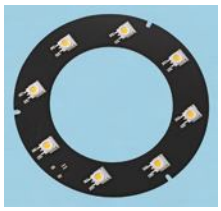
- Various options with different number of LEDs on MCPCB to meet different lighting output requirement
- Energy efficient
- Exposed pad for excellent heat transfer
- Integrated heat sink to simplify thermal management design for efficient heat dissipation
- Long operation life
- Silicone encapsulation

515798

No. of LEDs	Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+
Warm White						
3	ADJD-YM00-NJJZ0	161-8693	25.84	20.84	18.99	– –
4	ADJD-YM10-NJJZ0	161-8698	29.21	23.56	21.48	– –
6	ADJD-YM21-NJJZ0	161-8700	35.83	28.91	26.35	– –
9	ADJD-YM30-NJJZ0	161-8703	59.19	47.73	43.51	– –
12	ADJD-YM40-NJJZ0	161-8705	56.91	45.89	41.84	– –
Warm White (with resistor)						
3	ADJD-YM01-NJJZ0	161-8695	25.84	20.84	18.99	– –
Cool White						
3	ADJD-WM00-NKKZ0	161-8692	25.84	20.84	18.99	– –
4	ADJD-WM10-NKKZ0	161-8697	29.21	23.56	21.48	– –
6	ADJD-WM21-NKKZ0	161-8699	35.07	28.29	25.79	– –
9	ADJD-WM30-NKKZ0	161-8701	46.12	37.20	33.92	– –
12	ADJD-WM40-NKKZ0	161-8704	55.36	44.65	40.70	– –
Cool White (with resistor)						
3	ADJD-WM01-NKKZ0	161-8694	25.84	20.84	18.99	– –

Moonstone™

High Power Light Ring



Viewing Angle	110°
Forward Current	350mA
Forward Voltage	4V

Diameter:
Internal = 88mm
External = 140mm

- Energy efficient
- Exposed pad for excellent heat transfer
- Integrated heat sink to simplify thermal management design for efficient heat dissipation
- Long operation life
- Wide viewing angle
- Silicone encapsulation
- Ease of mechanical mounting
- Applications include reading light, architectural lighting, safety / emergency lighting, illumination in vending machine, refrigeration lighting

Colour	Colour Temperature (min)	(max)	Luminous Intensity (typ)	Mftrs. List No.	Order Code
Warm White	2600K	3000K	400lm	ADJD-YMR3-NJJZ0	163-4765
Cool White	4500K	5600K	480lm	ADJD-WMR3-NKKZ0	163-4764

RL Re-reeling available

Power LED Arrays - continued

Moonstone™ - continued

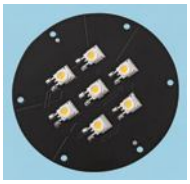
High Power Light Ring - continued

521882

Colour	Mftrs. List No.	Order Code	Price Each 1+	10+	25+	+
Warm White	ADJD-YMR3-NJJZ0	**163-4765●**	51.91	45.30	40.19	– –
Cool White	ADJD-WMR3-NKKZ0	**163-4764●**	40.69	35.52	31.51	– –

Moonstone™

High Power Light



Forward Current 350mA
Forward Voltage 4V
Operating Temperature -40°C to +85°C

New

- Energy efficient
- Long operation life
- Wide viewing angle
- Silicone encapsulation
- Ease of mechanical mounting
- Smooth wide radiation pattern
- Exposed pad for excellent heat transfer
- Integrated heat sink to simplify thermal management design for efficient heat dissipation
- Applications include architectural lighting, backlighting, task lighting, emergency lighting, vending machine illumination, refrigeration lighting

Colour	Luminous Intensity (typ)	Colour Temperature (min)	(max)	Mftrs. List No.	Order Code
Cool White	420lm	4500	5600	ADJD-WMR0-NKKZ0	163-4762
Warm White	350lm	2600	3000	ADJD-YMR0-NJJZ0	163-4763

523174

Colour	Mftrs. List No.	Order Code	Price Each 1+	10+	25+	+
Cool White	ADJD-WMR0-NKKZ0	**163-4762●**	32.07	27.99	24.83	– –
Warm White	ADJD-YMR0-NJJZ0	**163-4763●**	32.88	28.69	25.45	– –

Power LED Evaluation Kit



Contents:
- Five PCBs 8" in length
- Populated with three 0.5W white LEDs
- Wire harness with connector
- Hand insertion tool

New

The self-contained Power Line Designer Kit is a flexible and scalable lighting solution using mid-power LEDs to supply high luminous flux without additional heatsinking requirements. The kit includes components and instructions to allow a designer to configure LED placement as needed for uniform illumination in his application. With a 15-volt power supply, the Power Line Kit is a total lighting solution.

528494

Mftrs. List No.	Order Code	Price Each 1+	+	+	+	+
OVPLW5K	**167-8751●**	41.92	– –	– –	– –	– –

DRAGONtape®

Lighting design is now so wide-ranging that almost any vision can be converted into an efficient concept. With six high-flux Golden DRAGON® LEDs on flexible splittable boards, DRAGONtape® offers ideal conditions for creating innovative lighting designs in a wide variety of forms.

New

- Self-adhesive backing for simple installation
- Can be divided into units of 1 to 6 LEDs
- Optics can be used to reduce the beam angle from 120° to 10° or 30°
- Applications include orientation lights, shop and furniture lights, small signal lights and effect lighting

Viewing Angle 120°
No. of LEDs 6
Forward Current 350mA
Operating Temperature -30°C to +85°C

Colour	Luminous Intensity (typ)	Colour Temperature (typ)	Wavelength (typ)	Mftrs. List No.	Order Code
Red	85lm	—	617nm	DT6-A1	147-2635
Blue	50lm	—	470nm	DT6-B1	147-2636
Green	280lm	—	531nm	DT6-T2	147-2637
White	—	4700K	—	DT6-W3-847	147-2639
White	—	6500K	—	DT6-W3-865	147-2640
Yellow	100lm	—	587nm	DT6-Y1	147-2642

524966

Colour	Mftrs. List No.	Order Code	Price Each 1+	5+	10+	25+
Red	DT6-A1	**147-2635●**	24.52	22.96	21.58	19.27
Blue	DT6-B1	**147-2636●**	41.94	39.26	36.91	32.95
Green	DT6-T2	**147-2637●**	44.08	41.27	38.79	34.64
White	DT6-W3-847	**147-2639●**	45.24	41.76	38.78	36.19
White	DT6-W3-865	**147-2640●**	31.20	28.80	26.75	24.96
Yellow	DT6-Y1	**147-2642●**	24.52	22.96	21.58	19.27
Optics						
10°	OP1X1-10	**147-2663**	19.85	17.79	16.65	15.89
30°	OP1X1-30	**147-2664**	19.85	17.79	16.65	15.89

3 W Lumilight Light Engines



The Lumilight Light Engines are available in a range of three linear modules and come in a choice of six different single colour LEDs. Each LED linear array will fit into a standard 15mm wide aluminium "U" channel and is designed to be attached to a heatsink structure with thermal adhesive or double sided thermal tape.
Lumilight 3 - A linear array with three single colour LEDs.
Lumilight 6 - A linear array with six single colour LEDs.
Lumilight 9 - A linear array with nine single colour LEDs.
All have dimensions of: 324mm x 13.5mm

496052

Mftrs. List No.	Luminous Flux(lm)*	Colour	Order Code	Price Each 1+	5+	10+
3-LED Strip						
LLT3-R	105	Red	**138-0812●**	22.32	18.84	15.73
LLT3-G	126	Green	**138-0814●**	24.56	20.52	17.29
LLT3-B	528mW	Blue	**138-0815●**	33.35	22.49	18.79
LLT3-W	108	White	**138-0816●**	33.06	22.83	20.75
LLT3-WW	48	White-Warm	**138-0817●**	33.06	22.83	20.75
6-LED Strip						
LLT6-W	216	White	**138-0823●**	51.72	35.87	33.11
LLT6-WW	96	White-Warm	**138-0824●**	45.43	34.78	33.88
9-LED Strip						
LLT9-W	324	White	**138-0831●**	68.45	49.18	44.69
LLT9-WW	144	White-Warm	**138-0832●**	60.12	47.63	46.42

*If stated as mW, it is refering to the radiometric power

Arrays with Lens

on Anotherm Linear Heat Spreader



10 Watt Light Bar



12 Watt Light Ring



1 Watt Light Spot

New

Designed for areas where lighting intensity and reliability are essential. The light beam angle of 23° is ideal for illuminating areas close or long distances from the device while requiring minimal space. A patented substrate is used to ensure the best heat dissipation of any light assembly in the industry.

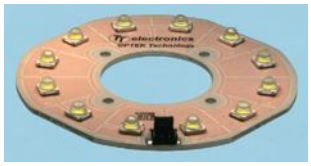
Colour	Viewing Angle	Forward Current	Luminous Intensity (typ)	Forward Voltage (max)	Mftrs. List No.	Order Code
Linear						
White	23°	700mA	408lm	18V	OPA740W23	167-8579
Circular						
White	23°	700mA	490lm	21.6V	OPA741W23	167-8580
Spot						
White	23°	350mA	41lm	3.6V	OPA742W23	167-8581

528110

Colour	Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
Linear							
White	OPA740W23	**167-8579●**	75.66	68.80	44.01	42.32	40.75
Circular							
White	OPA741W23	**167-8580●**	94.99	86.40	55.27	53.14	51.18
Spot							
White	OPA742W23	**167-8581●**	11.72	10.66	6.82	6.55	6.32

12 Watt Light Ring

on Anotherm Linear Heat Spreader



New

The OPA730 Series are designed for areas where lighting intensity and reliability are essential. The light beam angles of 40° and 120° are ideal for illuminating small and medium size areas while requiring minimal space. A patented substrate is used to ensure the best heat dissipation of any light assembly in the industry.

Colour	Viewing Angle	Forward Current	Luminous Intensity (typ)	Forward Voltage (max)	Mftrs. List No.	Order Code
White	120°	700mA	576lm	21.6V	OPA730W	167-8568
White	40°	700mA	576lm	21.6V	OPA730WD	167-8570
Red	40°	700mA	312lm	15V	OPA730RD	167-8567
Yellow	40°	700mA	420lm	15V	OPA730YD	167-8571
Green	40°	700mA	576lm	21.6V	OPA730GD	167-8566
Blue	40°	700mA	108lm	21.6V	OPA730BD	167-8564

RL Re-reeling available

Farnell

528109

Colour	Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
White	OPA730W	**167-8568●**	49.27	44.80	28.66	27.57	26.54
White	OPA730WD	**167-8570●**	57.10	51.93	33.22	31.94	30.67
Red	OPA730RD	**167-8567●**	41.02	36.47	23.44	22.17	21.31
Yellow	OPA730YD	**167-8571●**	41.02	36.47	23.44	22.17	21.31
Green	OPA730GD	**167-8566●**	76.07	67.62	43.47	41.13	39.52
Blue	OPA730BD	**167-8564●**	58.65	52.14	33.52	31.70	30.47

10 Watt Light Bar

on Anotherm Linear Heat Spreader



The OPA729 Series are designed for areas where lighting intensity and reliability are essential. The light beam angles of 40° and 120° are ideal for illuminating small and medium size areas while requiring minimal space. A patented substrate is used to ensure the best heat dissipation of any light assembly in the industry.

Colour	Viewing Angle	Forward Current	Luminous Intensity (typ)	Forward Voltage (max)	Mftrs. List No.	Order Code
White	120°	700mA	480lm	18V	OPA729W	167-8561
White	40°	700mA	480lm	18V	OPA729WD	167-8562
Red	40°	700mA	260lm	12.5V	OPA729RD	167-8560
Yellow	40°	700mA	350lm	12.5V	OPA729YD	167-8563
Green	40°	700mA	480lm	18V	OPA729GD	167-8559
Blue	40°	700mA	90lm	18V	OPA729BD	167-8558

528104

Colour	Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
White	OPA729W	**167-8561●**	40.18	36.56	23.37	22.48	21.65
White	OPA729WD	**167-8562●**	46.60	42.38	27.12	26.06	25.10
Red	OPA729RD	**167-8560●**	34.66	30.81	19.81	18.74	18.00
Yellow	OPA729YD	**167-8563●**	34.66	30.81	19.81	18.74	18.00
Green	OPA729GD	**167-8559●**	64.42	57.27	36.81	34.82	33.46
Blue	OPA729BD	**167-8558●**	47.89	42.57	27.37	25.89	24.88

Colour Light Engines



- Operating life in excess of 50,000 hours
- Optimised thermal management
- High flux LED technology
- Compact low profile design
- Simple Plug and Play operation
- No Ultra Violet
- Energy efficient

These colour engines are integrated red, green and blue light engine, which enables dynamic Colour changing applications with minimum effort. The design allows them out perform many mid range halogen and metal halide colour change systems. Colour Change using LED technology creates deep saturated colours with the ability for total control, which is impossible with any other light source. There are four different beam angles and five circular LED count versions. Available in either circular or straight configurations.

496271

Mftrs. List No.	Configuration No. LED's x Angle	Power Dispation	Order Code	Price Each 1+	5+	10+
3 - LED Circular						
CE3C-RGB-005	3 x 5°	3 x 1W	**138-0835●**	35.52	32.32	28.81
CE3C-RGB-015	3 x 15°	3 x 1W	**138-0836●**	35.52	32.32	28.81
CE3C-RGB-025	3 x 25°	3 x 1W	**138-0838●**	35.52	32.32	28.81
6 - LED Circular						
CE6C-RGB-005	6 x 5°	6 x 1W	**138-0839●**	64.38	58.60	52.22
CE6C-RGB-025	6 x 25°	6 x 1W	**138-0841●**	64.38	58.60	52.22
12 - LED Straight						
CE12L-RGB-025	12 x 25°	12 x 1W	**138-0844●**	95.81	87.20	77.70
12 - LED Circular						
CE12C-RGB-020	12 x 25°	12 x 1W	**138-0851●**	107.33	97.67	87.05
18 - LED Straight						
CE18L-RGB-025	18 x 25°	18 x 1W	**138-0854●**	136.95	124.63	111.07
18 - LED Circular						
CE18C-RGB-025	18 x 25°	18 x 1W	**138-0858●**	154.14	140.29	125.02
12 - LED Circular						
CE36C-RGB-005	36 x 5°	36 x 1W	**138-0859●**	286.19	274.75	252.70
Accessories						
CDU-L-3-35-DMX	Colour Driver 36		**124-2368●**	130.36	106.45	99.83
CT4-C	Common Connector		**124-2378●**	1.38	1.30	1.15
CT4-100	Linking Lead		**124-2376●**	1.50	1.42	1.25

700 products added online every week

See our pick of the hottest products and latest technologies in '**What's New?**' at **www.farnell.co.uk**

Powerwhite Linear Modules



L=297.18, W=40, H=16.5

Colour	Cool White
Colour Temperature (typ)	5300K
Number of LEDs	6
Temperature Range	-30°C to +55°C

- Fully modular linear arrays of ultra high brightness LEDs
- Utilizes the latest 80+ lumen LUXEON® Rebel™ LEDs
- >70% lumen maintenance @ 60,000 hours at maximum acceptable ambient temperature
- Lifesaver® thermal protection
- Onboard 350mA constant current driver runs off low voltage input (LV range)
- Primary heatsinking included (LV range)
- Applications include linear lighting, accent lighting, flood lighting, street and area lighting, general illumination
- 159-3580 and 159-3581 require LED driver 159-3579

519484

Optic	Mftrs. List No.	Order Code	Price Each 1+	3+	8+	+
Powerwhite Linear Modules						
5° spot	LML6C1-CW-SP	**159-3580●**	47.83	43.34	38.53	– –
5 x 20° oval	LML6C1-CW-OV	**159-3581●**	47.83	43.34	38.53	– –
Entry cable	LML6-CON-CAB	**159-3582●**	3.42	3.09	2.75	– –
End plug	LML6-TER-CAB	**159-3583●**	0.98	0.89	0.80	– –
Powerwhite Linear Modules - With On-Board Driver						
5° spot	LML6-LV-CW-SP	**159-3585●**	56.52	51.22	45.52	– –
5 x 20° oval	LML6-LV-CW-OV	**159-3586●**	56.52	51.22	45.52	– –
Entry cable	LML6-LV-CON-CAB	**159-3587●**	2.61	2.37	2.11	– –
End plug	LML6-LV-M2M-CAB	**159-3588●**	1.75	1.58	1.41	– –
LED Driver						
	PWD60-35-70	**159-3579●**	43.48	39.41	35.02	– –

12V LED Lighting Strips



- Low Power Consumption - (Up to 90% energy savings over Neon).
- Long Life - (100,000 Hours Typically - over 11 years in continuous use).
- Rugged and Reliable - (No glass to break as with Neon or Fluorescent).
- Fast & Simple Installation - (Easy plug together design).
- High Brightness - (LED types available include Standard, Superbright & Ultrabright options).
- No Colour Fade - (LED's emit a single colour wavelength so don't rely on filters which can fade over time).
- Low Maintenance - (LED's offer fit and forget designs which need the minimum of servicing).

Colour	Luminous Int, typ	Current per LED (mA)	Total Current/Strip (mA)	Viewing Angle °	LED per Strip	Mftrs. List No.
Front Firing Flexistrip (400 x 10 x 2.1mm)						
Red	14lm	20	240mA	120	36	FFSR1
Blue	14lm	20	240mA	120	36	FFSB1
Yellow	30lm	20	240mA	120	36	FFSY1
Side Firing Flexistrip						
White	14lm	20	240mA		36	SFSW1
White	30lm	20	240mA		36	HLLSPLFHW3-012

490890

Mftrs. List No.	Colour	Order Code	Price Each 1+	10+	50+
Front Firing Flexistrip					
FFSR1	Red	**122-6695●**	13.99	10.13	9.04
FFSB1	Blue	**122-6696●**	14.75	10.68	9.53
FFSY1	Yellow	**122-6697●**	11.68	8.45	7.54
Side Firing Flexistrip					
SFSW1	White	**122-6703●**	23.60	17.09	15.25
HLLSPLFHW3-012	White	**122-6698●**	17.64	12.76	11.40

LED Modules

8 Watt Strip Modules



LED Module - W = 12.7, L = 302.26mm

- 6 x 1 Watt High Power LED's
- Consistent unit-to-unit colour temperature
- Operational life of 50,000 hours
- Metal clad PCB Substrate
- 8" power leads

Colour	Dominent Wavelength / (Colour Temp.)	Luminous Flux (Typ)	Current	Electric Power	Mftrs. List No.
Red	625nm	264lm	350mA	8W	ILL2A0005G
Cool White	(6400K)	240lm	350mA	8W	ILL2A0005A
White-Warm	(3250K)	120lm	350mA	8W	ILL2A0005B

451446

Colour	Mftrs. List No.	Order Code	Price Each 1+	5+	10+
Red	ILL2A0005G	**122-8855●**	60.32	56.00	54.45
Cool White	ILL2A0005A	**122-8861●**	50.60	47.00	45.67
White-Warm	ILL2A0005B	**122-8862●**	40.42	37.54	36.49

Power LED Arrays - continued

DRAGON-X™

OSRAM

New

The small DRAGON-X™ module is a big hit when it comes to creating sensationally bright scenarios. With its high-flux Golden DRAGON® LED, this module is hard to beat for luminous intensity.

- Optimum heat dissipation for instant use
- 20cm long connecting cable
- Applications include portable and compace luminaires, architectural, shop and interior lighting, safety and signal lights

Forward Current 350mA
Operating Temperature -30°C to +85°C

Colour	Viewing Angle	Luminous Intensity (typ)	Colour Temperature (typ)	Mftrs. List No.	Order Code
White-Warm	12°	450cd	3300K	DX1-W3-733-L12W	147-2643
White-Warm	30°	75cd	3300K	DX1-W3-733-L30W	147-2644
White-Warm	60°	22cd	3300K	DX1-W3-733-L60W	147-2645
White	12°	675cd	6500K	DX1-W3-865-L12W	147-2646
White	30°	110cd	6500K	DX1-W3-865-L30W	147-2647
White	60°	33cd	6500K	DX1-W3-865-L60W	147-2648

524968

Colour	Mftrs. List No.	Order Code	Price Each 1+	5+	10+	25+
White-Warm	DX1-W3-733-L12W	147-2643●	44.08	41.27	38.79	34.64
White-Warm	DX1-W3-733-L30W	147-2644●	44.08	41.27	38.79	34.64
White-Warm	DX1-W3-733-L60W	147-2645●	44.08	41.27	38.79	34.64
White	DX1-W3-865-L12W	147-2646●	44.08	41.27	38.79	34.64
White	DX1-W3-865-L30W	147-2647●	44.08	41.27	38.79	34.64
White	DX1-W3-865-L60W	147-2648●	44.08	41.27	38.79	34.64

LINEARlight

POWER Flex

OSRAM

New

These modules show their strengths in areas where architectural structures are to emphasized and enhanced with optical effects. Powerful lighting and flexibility united in an extremely compact form.

- Can be divided into units of 6 LEDs or multiples thereof with no loss of function
- Flexible board with adhesive backing
- Small height for low-profile lighting solutions
- Applications include lighting counters, arches or handrails, illuminating or backlighting transparent or diffusing materials

Viewing Angle 120°
Forward Current 3A
Forward Voltage 24V dc
Luminous Intensity 1500lm
Operating Temperature -20°C to +85°C

524969

Colour	Mftrs. List No.	Order Code	Price Each 1+	5+	10+	25+
White	LM10P-W3-847	147-2659●	531.60	– –	– –	– –
Cool White	LM10P-W3-865	147-2660●	531.60	– –	– –	– –
Connector						
	LM-2PIN-FLEX	147-2661●	55.06	52.22	48.85	46.60

LINEARlight

Colormix Flex

OSRAM

New

LINEARlight Colormix Flex was developed to bathe rooms in changing light or to highlight contors with coloured effects.

- Can be divided into units of 10 LEDs or multiples thereof with no loss of function
- Homogenous colour changing with three chips in one package
- Applications include injecting light into transparent and diffusing materials, effect lighting in architecture, dynamic effects in public zones

Viewing Angle 120°
Forward Current 0.5A
Forward Voltage 24V dc
Luminous Intensity 385lm
Operating Temperature -30°C to +75°C

524990

Colour	Mftrs. List No.	Order Code	Price Each 1+	+	+	+
R, G, B	LM10L-RGB2-B7	147-2656●	414.95	– –	– –	– –
R, G, B	LM10L-RGB2-B8	147-2657●	414.95	– –	– –	– –

20 Watt Light Flood

on Anotherm Linear Heat Spreader

electronics OPTEK Technology

New



The OPA731 Series are designed for areas where lighting intensity and reliability are essential. The light beam angles of 40° and 120° are ideal for illuminating small and medium size areas while requiring minimal space. A patented substrate is used to ensure the best heat dissipation of any light assembly in the industry.

Colour	Viewing Angle	Forward Current	Luminous Intensity (typ)	Forward Voltage (max)	Mftrs. List No.	Order Code
Red	40°	1.4A	520lm	12.5V	OPA731RD	167-8574
Yellow	40°	1.4A	700lm	12.5V	OPA731YD	167-8578
Green	40°	1.4A	960lm	18V	OPA731GD	167-8573
Blue	40°	1.4A	180lm	18V	OPA731BD	167-8572
White	120°	1.4A	960lm	18V	OPA731W	167-8575
White	40°	1.4A	960lm	18V	OPA731WD	167-8576

527922

Colour	Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
Red	OPA731RD	167-8574●	60.23	53.53	34.42	32.56	31.29
Yellow	OPA731YD	167-8578●	60.23	53.53	34.42	32.56	31.29
Green	OPA731GD	167-8573●	119.76	106.45	68.43	64.73	62.22
Blue	OPA731BD	167-8572●	86.69	77.04	49.53	46.85	45.03
White	OPA731W	167-8575●	71.51	65.04	41.61	40.02	38.52
White	OPA731WD	167-8576●	84.40	76.75	49.09	47.22	45.47

Luxeon® LED Flood

Power Light Source

LUMILEDS™ LIGHT FROM SILICON VALLEY



- Long operating life - up to 100k hours
- More energy efficient than incandescent and most halogen lamps
- Low voltage DC operation
- Cool beam, safe to touch
- Instant light, less than 100 ns
- Fully dimmable
- No UV
- Superior ESD protection

These multi LED modules provide an energy efficient and compact light source, combining the lifetime and reliability advantages of Light Emitting Diodes with the brightness of conventional lighting.
The LED's are mounted on an aluminium core printed circuit board allowing ease of assembly, optimum cooling and accurate light centre positioning.

Colour	Luminous Flux Min. (lm)	Luminous Flux Typ. (lm)	Wavelength Typ. (nm)	Forward Voltage Typ. (V)	Forward Voltage Max. (V)	Order Code
Flood 18 LED						
Amber	190	450	590	17	20	110-9107
Red	250	480	625	17	20	110-9113
White	250	450	5500K	21	24	110-9114

423022

Colour	Mftrs. List No.	Order Code	Price Each 1+	3+	10+
Flood - 18 LED's					
Amber	LXHL-MLJA	SMD 110-9107●	67.54	64.16	62.14
Red	LXHL-MDJA	SMD 110-9113●	73.58	71.64	69.81
White	LXHL-MWJE	SMD 110-9114●	85.59	81.30	78.74

Luxeon™ LED Light Module

Power Light Source

LUMILEDS™ LIGHT FROM SILICON VALLEY



Features

- Long operating life - up to 100k hours
- Collimating optics providing tight beams
- Low voltage DC operation
- Cool beam, safe to touch
- Instant light, less than 100 ns
- Fully dimmable
- No UV
- Superior ESD protection

Applications

- Decorative lighting
- Architectural detail lighting
- Uplighters, downlighters & orientation lighting
- Entertainment lighting
- Bollards

These multi LED modules provide an energy efficient and compact light source, combining the lifetime and reliability advantages of Light Emitting Diodes with the brightness of conventional lighting.
The LED's are mounted on an aluminium core printed circuit board allowing ease of assembly, optimum cooling and accurate light centre positioning.

Colour	Luminous Flux (min) (lm)	Luminous Flux (typ) (lm)	Wavelength Typical (nm)	Forward Voltage Typ. (V)	Forward Voltage Max. (V)	Order Code (V)
Ring, 6 LED						
White	70	125	—	10	12	110-9149
Ring, 12 LED						
Red	310	450	627	18	21	110-9141
White	140	250	—	21	24	110-9142
Line, 12 LED						
White	140	250	—	21	24	110-9136

422923

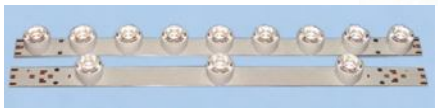
Colour	Mftrs. List No.	Order Code	Price Each 1+	5+	10+
Ring, 6 LED's					
White	LXHL-NWE7	110-9149●	45.98	43.68	42.31
Ring, 12 LED's					
Red	LXHL-ND92	110-9141●	90.09	85.58	82.89
White	LXHL-NWE6	110-9142●	90.09	85.58	82.89
Line, 12 LED's					
White	LXHL-NWE9	110-9136●	78.24	72.22	67.07

£ € 40,000 PRICES REDUCED

RL Re-reeling available

Farnell

LumiLine LED Arrays



The LumiLine range of LED arrays are designed to compliment the Lumidrives range of Microdrivers and are ideal for a myriad of OEM Solutions.They can be driven either singly or in multiples (depending on the total number of LEDs and the driver used), giving an increased level of flexibility in lighting design, and are in with a selection of LED colours and optic angles.

Beam Type:	Lambertian (5, 15 & 25° viewing angle options)
Power Consumption Max	Red / Amber: 1W White / Blue: 1.2W
Maximum Current	350 mA
LEDs	Luxeon 1
Compatable drivers:	MicroDriver (3, 9, LV3, LV9), Multidriver 8, VariLED 16
Op Temp:	Upto 105°C
PCB:	1.6mm Aluminium clad substrate
LED Life @ 55°C	50,000 hours

483863

Mftrs. List No.	Viewing Angle	Colour	Order Code	Price Each 1+	5+	10+
3 LED Light Strip						
LLN3-R-025	25	Red	**138-0764●**	32.32	24.25	21.62
LLN3-G-025	25	Green	**138-0769●**	35.39	26.55	23.66
LLN3-B-025	25	Blue	**138-0774●**	35.39	26.55	23.66
LLN3-W-005	5	White	**138-0776●**	43.24	32.44	28.91
LLN3-W-015	15	White	**138-0777●**	43.24	32.44	28.91
LLN3-W-025	25	White	**138-0778●**	43.24	32.44	28.91
LLN3-W-520	5(oval)	White	**138-0779●**	43.24	32.44	28.91
LLN3-WW-005	5	White-Warm	**138-0780●**	38.95	29.23	26.05
LLN3-WW-015	15	White-Warm	**138-0781●**	38.95	29.23	26.05
LLN3-WW-025	25	White-Warm	**138-0782●**	38.95	29.23	26.05
LLN3-WW-520	5(oval)	White-Warm	**138-0784●**	43.24	32.44	28.91
9 LED Light Strip						
LLN9-R-025	25	Red	**138-0788●**	76.29	57.25	51.03
LLN9-G-025	25	Green	**138-0793●**	85.53	64.18	57.20
LLN9-B-025	25	Blue	**138-0798●**	85.53	64.18	57.20
LLN9-W-025	25	White	**138-0805●**	107.73	80.84	72.05
LLN9-WW-005	5	White-Warm	**138-0807●**	107.73	80.84	72.05
LLN9-WW-025	25	White-Warm	**138-0810●**	97.06	72.83	64.91

Mid-Power LEDs

Viewing Angle	120°
LED / Lamp Size	5.2 x 5.2mm
Operating temperature	-30°C to +85°C

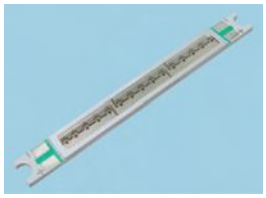
Colour	Luminous Intensity (typ)	Forward Current	Forward Voltage (max)	Mftrs. List No.	Order Code
Cool White	1.7cd	20mA	3.6V	SLSNNWH805TS	168-6034
Cool White	3.5cd	40mA	3.6V	SLSNNWH825TS	168-6035
Warm White	3.2cd	40mA	3.8V	SLSNNWW825TS	168-6036
Cool White	5.2cd	60mA	3.6V	SLSNNWH815TS	168-6037
Warm White	5.1cd	60mA	3.6V	SLSNNWW815TS	168-6039
Red / Green / Blue	140mcd	20mA	3.7V	SLSRGBW815TS	168-6040

528862

Mftrs. List No.	Order Code	Price Each 1+	10+	25+	100+	250+
SLSNNWH805TS	**168-6034●**	0.45	0.38	0.32	0.29	0.26
SLSNNWH825TS	**168-6035●**	0.56	0.47	0.39	0.36	0.33
SLSNNWW825TS	**168-6036●**	0.68	0.57	0.48	0.43	0.40
SLSNNWH815TS	**168-6037●**	0.60	0.50	0.42	0.38	0.35
SLSNNWW815TS	**168-6039●**	0.72	0.60	0.50	0.46	0.42
SLSRGBW815TS	**168-6040●**	0.82	0.68	0.57	0.52	0.48

Linear LED Light Bar

High Power



Forward Current	500mA
Operating temperature	-30°C to +100°C

Colour	Viewing Angle	Luminous Intensity (typ)	Forward Voltage (max)	Mftrs. List No.	Order Code
Hyper Orange	130°	75lm	10.6V	KAS-4805SELS/5	168-6126
Super Bright Yellow	130°	75lm	10.6V	KAS-4805SYLS/5	168-6127
Green	140°	30lm	13V	KAS-4805ZGS/3	168-6128
Green	130°	180lm	11.5V	KAS-4805ZG24S/7	168-6129
Blue	130°	20lm	12.5V	KAS-4805QBFS/3	168-6130
Blue	120°	45lm	11.5V	KAS-4805QB24S/7	168-6131

528828

Mftrs. List No.	Order Code	Price Each 1+	10+	25+	100+	+
KAS-4805SELS/5	**168-6126●**	7.58	6.82	6.20	5.89	– –
KAS-4805SYLS/5	**168-6127●**	7.58	6.82	6.20	5.89	– –
KAS-4805ZGS/3	**168-6128●**	7.00	6.30	5.73	5.44	– –
KAS-4805ZG24S/7	**168-6129●**	20.22	18.20	16.54	15.71	– –
KAS-4805QBFS/3	**168-6130●**	8.36	7.52	6.84	6.50	– –
KAS-4805QB24S/7	**168-6131●**	15.16	13.65	12.41	11.79	– –

LumiSpot LED Arrays



The LumiSpots are a range of range of circular LED arrays designed to compliment the Lumidrives range of Microdrivers and are ideal for a myriad of OEM Solutions.They can be driven either singly or in multiples (depenmding on the total number of LEDs and the driver used), giving an increased level of flexibility in lighting design, and are in with a selection of LED colours and optic angles.

Beam Type:	Lambertian (5, 15 & 25° viewing angle options)
Power Consumption Max	Red / Amber: 1W White / Blue: 1.2W
Maximum Current	350 mA
LEDs	Luxeon 1
Compatable drivers:	MicroDriver (3, 9, LV3, LV9), Multidriver 8, VariLED 16
Op Temp:	Upto 105 Deg C
PCB:	1.6mm Aluminium clad substrate
LED Life @ 55°C	50,000 hours

483819

Mftrs. List No.	Viewing Angle	Colour	Order Code	Price Each 1+	5+	10+
1 LED						
LSP1-R-005	5	Red	**138-0671●**	8.17	7.43	6.62
LSP1-R-015	15	Red	**138-0672●**	8.17	7.43	6.62
LSP1-R-025	25	Red	**138-0673●**	8.17	7.43	6.62
LSP1-G-005	5	Green	**138-0675●**	9.04	8.24	7.34
LSP1-G-015	15	Green	**138-0676●**	9.04	8.24	7.34
LSP1-G-025	25	Green	**138-0677●**	9.04	8.24	7.34
LSP1-B-005	5	Blue	**138-0681●**	9.04	8.24	7.34
LSP1-B-015	15	Blue	**138-0682●**	9.04	8.24	7.34
LSP1-B-025	25	Blue	**138-0683●**	9.04	8.24	7.34
LSP1-B-520	5	Blue	**138-0684●**	9.04	8.24	7.34
LSP1-W-005	5	White	**138-0685●**	10.25	9.32	8.30
LSP1-W-015	15	White	**138-0686●**	10.25	9.32	8.30
LSP1-W-025	25	White	**138-0687●**	10.25	9.32	8.30
LSP1-WW-005	5	White-Warm	**138-0689●**	10.25	9.32	8.30
LSP1-WW-015	15	White-Warm	**138-0690●**	10.25	9.32	8.30
LSP1-WW-025	25	White-Warm	**138-0691●**	10.25	9.32	8.30
3 LED Ring						
LSP3-R-005	5	Red	**138-0694●**	25.97	23.64	21.07
LSP3-R-015	15	Red	**138-0695●**	20.59	18.75	16.71
LSP3-R-025	25	Red	**138-0696●**	25.97	23.64	21.07
LSP3-G-005	5	Green	**138-0698●**	25.90	23.57	21.01
LSP3-G-015	15	Green	**138-0699●**	22.80	20.75	18.49
LSP3-G-025	25	Green	**138-0700●**	28.75	26.16	23.31
LSP3-B-005	5	Blue	**138-0702●**	25.90	23.57	21.01
LSP3-B-015	15	Blue	**138-0703●**	28.75	26.16	23.31
LSP3-B-025	25	Blue	**138-0704●**	28.75	26.16	23.31
LSP3-W-005	5	White	**138-0706●**	32.29	29.39	26.19
LSP3-W-015	15	White	**138-0707●**	30.22	27.50	24.50
LSP3-W-025	25	White	**138-0708●**	32.29	29.39	26.19
LSP3-W-520	5	White	**138-0711●**	32.29	29.39	26.19
LSP3-WW-005	5	White-Warm	**138-0712●**	32.29	29.39	26.19
LSP3-WW-015	15	White-Warm	**138-0713●**	32.29	29.39	26.19
LSP3-WW-025	25	White-Warm	**138-0714●**	29.09	26.48	23.60
6 LED Ring						
LSP6-R-005	5	Red	**138-0716●**	47.95	43.63	38.90
LSP6-R-025	25	Red	**138-0718●**	43.20	39.32	35.05
LSP6-G-005	5	Green	**138-0720●**	48.28	43.93	39.16
LSP6-G-025	25	Green	**138-0723●**	48.28	43.93	39.16
LSP6-B-005	5	Blue	**138-0725●**	48.28	43.93	39.16
LSP6-B-025	25	Blue	**138-0727●**	48.28	43.93	39.16
LSP6-W-005	5	White	**138-0729●**	60.65	55.19	49.18
LSP6-W-025	25	White	**138-0731●**	60.65	55.19	49.18
LSP6-WW-005	5	White-Warm	**138-0733●**	60.65	55.19	49.18
LSP6-WW-025	25	White-Warm	**138-0736●**	60.65	55.19	49.18
9 LED Ring						
LSP9-R-015	15	Red	**138-0739●**	54.27	49.40	44.02
LSP9-R-025	25	Red	**138-0740●**	68.42	62.29	55.51
LSP9-G-015	15	Green	**138-0743●**	60.94	55.46	49.43
LSP9-G-025	25	Green	**138-0744●**	69.23	63.00	56.15
LSP9-B-015	15	Blue	**138-0748●**	67.64	61.55	54.86
LSP9-B-025	25	Blue	**138-0749●**	69.23	63.00	56.15
LSP9-W-005	5	White	**138-0751●**	78.79	71.69	63.90
LSP9-W-015	15	White	**138-0753●**	87.45	79.57	70.92
LSP9-W-025	25	White	**138-0754●**	87.45	79.57	70.92
LSP9-WW-005	5	White-Warm	**138-0756●**	87.45	79.57	70.92
LSP9-WW-015	15	White-Warm	**138-0757●**	87.45	79.57	70.92
LSP9-WW-025	25	White-Warm	**138-0759●**	78.79	71.69	63.90

Strip Light Tubes



Multi-Angle Light Tube



LED T5 Style Light Tube

Compact, Low voltage LED lighting fixtures with slim profile and multi-angle mounting brackets. Can be used a a long life, low energy alternative to fluorescent sources in apllications such as vending machines, CNC machinery and point-of-sale lighting.

Ultra-bright LED lighting tube with a diameter matching that of a T5 fluorescent tube. Supplied with a selection of mounting clips and fixings to facilitate use in the widest possible range of applications, inlcuding shelf displays, backlighting and display cabinets.

RL Re-reeling available

Farnell

Power LED Arrays - continued

Strip Light Tubes - continued

Multi-Angle Light Tube - continued

Multi-Angle Light Tube

Angle	Length	Current Rating	Power Consumption	List No.	Code
Warm					
80°	1ft	120mA	2.88W	LST1FTW	168-4463
80°	2ft	240mA	2.76W	LST2FTW	168-4464
80°	3ft	360mA	8.64W	LST3FTW	168-4465
Daylight					
80°	1ft	120mA	2.88W	LST1FTD	168-4466
80°	2ft	240mA	5.76W	LST2FTD	168-4467
80°	3ft	360mA	8.64W	LST3FTD	168-4468

Mftrs. List No.	Order Code	1+	5+	10+
Warm				
LST1FTW	**168-4463**	33.44	27.87	25.72
LST2FTW	**168-4464**	59.84	49.87	46.03
LST3FTW	**168-4465**	84.74	70.62	65.18
Daylight				
LST1FTD	**168-4466**	33.44	27.87	25.72
LST2FTD	**168-4467**	59.84	49.87	46.03
LST3FTD	**168-4468**	84.74	70.62	65.18

LED T5 Style Light Tube

Angle	Length	Current Rating	Power Consumption	List No.	Code
Warm					
60°	1ft	120mA	2.88W	OMT5W1FT	168-4469
60°	2ft	240mA	5.76W	OMT5W2FT	168-4470
60°	3ft	360mA	8.64W	OMT5W3FT	168-4471
Daylight					
60°	1ft	120mA	2.88W	OMT5D1FT	168-4472
60°	2ft	240mA	5.76W	OMT5D2FT	168-4473
60°	3ft	360mA	8.64W	OMT5D3FT	168-4475

528702

Mftrs. List No.	Order Code	1+	5+	10+
Warm				
OMT5W1FT	**168-4469**	21.74	18.12	16.72
OMT5W2FT	**168-4470**	39.84	33.20	30.65
OMT5W3FT	**168-4471**	57.52	47.93	44.25
Daylight				
OMT5D1FT	**168-4472**	21.74	18.12	16.72
OMT5D2FT	**168-4473**	39.84	33.20	30.65
OMT5D3FT	**168-4475**	57.52	47.93	44.25

Multi Chip LED Modules

Allegro



New

- High efficiency
- Low thermal resistance
- High optical output with all LEDs illuminated
- Superior directivity
- 5.23 mm × 13.7 mm case footprint, and low 2.5 mm overall package height
- Silver plating on leadframe

The SEP series produces a high-powered range of LEDs that can be used in general lighting applications, amusement and gaming equipment, and for backlighting TFT displays. Modular design allows the SEP devices to be easily assembled into string arrays by simply connecting the modules in series. The devices also provide superior colour balance throughout the display because of the high density of LEDs that can be achieved. This also minimizes the distance that power and control lines must run between LEDs and from the LEDs to the control electronics.

Colour	Luminous Flux Min. (lm)	Luminous Flux Typ. (lm)	Wavelength Typ. (nm)	Forward Voltage Typ. (V)	Forward Voltage Max. (V)	Mftrs. List No.	Order Code
Red	3.5	5	625	4.4	5.4	SEP8MA8001	168-2941
Green	12	17	524	6.4	7.8		168-2941
Blue	1.5	2.2	460	6.2	7.6		168-2941
Bulb Light	25	40	460	3.1	3.8	SEP8WL2001	168-2942
Day White	25	40	460	3.1	3.8	SEP8WN2001	168-2943

527767

Mftrs. List No.	Order Code	Price Each 1+	10+	25+	100+	250+
SEP8MA8001	SMD **168-2941** RL	9.74	8.11	7.49	7.08	6.49
SEP8WL2001	SMD **168-2942** RL	9.41	7.84	7.23	6.84	6.27
SEP8WN2001	SMD **168-2943** RL	9.41	7.84	7.23	6.84	6.27

£ € 40,000 PRICES REDUCED

LumiSpot-K2

LED Light Engines

Dialight Lumidrives

New



L=127, W=100, H=15.5
LumiSpot 12-K2



L=180, W=180, H=15.5
LumiSpot 32-K2

- Solid-state RGB and single-colour technology LED light engines
- Based on high-power K2 LED technology mounted on high-specification aluminium-backed PCBs
- Designed for use with low-voltage, constant-current power supplies
- Applications include architechtural lighting, spotlights, floodlights, accent lighting, colour washing, nightclubs, restaurants, bars
- Suggested driver 159-3607

LumiSpot 12-K2

	Red	Green	Blue	White	Amber
Luminous Flux / (Radiometric Power)	180lm	240lm	(1140mW)	240lm	180lm
Wavelength / (Colour Temperature)	645nm	550nm	460nm	(4500K)	597nm
Current (max)	700mA	1000mA	1000mA	1000mA	700mA

Colour	Mftrs. List No.	Order Code	Price Each 1+	5+	10+	+
RGBW	LSP12-K2-RGBW	**159-3597**	111.93	101.75	93.27	– –
RGBA	LSP12-K2-RGBA	**159-3598**	117.10	106.44	97.57	– –
WWWW	LSP12-K2-WWWW	**159-3599**	129.28	117.52	107.73	– –

LumiSpot 32-K2

	Red	Green	Blue	White	Amber
Luminous Flux / (Radiometric Power)	180lm	180lm	(1140mW)	640lm	480lm
Wavelength / (Colour Temperature)	645nm	550nm	460nm	(4500K)	597nm
Current (max)	700mA	1000mA	1000mA	1000mA	700mA

519484

Colour	Mftrs. List No.	Order Code	Price Each 1+	3+	8+	+
RGBW	LSP32-K2-RGBW	**159-3600**	241.03	230.69	221.21	– –
RGBA	LSP32-K2-RGBA	**159-3601**	253.41	242.55	232.59	– –
WWWW	LSP32-K2-WWWW	**159-3603**	282.51	270.41	259.29	– –

Power LED Modular Systems

LinkLED Light Engine

Single Colour

Dialight Lumidrives



LinkLED



CTxxx Link Cable

Optimized to utilise the leading high-powered LEDs, with compact dimensions, they can be incorporated into virtually any object, surface or appliance.
The modular design approach is ideal for OEM applications for a quick and flexible colour solution.
The CT2-C connector must be connected to the last module in the chain, then subsequant modules are linked together using the CT2-100/200.

- Very long operating life (+50,000 hours)
- Simple plug and socket connections
- Thermal adhesive backed PCB
- Optimized thermal management
- Highest flux LED technology in the world
- Compact profile design
- Energy efficient

Applications include:

- Signage
- Back lighting
- Decorative effects
- Fibre Optic Light Engines
- Light pipes
- Cove and Cornice Lighting
- Architectual
- Furnature

446598

Colour	Mftrs. List No.	Order Code	Price Each 1+	10+	25+
White	LK1-1-W	**124-2360**	13.24	10.70	8.77
White-Warm	LK1-1-WW	**124-2361**	13.24	10.70	8.77
Link Cables					
100mm	CT2-100	**124-2364**	0.78	0.74	0.65
200mm	CT2-200	**124-2365**	0.82	0.80	0.65
Input Lead					
	CT2-E300	**124-2367**	0.92	0.86	0.69
End terminator					
	CT2-C	**124-2366**	1.04	0.97	0.78

LinkLED Light Engine

Dialight Lumidrives



LinkLED with optics



LinkLED

RL Re-reeling available

Farnell


LinkLED K2 with optics


LinkLED K2

- Very long operating life (+50,000 hours)
- Simple plug and socket connections
- Thermal adhesive backed PCB
- Red, green and blue cluster for full colour lighting applications
- Optimised thermal management
- Highest flux LED technology in the world
- Compact profile design
- No harmful ultra-violet emission
- Energy efficient
- Applications include signage, back lighting, decorative effects, fibre optic light engines, light pipes, cove and cornice lighting, architectural, furniture

Optimized to utilise the leading high-powered LEDs, with compact dimensions, they can be incorporated into virtually any object, surface or appliance.
RGB light output means these can be programmed to produce colour change lighting effects by simply varying the amplitude of each of the RGB channels.
The modular design approach is ideal for OEM applications for a quick and flexible colour solution.
The CT4-C connector must be connected to the last module in the chain, then subsequant modules are linked together using the CT4-100/200.
The modules may then be powered by a custom driver circuit or Lumileds own colour change DMX unit.

446589

	Mftrs. List No.	Order Code	Price Each 1+	25+	100+
LinkLED					
RGB	LK-3-RGB	**124-2370●**	26.01	24.41	20.39
RGBA	LK4-K2-RGBA	NEW **159-3591●**	28.34	25.70	22.85
LinkLED with optics					
RGB	LKOP-RGB-025	**124-2373●**	27.66	26.28	25.45
RGB	LKOP-RGB-520	**124-2375●**	27.66	26.28	25.45
RGBA	LKOP-K2-RGBA	NEW **159-3589●**	33.63	30.47	27.09
RGBW	LKOP-K2-RGBW	NEW **159-3590●**	35.42	32.09	28.54
Cables					
100mm	CT4-100	**124-2376●**	1.50	1.42	1.25
100mm	CT8-1.25-100	NEW **159-3592●**	1.09	0.98	0.88
200mm	CT4-200	**124-2377●**	1.63	1.54	1.31
200mm	CT8-1.25-200	NEW **159-3593●**	1.20	1.09	0.95
3m	CT8-1.25-3E	NEW **159-3595●**	10.21	9.26	8.24
3m	CT10-1.25-3E	NEW **159-3604●**	11.95	10.83	9.63
Connectors					
4-way common connector	CT4-C	**124-2378●**	1.38	1.30	1.15
End connector	CT8-1.25-C	NEW **159-3594●**	0.88	0.80	0.70
Driver + Lead					
Colour Driver	CDU-L-3-35-DMX	**124-2368●**	130.36	106.45	99.83
Colour Driver	CDU-XP-DMX-CON-IP	NEW **159-3607●**	217.39	197.01	175.11
Colour Driver Lead	CDL-M3E	**124-2369●**	15.27	13.03	10.89

Today's power LEDs require high current stability to ensure the LED is run consistently at its optimum current, therefore giving you the full light output without deteriorating the life of the LED.Standard LED driving via the use of a fixed voltage source and resistors to obtain the correct current, have the weakness of having low efficiency (as power is wasted in the form of heat on the resistor), as well as current instability problems due to temperature fluctuations on the resistor.[LineBreak]Constant current source LED drivers eliminate these problems as variations in temperature should not effect the brightness of the LED in the long term.Modern switch mode current supplies ensure high efficiency and negligible heat generation.

Power LED Drivers, Lenses and Accessories

Connector, LED, 2 Post SMD

Tyco Electronics

New



This 2-position, low profile SMT wire poke-in connector is designed for LED lighting applications. The connector is designed to accept a wide range of wire sizesand types.

Materials:
Housing: UL 94V-0 High temperature resistant thermoplastic
Contact: Copper Alloy, Tin over Nickel plating

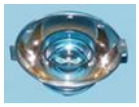
Key Features:
- Tape & reel packaging
- High speed for SMT processes
- RoHS compliant
- Redundant SMT pads prevents peeling
- Rounded corners to minimize shadowing
- Side to side stackable with pads on 4mm centers
- Accepts 18, 20, 22 AWG solid wire; 18, 20 AWG prebond stranded; 18 AWG stranded
- Cost effective alternative to hand soldering wires
- Low profile flat surface allows for vacuum pick up
- High temperature material for type reflow processes

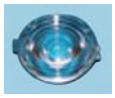
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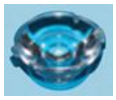
Mftrs. List No.	Order Code	Price Each 1+	50+	100+
1954097-1	**161-9050●**	0.31	0.28	0.25

Over 480,000 products online QGO

Lenses


Spot


Wide


Medium


Oval


Luxeon Star (1W) Lens Holder


Base Spot


Sub Lens: Oval


Sub Lens: Diffuser

A selection of lenses and mountings to fit our wide range of power LEDs.
Made from optical grade PMMA (acrylic) to ensure excellent optical properties as well as long term material stability and durability even in harsh environments.
The lenses come in various divergences and offer diffused and clear options.
The holders position themselves easily and accurately on top of the LED. They are easy to fasten onto the PCB by using an appropriate adhesive.The snap-lock fastening of the lens is very secure and does not allow lens to move or drop out of the holder, once it has been placed.

446533

Type/Colour	Mftrs. List No.	Order Code	Price Each 1+	25+	100+
Lenses					
Spot	OP-005	**124-2339●**	1.000	0.950	0.920
Medium	OP-015	**124-2340●**	1.000	0.950	0.920
Wide	OP-025	**124-2341●**	1.000	0.950	0.920
Oval	OP-520	**124-2342●**	1.000	0.950	0.920
Luxeon Emitter, Star 1 W Lens Holders					
Clair	OH-ES1-CL	**124-2328●**	0.210	0.199	0.193
Blanc	OH-ES1-WH	**124-2330●**	0.210	0.199	0.193
Noir	OH-ES1-BK	**124-2331●**	0.160	0.154	0.149
Golden Dragon Lens Holders					
Blanc	OH-GD-WH	**124-2333●**	0.210	0.199	0.193
Noir	OH-GD-BK	**124-2334●**	0.210	0.199	0.193
Luxeon Emitter, K2 Lens Holders					
Clair	OH-K2-CL	**124-2335●**	0.210	0.199	0.193
Blanc	OH-K2-WH	**124-2336●**	0.210	0.199	0.193
Noir	OH-K2-BK	**124-2338●**	0.160	0.154	0.149
Golden Dragon, Sub Lenses					
Spot Base	OPGD-1-002	**124-2343●**	1.780	1.690	1.640
Diffuser	OPGD-1-DIF5	**124-2344●**	0.530	0.500	0.490
Oval	OPGD-1-427S	**124-2346●**	0.530	0.500	0.490
Luxeon K2 Emitter Lens					
Base	OPK2-1-003	**124-2347●**	1.780	1.690	1.640
Wide	OPK2-1-012S	**124-2351●**	0.530	0.500	0.490
Oval	OPK2-1-427S	**124-2352●**	0.530	0.500	0.490

Luxeon™ Collimator

LUMILEDS™ LIGHT FROM SILICON VALLEY


H = 11.2, Dia. = 19.7mm

Typical Applications
- Reading lights (car, bus, aircraft)
- Portable (flashlight, bicycle)
- Mini-accent, decorative, fibre optics alternative
- Under shelf, task lighting
- Indoor and outdoor commercial and residential architectural lighting

The driving force in the quality of an Optic is it's efficiency, the entrance to the light guide (Optic) is where light can be lost so alignment is very important. The entrance to the NX05 is designed to be the exact size of 1 Luxeon Chip. The NX05 is suggested for all Luxeons with a single chip light source.

This includes Luxeon I (all colours) and Luxeon III (Green, Blue, White, Cyan, Royal Blue). It is not recommended for use with Luxeon V and Luxeon III (Red, Amber, Red Orange) as these are Multi Chip devices.
The optical design of the collimator uses the total internal reflection mechanism to collimate the light source into a 10° beam.

418539

Mftrs. List No.	Order Code	Price Each 1+	10+	50+
LXHL-NX05	**110-6603●**	1.02	0.93	0.87
LXHL-NX05	**110-6603●**	Please CALL for Prices		

Lenses for LUXEON™ LED's

FRAEN

FHS Series


489-4376


489-4420


489-4431

Power LED Drivers, Lenses and Accessories - continued

Lenses for LUXEON™ LED's - continued

FHS Series - continued

The FHS series offers a complete range of lenses specially designed for the LUXEON™ LED from Lumileds.™
Both Batwing and Lambertion radiation patterns are supported.
The high collection efficiency reaches 85% of the total flux emitted from the LED.
Lenses are available assembled with the universal lens holder. The holder assures the proper placement relationship between the lens and the LED.

- High efficiency
- 4 different beam widths available
- Available with or without lens holder
- Patent Pending

Typical beam divergence with Batwing LED

Beam Type	Amber, Red	Blue, Cyan, Green	White
Narrow Beam	6°	8°	10°
Medium Beam	25°	28°	30°
Wide Beam	40°	42°	45°
Elliptical Beam	10° x 22°	12° x 25°	15° x 30°

Typical beam divergence with Lambertian LED

Beam Type	Amber, Orange, Red	Blue, Cyan, Green	White
Narrow Beam	8°	10°	10°
Medium Beam	25°	28°	30°
Wide Beam	40°	42°	45°

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Lens Type	Mftrs. List No.	Order Code	Price Each 1+	10+	50+
Without Holder					
Batwing					
Elliptical Beam	FHS-HEB1-LB01-0.	**489-4467**	3.81	3.52	3.41
Lambertian					
Narrow Beam	FHS-HNB1-LL01-0	**489-4364**	4.44	4.10	3.77
Medium Beam	FHS-HMB1-LL01-0	**489-4406**	4.44	4.10	3.77
Wide Beam	FHS-HWB1-LL01-0	**489-4443**	3.22	2.97	2.73
With Holder					
Batwing					
Narrow Beam	FHS-HNB1-LB01-H.	**489-4352**	4.92	4.55	4.39
Medium Beam	FHS-HMB1-LB01-H	**489-4390**	5.23	4.83	4.44
Wide Beam	FHS-HWB1-LB01-H.	**489-4431**	4.92	4.55	4.39
Elliptical Beam	FHS-HEB1-LB01-H	**489-4479**	4.04	3.74	3.43
Lambertian					
Narrow Beam	FHS-HNB1-LL01-H.	**489-4376**	4.92	4.55	4.39
Medium Beam	FHS-HMB1-LL01-H.	**489-4418**	4.92	4.55	4.39
Wide Beam	FHS-HWB1-LL01-H.	**489-4455**	4.92	4.55	4.39
Elliptical Beam	FHS-HEB1-LL01-H.	**489-4492**	3.80	3.52	3.39

Tri-Lens Module Lenses for LUXEON™ LED's — FRAEN

FT3 Series



- High efficiency
- Replacement for 50mm dichroic halogen lamps
- 3 different beam widths available

Applications:
- Indoor & outdoor lighting
- Reading lamps
- Luminaries
- Furniture lighting
- Signs

The FT3 series -TRILENS MODULE- offers a range of complete lenses specially designed for the LUXEON™ LEDs from Lumileds™ .
The high collection efficiency reaches 85% of the total flux emitted from the LEDs.
Lenses are supplied assembled with a holder that fits the standard 50mm dichroic halogen lamp. The holder ensures the proper relative placement between the lens and the LUXEON™ LEDs.
Heat staking the legs of the holder to the support provides excellent mechanical strength.

Typical beam divergence with Lambertian LED

Beam Type	Amber, Orange, Red	Blue, Cyan, Green	White
Narrow Beam	8°	10°	12°
Medium Beam	25°	28°	30°
Wide Beam	40°	42°	45°

386104/405980

Lens Type	Mftrs. List No.	Order Code	Price Each 1+	10+	50+
Narrow Beam	FT3-HNB1-LL01-H	**879-9806**	12.08	11.20	10.82
Medium Beam	FT3-HMB1-LL01-H	**879-9822**	12.08	11.20	10.82
Wide Beam	FT3-HWB1-LL01-H	**879-9849**	12.08	11.20	10.82

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Low Profile Lenses for LUXEON™ LED's — FRAEN

FLP Series



The Fraen Low Profile Series offers two lenses specially designed for the LUXEON™ LED from Lumileds™ with a Lambertian radiation pattern. A software optimized aspheric profile combined with a front shaped surface and a Fresnel profile provide two different narrow and medium beam patterns.
The high collection efficiency reaches 85% of the total flux emitted from the LED.

- High efficiency
- Complete with lens holder
- 2 different beam widths available

Applications:
- Reading lamps
- Street lighting
- Signs
- General illumination

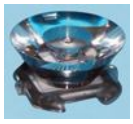
Typical beam divergence with Batwing LED

Beam Type	Amber, Red	Blue, Cyan, Green	White
Narrow Beam	10°	12°	12°
Medium Beam	25°	30°	30°

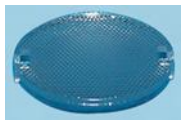
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Lens Type	Mftrs. List No.	Order Code	Price Each 1+	10+	50+
Narrow Beam	FLP-HNB3-LL01-0	**879-9857**	2.30	2.14	2.07
Medium Beam	FLP-HMB3-LL01-0	**879-9865**	2.30	2.14	2.07

LED Lenses


138-0861


138-0863


138-0864


138-0865


Luxeon Rebel

- Designed and optimized for the matching LED's
- Lens material allows use of high current and temperatute conditions
- Easy to fix and very secure once in place
- High optical efficiency with extreemly good light cut-off

496411

Type	Angle	Mftrs. List No.	Order Code	Price Each 1+	10+	50+
Lenses - Cree XLamp LED						
Spot	6°	OPTX-1-006	**138-0861**	1.77	1.69	1.64
Spot Diffuser	8°	OPAA-1-DFL	**138-0863**	0.66	0.59	0.53
Wide Sub-Lens	16°	OPAA-1-WSL	**138-0864**	0.66	0.59	0.53
Oval Sub-Lens	8° x 25°	OPAA-1-OSL	**138-0865**	0.66	0.59	0.53
Lenses - Luxeon Rebel LED						
Spot	3°	OPC1-1-SPOT	**138-0866**	1.06	0.94	0.84
Medium	15°	OPC1-1-MEDIUM	**138-0867**	1.06	0.94	0.84
Wide	30°	OPC1-1-WIDE	**138-0868**	1.06	0.94	0.84
Oval	6° x 22°	OPC1-1-OVAL	**138-0869**	1.06	0.94	0.84

Today's power LEDs require high current stability to ensure the LED is run consistently at its optimum current, therefore giving you the full light output without deteriorating the life of the LED.Standard LED driving via the use of a fixed voltage source and resistors to obtain the correct current, have the weakness of having low efficiency (as power is wasted in the form of heat on the resistor), as well as current instability problems due to temperature fluctuations on the resistor.[LineBreak]Constant current source LED drivers eliminate these problems as variations in temperature should not effect the brightness of the LED in the long term.Modern switch mode current supplies ensure high efficiency and negligible heat generation.

Drivers for Luxeon™ LED's
1, 3 and 5 Watts Stardrive



8 LED, 16 LED, 8 LED Dim.

- Luxeon™ compliant
- Sealed against moisture
- 90% efficient
- Thermal and short circuit protected
- Constant current
- Operational life in excess of 50,000 Hrs.

Stardrive Series modules are designed to drive Lumileds® Luxeon™ Leds from a 24 volt power source. Intended of applications where low voltage, quality, reliability, efficiency and service life are critical factors.
1 Watt modules are available for driving 8 Led's in series, at a maximum of 350 mA, and a module which is capable of driving 16 Led's in series/parallel at a maximum of 700 mA. Both modules are available with Dimming via:- 0 - 10Vdc, 4 - 20mA or Potentiometer Control.
3 Watt modules are available for driving 6 Led's in series, at a maximum of 1A, (Depending on individual Forward voltage Drop). Including Full Power and Dimming via:- 0 - 10Vdc, 4 - 20mA or Potentiometer Control.
5 Watt modules are available for driving 3 Led's in series, at a maximum of 700mA, (Depending on individual Forward voltage Drop). Including Full Power and Dimming via:- 0 - 10Vdc, 4 - 20mA or Potentiometer Control.

Input voltage range	24V ac, 12 to 36V dc
Input current	1A 1 & 3 Watt, 1A5 Watt
Output current - 1 Watt, 8 LED	300mA
Output current - 1 Watt, 16 LED	300mA
Output current - 3 Watt, 6 LED	300mA
Output current - 5 Watt, 3 LED	700mA
Current Accuracy	±2%
Current set	-7% to extend LED life

337849.343594

Output	Mftrs. List No.	Order Code	Price Each 1+	5+	10+
1 Watt, 8 LED					
1A Dimming 0 - 10V	101-080	**121-0808**	13.95	12.87	12.43
1 Watt, 16 LED					
1A Dimming	101-081	**121-0809**	24.79	22.86	22.10
3 Watt, 6 LED					
1A Dimming	101-160	**121-0810**	17.29	15.95	15.41
5 Watt, 3 LED					
700mA Dimming Pot.	102-300	**121-0811**	18.88	17.42	16.83
	120-500	**121-0812**	19.38	17.90	17.30
	102-503	**121-0813**	29.54	27.28	26.35

Electronic Drivers for LED's

i - Xitanium™ Series



Constant Current



Dimming

A range of drivers specifically designed for use with Lumiled® LED's. The use of these constant current/voltage drivers enhances the long life and optimum performance of high intensity LED's when used for applications such as lighting and illumination. Designed with switch-mode PSU technology the drivers are lightweight, compact and efficient.

- Provide appropriate dc current level to LED's
- AC input 230V ±10%
- Long life (50,000 hours)
- Energy efficient - Switch mode power supply design
- Class 2 electrical insulation
- Short circuit protected
- Meet approbation requirements (CE, ENEC)

Input voltage range	207 to 253V ac	Total Harmonic Distortion	20% maximum
Input frequency	50Hz	Power factor	0.9 minimum
Efficiency	80% typical	Operating temperature	-40 to 60°C

Driver Order Code	**167-1802**	**489-4327**
Power Consumption (W)	6.8 to 21.5	2.9 to 31.9
Power Output (W)	5.5 to 17.2	2.3 to 25.5
Output Voltage (V dc)	7.8 to 24.6	24V ±1.2
Output Current	700mA ±35	0.1 to 1.05

336163.343598

Output	Mftrs. List No.	Order Code	Price Each 1+	5+	10+
Constant Current Output					
700mA / 12W	871150093095830	**167-1802●**	21.90	18.63	17.20
Dimming					
24V / 2.3 - 25.5W	913700181903M.	**489-4327**	57.28	48.67	41.75

Power LED PSUs



168-4448 168-4452



168-4451

New

Desk-top style, regulated switch-mode power supplies safe for use with 12V and 24V LED strips and modules.

No. of Outputs	1	Voltage Supply	100V - 240V
Input Frequency	50Hz - 60Hz	Operating Temperature	0°C - +40°C
Load Regulation	±5%		

528697

Output Voltage	Output Current	Mftrs. List No.	Order Code	1+	5+
12V	5A	OMPS1260	**168-4448●**	27.62	24.86
12V	1.5A	OMPS1218	**168-4451●**	15.78	14.20
24V	2.5A	OMPS2460	**168-4452●**	31.98	28.78

Low voltage LED power Driver - MicroLV9

12 V to 24V Ac/Dc, with power saving features



MicroLV9

- Compliant with Luxeon™ Power Light Sources
- Energy efficient switch mode power electronics
- Short and open circuit protected
- Low power operating mode
- Long Life (+ 50,000 hours)
- Compact form factor
- Meets lighting approbation requirements (CE)
- Can be integral with fixtures or remote mounted

The MicroLV ™ range of LED Power Drivers is ideal for driving Luxeon®LEDs from a range of low voltage power supplies.The compact and efficient power electronics ensure optimum operation of LEDs through a highly stable constant current output.
The wide ranging input voltage enables one driver solution to be used in a host of low voltage LED lighting applications.
A unique power saving mode allows a reduced output current to be selected with a simple switch. This feature is useful in solar recharge and other batterypowered applications.

446634

Mftrs. List No.	Order Code	Price Each 1+	5+	10+	+
MLV9-C-35	**124-2354●**	42.94	29.66	26.95	– –

VariLED 16 Microdriver - Dimmable

16 x 1W, 350 mA output current



VariLED 16

The MicroDriver™ 16 VariLED LED Power Driver is ideal for driving high power 1W or 3W LEDs from a230V AC supply in a host of applications.
The compact and efficient power electronics ensure optimumoperation of LEDs through a highly stable constant current output.Designed for driving 16 x 1W LEDs at 350mA or 8 x 3W LEDs at 700mA with maximum reliability and longservice life.
The low profile enclosure incorporates integral cable grips and terminal cover enabling the unit to bedirectly used in ceiling voids or other internal exposed applications. The MicroDriverTM 16 VariLED has two dimming options using either 0-10V dimming or dimming with a remote potentiometer.

- Switch mode design for optimum efficiency
- Short and open circuit protected
- Remote potentiometer for 0-10V dimming
- Fully isolated twin outputs
- Rugged design with terminal cover and cable grip
- Meets lighting approbation requirements
- Can be integral with fixtures or remote mounted resetting thermal shutdown.
- Meets lighting approbation requirements
- 70% to 80% typical efficiency
- 4 to 32 V DC Output voltage (dependant on load)

446626

Mftrs. List No.	Order Code	Price Each 1+	5+	10+	25+
MDE16-C-VRL	**124-2353●**	27.11	24.82	23.89	22.03

Single Channel LED Driver

25 Watt



H=27.5, W=140, D=45

New

The ISTL025 single channel driver is ideal for single colour LED lighting applications for voltage requirement between 30 and 72 Vdc at 350mA.
This new design complies with Class II SELV and also provides additional protections features for short circuit protection and over temperature protection.
Simple terminal connections for power in / out allows for easy installation.

Output Current	350mA	Power Rating	1%
Output Voltage	72V	Power Factor	0.8
Efficiency	70%	Operating Temperature	-10°C to +40°C

517481

Mftrs. List No.	Order Code	Price Each 1+	5+	10+
IDRIVE S350	**162-2625●**	17.85	15.75	14.60

MicroDriver™ 9 LED Driver Module. - Dimmable

93 to 265 Vac.



MicroDriver 9

The MicroDriver™ 9 LED Power Driver is ideal for driving Luxeon® LEDs from mains power supplies in a host of applications.
The compact and efficient power electronics ensure optimum operation of LEDs through a highly stable constant current output.
The low profile enclosure incorporates integral cable grips and terminal covers enabling direct use in ceiling voids or other internal exposed applications.
MicroDriverTM 9 is also available with the option of localised dimming via an off board isolated potentiometer.

RL Re-reeling available

Farnell

Power LED Drivers, Lenses and Accessories - continued

MicroDriver™ 9 LED Driver Module. - Dimmable - continued

93 to 265 Vac. - continued

- Compliant with Luxeon® Power Light Sources
- Energy efficient switch mode power electronics
- Short and open circuit protected
- Dimmable via remote potentiometer
- Fully isolated output
- Long Life (+ 50,000 hours)
- Rugged design with terminal covers & cable grip
- Meets lighting approbation requirements (CE)
- Can be integral with fixtures or remote mounted
- Resetting Thermal Shutdown

446636

Mftrs. List No.	Order Code	Price Each 1+	5+	10+	+
MDU-9-SC-35/70	124-2355●	18.15	15.94	14.70	– –

MVD100 Series

12V or 24V DC Output

Dialight Lumidrives

New



L=230, W=65, H=42

Output Voltage	Input Voltage (min)	(max)
12V	85V	265V
24V	85V	265V

- Constant DC voltage output
- Thermal, short-circuit and overload protected
- IP67 rated
- Converter meets CE standards
- Approval by UL as a Class 2 recognized component pending
- VDE & VDE EMV pending
- Complies to FCC Class B / EN 55015
- Harmonics = EN 61000-3-2
- ESD = IEC61000-4-2
- EMC Immunity = IEC61000-4-3
- Injected RF = IEC61000-4-6
- Mains interruption = IEC61000-4-11
- Immunity = EN 61547 / 61047
- Safety = EN 61347-2-2
- Burst = IEC61000-4-4
- Surge = IEC61000-4-5

519760

Output Voltage	Mftrs. List No.	Order Code	Price Each 1+	5+	10+	+
12V	MVDU100-12-P	159-3605●	60.79	56.86	54.05	– –
24V	MVDU100-24-P	159-3606●	60.79	56.86	54.05	– –

PowerWhite LED Driver

Dialight Lumidrives

New



L=191, W=53, H=33

	Output Voltage	Output Power	Input Voltage	Input Frequency
(min)	55V	20W	90V	50Hz
(max)	180V	60W	264V	60Hz

- Universal input LED driver with high-voltage DC output
- High reliability - no electrolytic capacitors
- Thermal stability - can be used in high ambient temperature applicayions
- High power factor
- Applications include roadway lighting, tunnel lighting, hazardous area lighting, signage illumination, architechtural and display lighting
- Suiable for any application demanding high power, high reliability, long life and rugged contruction

519769

Mftrs. List No.	Order Code	Price Each 1+	5+	10+	+
PWD60-35-70	159-3579●	43.48	39.41	35.02	– –

Colourdriver™ RF

Remote controlled

Dialight Lumidrives



The Colourdrive™ RF represents true innovation in LED lighting. A powerful LED driver combines with a n intuitive RF remote control. Systems can be built from a combination of master or slave driver options each with the capability to power 18-350mA LEDs. Slave modules can also be linked to a wall mounted control unit or standard DMX controls for maximum flexibility in design.

- Remote Control - 30m operation
- Wide constant current range (18 to 350mA)
- Wide output voltage range (3 to 24V)
- DMX compatable interface

Constant I_{OUT} min, max (mA)	Number of. Outputs	Power max (VA)	Efficiency (%)	Mftrs. List No.	Order Code
18, 350	3	27	80	CDURF-3-35	133-3817

471251

Type	Mftrs. List No.	Order Code	Price Each 1+	5+	10+	+
Master Unit	CDURF-3-35	133-3817●	109.22	100.81	94.77	– –
Slave Unit	CDUSL-3-35	133-3818●	50.43	46.57	43.77	– –
Remote	CDURF-TX	133-3819●	60.38	55.74	52.40	– –

3-Channel DMX Driver

Dialight Lumidrives



DMX Driver

Designed to optimise the performance of LEDs this innovative device incorporates a host of world leading features.
Excellent dimming (0-100%) is achieved via an on board DMX512 interface combined with PWM power control.
A unique thermal feedback circuit constantly monitors LED temperature ensuring maximum reliability and protection.

- 14.4W per channel
- 3 fully addressable constant current outputs
- Digital dimming level from 0 - 100 % (350mA max)
- On board DMX512 compliant control interface
- LED temperature compensation feedback
- Energy efficient switch mode power electronics
- Short and open circuit protected
- Long life (+50,000 hours)
- High quality rugged construction
- Meets lighting approbation requirements (CE)
- Compliant with Luxeon™ Power Light Sources
- Can be remote mounted from LEDs ~ 30 meters

446559

	Mftrs. List No.	Order Code	Price Each 1+	5+	10+
Colour Driver	CDU-L-3-35-DMX	124-2368●	130.36	106.45	99.83
Colour Driver Lead	CDL-M3E	124-2369●	15.27	13.03	10.89

COLOURDRIVER® XP

DMX Controllable 4 Channel LED Driver

Dialight Lumidrives



XP DMX Driver

New

- DMX controllable
- IP67 rated for wet environments
- Universal 90-264V input voltage
- Multi-stage thermal protection
- Digital dimming level from 0% to 100%
- 4 independent channels for wider colour gamuts
- Constant current output with 0-100% dimming in 255 steps
- Individually settable max drive current for each channel up to 1000mA
- Applications include indoor and outdoor architectural lighting, entertainment lighting and theme lighting

523650

	Mftrs. List No.	Order Code	Price Each 1+	5+	10+
ColourDriver® XP	CDU-XP-DMX-CON-IP	159-3607●	217.39	197.01	175.11

LED Driver

iDrive ISTI



H=60, W=210, D=95

The powerful new iDrive™ lite LED driver is designed to optimize the performance of high power lighting fixtures using high power LEDs.
The integrated technology enables excellent colour matching and 100% smooth dimming with precise DC current control combined with advanced automatic heat management system to enhance the long life of both fixtures and LED boards.
iDriveTM lite can be controlled by DMX512, or use the hundreds of pre-programmed settings to provide independent scenes, colour combinations and effects.

- 14.4W per channel
- 3 Fully Addressable constant current outputs
- Digital Dimming level from 0 - 100 % (350mA max)
- On board DMX512 compliant control interface
- LED temperature compensation feedback
- Energy efficient switch mode power electronics
- Short and open circuit protected
- Long Life (+ 50,000 hours)
- High quality rugged construction
- Meets lighting approbation requirements (CE)
- Compliant with LuxeonTM Power Light Sources
- Can be remote mounted from LEDs ~ 30 meters

467557

Mftrs. List No.	Order Code	Price Each 1+	5+	10+
IDRIVE LITE	135-5413●	85.05	80.80	75.60

LED Driver

1000mA

iDrive ISTI

New



H=70, W=205, D=155

RL Re-reeling available

Farnell

- Variable forward current settings on each output channel between 350mA and 1000mA in 50mA increments
- Simple LED display interface to control DMX addresses and internal preset functions
- Universal voltage input with standard IEC converter 100-240V AC / 50 - 60hz
- Standard 5-Pin XLR DMX in/out connections
- Output 8-pin terminal block
- Patented Colour Cool™ thermal management system to optimise and prolong the life of fixtures and LED's
- Patented colour mixing 3 channel system
- Smooth dimming control 0-100%
- High efficiency up to 85% max
- Long life and high reliability (50,000 hours)
- Short and open circuit protection
- Output voltage 14V - 55V DC (variable)
- Self test functions
- Internal thermal protection
- Safety approvals include CE

The unique iDrive™-1000 LED driver is the latest intelligent innovative driver and control system from IST Ltd, designed to optimise the performance of second generation high-power LED lighting systems.
The output connection utilises a simple 8-way terminal block for ease of installation, the number of LED's fitted to each channel can be varied. The patented power supply automatically adjusts the forward voltage between 14 - 55 VDC to allow for the number and type of LED's being used, since most LED's have different forward voltages. The iDrive™-1000 will cater for them all, it also compensates for voltage drop over long cable runs.
The iDrive™-1000, DMX-512A system, has been designed to the latest accreditation and is fully isolated and protected, with the ability to use a 'master' - 'slave' setup. It is a truly flexible system designed for the user and lighting designer who requires much more from their lighting systems.
The iDrive™-1000 ensures ultimate reliability with multiple protection systems to enable increased longevity for all lighting installations. An internal sensor measures the PSU temperature itself to ensure that the system is optimised whatever the environmental conditions whilst a patented closed-loop feedback monitoring facility for the LED fixtures can be activated during set-up enabling four different temperature profile setting - an industry first. Both thermal feedback systems will protect LED's and drivers from failure whatever climate they are operating in.

517447

Mftrs. List No.	Order Code	Price Each 1+	3+	+
IDRIVE 1000	**162-2623●**	313.95	261.45	– –

LED Driver

Remote Controlled



H=55, W=170, D=90

- Rugged aluminium black anodized casing with red filter cover and manual re-set button
- Simple wall plug power supply requires no certified installation, standard 240V AC supply
- Infra red multi-function handset with 30 button selections
- Full RGB control of each channel in 256 increments
- Control up to 96 DMX addresses, with 4 zone settings and 64 scene memories
- Standard RJ45 out to 5-pin XLR cable
- Effects include, cyclic wash, phasing, chase and speed setting
- Settings are saved and are not effected if power is lost
- Manual control (without the handset) allows the last 4 scenes to be recalled
- Factory re-set facility (see user manual)
- Low power consumption in sleep mode < 1 Watt

The unique iDrive™ Sync has been designed to allow the user to remotely control up to 96 DMX address locations in 4 individual zones for RGB applications.
Controlling up to 32 individual RGB fixtures where a fixture is a consecutive block of 3 DMX addresses in red, green and blue order. The fixtures should be connected in logical order for each programmable area, so that moving effects are correctly presented.
The first fixture should have a DMX base address 001, the second fixture address 004 then incrementing by 3 up to a maximum of 96.
Primarily designed for use with the iDrive™-lite and the iDrive™-1000, this simple to use synchronisor uses an Infra Red 30 button hand-set for setting and recalling up to 64 different scenes programmed in to the memory.
The handset is used for all functions, such as static colours, cyclic effect, chase, phasing and speed.
There is also a re-set button on the synchronizer that can be used to recall the previous 4 stored scenes.
All communication between the iDrive™ Sync and the LED drivers is standard DMX-512A protocol and complies with the latest ESTA standards.
The iDrive™ Sync system comes complete with a plug in power supply, Infra Red handset, the synchronizer and 2-meters of RJ45 to XLR connector.

517476

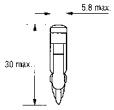
Mftrs. List No.	Order Code	Price Each 1+	3+	+
IDRIVE SYNC	**162-2624●**	313.95	261.45	– –

Over 480,000 products online GO

Multi-Chip LED Bulb Replacements

Telephone Slide, T5.5 with Integral Resistor





Design features and specifications are identical to Midget Groove.

206354

Colour	Mftrs. List No.	Order Code	Price Each 1+	10+	50+	100+	250+
12V dc Red	15051250	**113-9590●**	3.95	3.31	2.51	2.19	1.99
24V dc Red	15051350	**113-9592●**	4.02	3.44	3.33	3.10	2.14
24V dc Green	15051351	**113-9591●**	3.95	3.31	2.51	2.19	1.99
24V dc Yellow	15051352	**110-5144●**	2.93	2.55	2.25	2.02	1.85

Telephone Slide, T5.5 Slide LEDs



- 7mA(AC) / 14mA(DC) current consumption
- Operating Temp: -20°C to +60°C
- Voltage tolerance: +10%

L=30, Dia=6

496467

Colour	Mftrs. List No.	Order Code	Price Each 1+	10+	25+
24 V AC/DC					
Red	1505135UR3	**136-9109●**	1.85	1.72	1.65
Yellow	1505135UY3	**136-9110●**	2.58	2.42	2.31
White	1505135W	**136-9111●**	5.48	5.04	4.85
White	1505435W3D	NEW **165-6723●**	6.90	5.03	4.40
White	1505135W3D	**136-9112●**	4.35	4.05	3.88
28 V AC/DC					
White	1505145W	**136-9113●**	4.35	4.00	3.84
48 V AC/DC					
White	1505465W3D	NEW **165-6724●**	6.90	5.03	4.40
60 V AC/DC					
White	1505475W3D	NEW **165-6725●**	6.90	5.03	4.40
85 V AC/DC					
White	15054A5W3D	NEW **165-6726●**	6.90	5.03	4.40

T 5.5k Slide LEDs

24 V AC/DC



- 7mA(AC) / 14mA(DC) current consumption
- Operating Temp: -20°C to +60°C
- Voltage tolerance: +10%

L=22, Dia=5.8

496464

Mftrs. List No.	Colour	Order Code	Price Each 1+	10+	25+
1504135UG3	Green	**136-9103●**	3.10	2.89	2.76
1504135UY3	Yellow	**136-9105●**	2.58	2.42	2.31
1504135W3D	White	**136-9107●**	3.22	3.00	2.87

T 6.8 Slide LEDs



- 9mA(AC) / 17mA(DC) current consumption
- Operating Temp: -20°C to +60°C
- Voltage tolerance: +10%

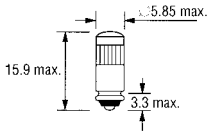
L=45, Dia=7.1

496473

Mftrs. List No.	Colour	Order Code	Price Each 1+	10+	25+
12 V AC/DC					
1507125W	White	**136-9116●**	6.50	5.98	5.72
24 V AC/DC					
1507135W3D	White Diffused	**136-9122●**	4.35	4.05	3.88
28 V AC/DC					
1507145W	White	**136-9124●**	6.50	5.98	5.72
1507145W3D	White Diffused	**136-9125●**	4.03	3.75	3.59

Midget Groove, T1¾ with Integral Resistor





Centre contact anode (+)

RL Re-reeling available

Multi-Chip LED Bulb Replacements - continued

Midget Groove, T1¾ with Integral Resistor - continued

Supply Voltage	12V	24V	28V
Luminous intensity (typ)			
Yellow	36mcd	63mcd	63mcd
Green	90mcd	90mcd	90mcd
Yellow	63mcd	63mcd	63mcd
Forward Current	14mA	14mA	14mA

Wavelength(nm): Yellow 635, Green 567, Yellow 585. No of LED chips:6
Viewing angle: 140°, operating temp. range -25°C to +60°C

206351

Colour	Mftrs. List No.	Order Code	Price Each 1+	10+	50+	100+	250+
12V dc Red	15121250	**110-5134●**	3.19	3.09	2.94	2.02	1.87
12V dc Yellow	15121252	**110-5135●**	3.19	3.09	2.53	2.02	1.87
12V dc Green	15121251	**113-9581●**	3.19	3.09	2.53	2.02	1.87
24V dc Red	15121350	**110-5136●**	3.19	3.09	2.53	2.02	1.87
24V dc Yellow	15121352	**110-5138●**	3.19	3.09	2.94	2.02	1.87
24V dc Green	15121351	**110-5137●**	3.19	3.09	2.94	2.71	1.87
28V dc Red	15121450	**110-5141●**	3.19	3.09	2.53	2.02	1.87
28V dc Yellow	15121452	**110-5143●**	3.19	3.09	2.53	2.02	1.87
28V dc Green	15121451	**110-5142●**	3.19	3.09	2.53	2.02	1.87

T1 3/4, StarLED with Rectifier



- 7mA(AC) / 14mA(DC) current consumption
- Operating Temp: -20°C to +60°C
- Voltage tolerance: +10%

L=16, Dia=6.1

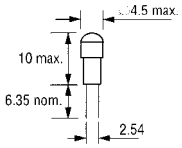
496487

Mftrs. List No.	Colour	Order Code	Price Each 1+	10+	25+
24 V AC/DC					
1512135W	White Diffuse	**136-9132●**	4.91	4.54	4.34
48 V AC/DC					
1512165W3D	White Diffuse	**136-9134●**	3.10	2.89	2.76

Bi-Pin, T1 (4.2mm Head) with Integral Resistor



Polarity indicated by (+)



These devices are fully potted to minimise the possibility of arcing within the narrow space housing the lead wires and resistor.

Supply Voltage	24V	28V
Luminous intensity (typ)		
Red	19mcd	19mcd
Green	44mcd	44mcd
Yellow	32mcd	—
Forward Current	12mA	12mA

Wavelength(nm): Red 635, Green 567, Yellow 585 — No of LED chips 4
Viewing angle to half intensity 140° — Operating temp. range -25°C to +60°C

206352

Colour	Mftrs. List No.	Order Code	Price Each 1+	10+	50+	100+	250+
24V dc Red	15010350	**113-9600●**	4.33	3.95	3.48	3.16	2.39
24V dc Green	15010351	**113-9598●**	4.33	3.95	3.04	2.85	2.39
24V dc Yellow	15010352	**113-9601●**	4.33	3.95	3.04	2.85	2.39
28V dc Red	15010450	**113-9608●**	4.33	3.95	3.04	2.85	2.39
28V dc Green	15010451	**113-9607●**	4.33	3.95	3.04	2.85	2.39

MBC/MCC (BA9s)



Length = 25.0 max.

If the 130V ac or 230V ac types are to be used in applications where there is a possibility of an overload by extremely high noise levels or surge, the device must be protected by fitting a 500mA quick blow fuse in series.
Colour identified by coloured band on low voltage types and by plastic shroud over the metal body on 130V/230V ac types.

Note: 130V ac types are not suitable for use from 240V ac supplies by using a dropper resistor.

Operating Temperature -20°C to +50°C — Tolerance (Supply Voltage) 10°C to +50°C

Colour	Luminous Intensity (typ)	Wavelength (typ)	Mftrs. List No.	Order Code
6V ac/dc				
Green	95mcd	565nm	18310111	113-9577
HE Red	110mcd	660nm	18310113	113-9578
12V ac/dc				
Red	110mcd	635nm	18310250	110-5128
Green	170mcd	567nm	18310251	110-5129
24V ac/dc				
Red	110mcd	620nm	18310350	110-5130
Green	170mcd	567nm	18310351	110-5131
24V ac/dc				
Yellow	120mcd	585nm	18310352	110-5132
White	2100mcd	—	1882235W3D	165-6728
48V ac/dc				
White	2100mcd	—	1882265W3D	165-6729
85V ac/dc				
White	2100mcd	—	18822A5W3D	165-6730
130V ac/dc				
White	2100mcd	—	1882613W3D	165-6731
130V ac				
Green	130mcd	565nm	18401151	113-9571
Red	90mcd	660nm	18401153	113-9572
Yellow	95mcd	585nm	18401152	113-9573
230V ac				
Green	130mcd	565nm	18411151	113-9574
Red	90mcd	660nm	18411153	113-9576

Note: Luminous intensity for dc operation is typically 7% less than for ac.

206281

Order Multiple=1 Colour	Mftrs. List No.	Order Code	Price Each 1+	10+	50+	100+
6V ac/dc						
Green	18310111	**113-9577●**	6.420	6.020	5.670	3.820
HE Red	18310113	**113-9578●**	5.680	5.360	4.850	3.440
12V ac/dc						
Red	18310250	**110-5128●**	4.740	4.020	3.550	3.200
Green	18310251	**110-5129●**	4.740	4.480	3.550	3.200
24V ac/dc						
Red	18310350	**110-5130●**	5.270	4.990	4.560	4.170
Green	18310351	**110-5131●**	5.270	4.990	4.560	4.170
Yellow	18310352	**110-5132●**	5.270	4.990	4.560	3.560
White	1882235W3D	NEW **165-6728●**	11.650	8.500	7.420	6.580
48V ac/dc						
White	1882265W3D	NEW **165-6729●**	11.650	8.500	7.420	6.580
85V ac/dc						
White	18822A5W3D	NEW **165-6730●**	14.080	10.260	8.960	7.950
130V ac/dc						
White	1882613W3D	NEW **165-6731●**	14.080	10.260	8.960	7.950
130V ac						
Green	18401151	**113-9571●**	10.290	10.100	9.870	9.690
Red	18401153	**113-9572●**	6.650	6.530	6.410	6.180
Yellow	18401152	**113-9573●**	7.790	7.640	7.490	7.230
230V ac						
Green	18411151	**113-9574●**	10.290	10.100	9.870	9.690
Red	18411153	**113-9576●**	17.630	16.830	12.970	9.880
Order Multiple=5			**Price Each 5+**	**10+**	**25+**	**50+**
Removal Tool	55001250	**301-1586**	0.128	0.114	0.101	0.080

T1 3/4 & T1 1/2 LEDs



T 1 3/4 (6mm) MF



T 1 3/4(6mm) MG



T 1 1/2 (5mm) WB

Colour	Wavelength Dominant Typ. (nm)	Luminous Intensity (mcd)	Current Rating (mA)	Style	Voltage (V)	Mftrs. List No.	Order Code
Vdc							
Red	630	34	28	T 1 3/4 MF	12	15101250	136-8892
Green	565	84	14	T 1 3/4 MF	12	15101351	136-8895
Yellow	585	59	14	T 1 3/4 MF	24	15101352	136-8896
Vac / Vdc (Integrated Rectifier)							
Green	565	60	10	T 1 1/2 WB	24	15113351	136-8901
Yellow	585	42	10	T 1 1/2 WB	24	15113352	136-8902
Red	630	24	10	T 1 3/4 MG	24	15130350	136-8908
Green	565	60	10	T 1 3/4 MG	24	15130351	136-8909
Yellow	585	42	10	T 1 3/4 MG	24	15130352	136-8910
Red	630	24	10	T 1 3/4 MG	24	15130350	136-8908
Green	565	60	10	T 1 3/4 MG	24	15130351	136-8909
Yellow	585	42	10	T 1 3/4 MG	24	15130352	136-8910

475969

Mftrs. List No.	Pkg.	Voltage	Order Code	Price Each 1+	25+	100+
Vdc						
15101250	T 1 3/4 MF	12	**136-8892●**	2.62	2.43	2.34
15101351	T 1 3/4 MF	12	**136-8895●**	3.67	3.41	3.27
15101352	T 1 3/4 MF	24	**136-8896●**	2.62	2.43	2.34
Vac/Vdc (integrated rectifier)						
15113351	T 1 1/2 WB	24	**136-8901●**	2.90	2.69	2.58
15113352	T 1 1/2 WB	24	**136-8902●**	4.06	3.77	3.61
15130350	T 1 3/4 MG	24	**136-8908●**	4.06	3.77	3.61
15130351	T 1 3/4 MG	24	**136-8909●**	4.06	3.77	3.61
15130352	T 1 3/4 MG	24	**136-8910●**	4.06	3.77	3.61
15130350	T 1 3/4 MG	24	**136-8908●**	4.06	3.77	3.61
15130351	T 1 3/4 MG	24	**136-8909●**	4.06	3.77	3.61
15130352	T 1 3/4 MG	24	**136-8910●**	4.06	3.77	3.61

T3 1/4, StarLED

White Diffused and White Clear



BA9s
L=25, Dia=10



E10
L=25, Dia=10

- Low current consumption (6mA to 13mA)
- Operating Temp: -20°C to +60°C
- Voltage tolerance: +10%

BA9S - with bridge rectifier

Colour	Voltage	Mftrs. List No.	Order Code	Price Each 1+	10+	25+
White Diffused	12V	1860225W3D	**136-9144●**	6.26	5.83	5.22

E10 - with bridge rectifier

Colour	Voltage	Mftrs. List No.	Order Code	Price Each 1+	10+	25+
White Diffused	12V	1860325W3D	**136-9145●**	3.22	3.03	2.91
White Diffused	24V	1860335W3D	**136-9146●**	3.10	2.92	2.80
White Clear	24V	1882335W3D	NEW **165-6732●**	11.65	8.50	7.42
White Clear	48V	1882365W3D	NEW **165-6733●**	11.65	8.50	7.42
White Clear	60V	1882375W3D	NEW **165-6734●**	14.08	10.26	8.96
White Clear	85V	18823A5W3D	NEW **165-6735●**	14.08	10.26	8.96
White Clear	130V	1882713W3D	NEW **165-6736●**	14.08	10.26	8.96

E10 - with protection diode

496539

Colour	Voltage	Mftrs. List No.	Order Code	Price Each 1+	10+	25+
White Diffused	6V	1860115W3D	**136-9142●**	3.45	3.21	3.08

T5, StarLED

With Bridge Rectifier



- Operating Temp: -20°C to +50°C
- Voltage tolerance: +10%

New

E14
L=33, Dia=16

496539

Colour	Voltage	Mftrs. List No.	Order Code	Price Each 1+	10+	25+
White Clear	24V	1884635W3D	**165-6737●**	14.23	10.37	9.06
White Clear	48V	1884665W3D	**165-6738●**	14.23	10.37	9.06
White Clear	60V	1884675W3D	**165-6741●**	14.23	10.37	9.06
White Clear	85V	18846A5W3D	**165-6742●**	14.23	10.37	9.06
White Clear	130V	1884713W3D	**165-6743●**	19.43	14.18	12.36
White Clear	230V	1884723W3D	**165-6744●**	19.43	14.18	12.36

BA15d Replacement LED

225 Series



- Direct replacement for BA15d bulb
- 6 LED cluster
- Bi-polar
- Internal potting for increased reliability
- Ideal for high vibration applications

Lum.Intensity I_v@ 20mA (mcd)	Current Operating (mA)	Colour	Operating Voltage	Mftrs. List No.	Order Code
9200	20	Warm White	24V dc	225-993-22-38	149-8589

497300

Colour	Mftrs. List No.	Order Code	Price Each 1+	10+	25+	50+	+
Warm White	225-993-22-38	**149-8589●**	40.15	33.13	29.45	27.60	– –

Multi-Chip LED, Bulb Replacements

15mm Bayonet (BA15s) Polarized



- Use 90% less energy than incandescent
- Long life - up to 100K hours
- No heat generated
- Resistant to shock and vibration
- AlInGap and InGaN technology

Dia. - Body = 14.99mm,
Lens = 24.89mm,
Length O/A = 38.74mm

Mftrs. List No.	Colour	Voltage (Vdc)	Current (mA)	Intensity (mcd)
586-4606-103F	White	14	20	23800

361079

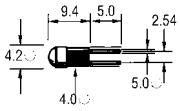
Mftrs List No.	Order Code	Price Each 1+	10+	50+	100+	250+
586-4606-103F	**113-8271●**	19.32	15.91	13.01	12.33	10.49

Bi-Pin, T1



Polarity indicated by (+).
Colour identified by coloured spot.

Wavelength (nm)	Red = 630 Green = 565 Yellow = 585		
Viewing angle	140°		
Operating temperature	-20°C to +50°C		
No. of LED chips	4		



These LEDs feature mechanical design improvements to ensure greater consistency and an easy and reliable fit in illuminated push buttons.

Supply Voltage	28V	Supply Voltage	28V
Luminous intensity (typ) Red	14mcd	Yellow	18mcd
Green	30mcd	Forward current	12mA

206256

Colour	Voltage	Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+
Red	28V	203-301-23-38	**973-7413●**	5.20	4.42	3.79	2.18
Green	28V	203-324-23-38	**973-7421●**	6.47	5.49	4.70	2.71
Yellow	28V	203-325-23-38	**973-7430●**	5.20	4.42	3.79	2.18

T5, StarLED with Rectifier



- 5mA(AC) / 10mA(DC) current consumption
- Operating Temp: -20°C to +60°C
- Voltage tolerance: +10%

L=18.5, Dia=6.1

496486

Mftrs. List No.	Colour	Order Code	Price Each 1+	10+	25+
24 V AC/DC					
1511A35W3D	White Diffuse	**136-9130●**	6.91	6.41	5.36

6S6 LED Replacement

Sixcess



- Long operational life
- Rugged solid state construction for shock & vibration resistance
- Environmentally sealed
- Reduced running costs
- Low power consumption
- Reduced down time

Dia. = 0.7" (17.75mm), OA Length = 1.88" (47.75mm)

Siza & Socket	6S6, Candelabra form factor
Colour Temperature	3100K
Input voltage - 122-8942	12V ac/dc
Input voltage - 122-8943	24V ac/dc
Luminous intensity	8lm
Life expectancy	15,000 hrs. Typical with 70% lumen maintenance
Operating temperature	15 to 110°C

451641

Mftrs. List No.	Order Code	Price Each 1+	10+	25+	50+
2410F73-12V	**122-8942●**	18.30	16.79	15.49	14.38
2410F73-24V	**122-8943●**	22.01	20.17	18.62	17.29

White Single-Chip Based LEDs

Single Chip White LED Bulb Replacements

3000 mcd typical brightness



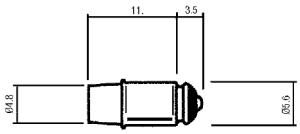
Centre contact anode (+)

RL Re-reeling available

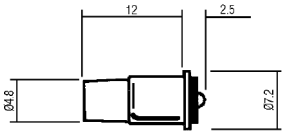
White Single-Chip Based LEDs - continued

Single Chip White LED Bulb Replacements - continued

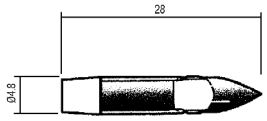
3000 mcd typical brightness - continued



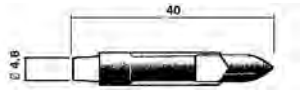
Midget Groove - 205 series



Midget Flange - 206 series

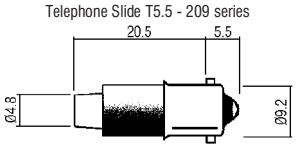


Telephone Slide T5.5 - 209 series

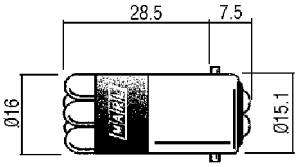


Telephone Slide T6.8 - 208 series

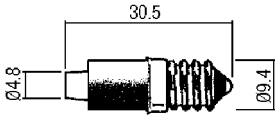
45



BA9s - 215 series



BA 15d - 225 series



MES - 211 series

The single chip bulb replacements have a Mean Time Between Failure (MTBF) in excess of 100,000 hours offering major benefits including reduced power, low heat generation, increased reliability and less maintenance. The single light source is compatible with all coloured lens options. The BA15ds are made up of a cluster of 6 5mm LEDs and the Sub-Midget Flange LEDs are fully potted.

Operating Voltages		12V dc	24V dc	28V dc	12V dc
Operating current					
Midget groove	205 Series	20mA dc	20mA dc	17mA dc	—
Midget Flange	206 Series	20mA dc	20mA dc	17mA dc	—
Telephone Slide T5.5	209 Series	20mA dc	20mA dc	—	—
Telephone Slide T6.8	208 Series	20mA dc	17mA dc	17mA dc	—
BA9s	215 Series	17mA dc	17mA dc	17mA dc	12mA dc
BA15d	225 Series	—	20mA dc	17mA dc	—
MES	211 Series	20mA dc	20mA dc	— —	—

Luminous intensity (typ): 3000mcd, note 225 series=3000mcd per LED (6 LED per cluster) and 202 series = 2000mcd

Operating temp. range: -40°C to +80°C Viewing angle to half intensity: 120° except 225 series=30°

206521

Voltage	Mftrs. List No.	Order Code	Price Each 1+	10+	25+	50+	100+
Midget Groove							
12V dc	205-997-21-38	**973-7006●**	6.09	5.71	5.51	5.40	5.05
24V dc	205-997-22-38	**973-7014●**	6.09	5.71	5.51	5.40	5.05
28V dc	205-997-23-38	**973-7022●**	5.97	5.60	5.40	5.29	4.95
Midget Flange							
12V dc	206-997-21-38	**973-7049●**	6.02	5.91	5.60	5.29	5.08
24V dc	206-997-22-38	**973-7057●**	6.99	6.85	6.50	6.13	5.89
28V dc	206-997-23-38	**973-7065●**	6.99	6.85	6.50	6.13	5.89
Telephone Slide T5.5							
12V dc	209-997-21-38	**973-7073●**	6.10	5.98	5.87	5.74	5.62
24V dc	209-997-22-38	**973-7081●**	6.10	5.98	5.87	5.74	5.62
Telephone Slide T6.8							
24V dc	208-997-22-38	**973-7090●**	6.11	5.98	5.74	5.63	5.53
28V dc	208-997-23-38	**973-7103●**	6.11	5.98	5.74	5.63	5.53
BA9s							
12V dc	215-997-21-38	**973-7120●**	6.34	6.01	5.74	5.63	5.53
24V dc	215-997-22-38	**973-7138●**	6.34	6.01	5.74	5.63	5.53
28V dc	215-997-23-38	**973-7146●**	6.34	6.01	5.74	5.63	5.53
48V dc	215-997-24-38	**973-7154●**	7.14	6.09	5.90	5.77	5.51
BA 15d							
24V dc	225-997-22	**973-7197●**	26.30	25.21	24.24	23.74	22.63
28V dc	225-997-23	**973-7200●**	33.54	32.14	30.91	30.27	28.86
MES							
12V dc	211-997-21-38	**973-7162●**	6.22	6.09	5.97	5.86	5.71
24V dc	211-997-22-38	**973-7170●**	6.22	6.09	5.97	5.86	5.71

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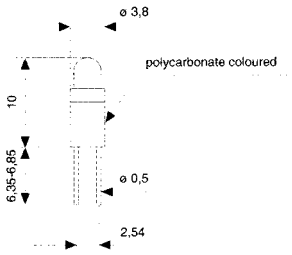
Single Chip LED Bulb Replacements

Bi-Pin, T1

12V, 24V & 28V ac/dc with Half Wave Rectification



Polarity indicated by (+)



Supply Voltage ac/dc	12V	24V	28V
Luminous intensity (typ)			
Red	—	230mcd	—
Green	—	650mcd	—
White Clear Lens	600mcd	500mcd	500mcd
Forward Current - ac/dc	6 / 12mA	5 / 10mA	5 / 10mA
Wavelength (nm)	Red, 630	Green, 525	White N/A
Operating temperature range:		-20°C to +60°C	

231904

Colour	Mftrs. List No.	Order Code	Price Each 1+	10+	25+	50+	100+
12V AC / DC							
White Clear Lens	1501525W3	**113-9596●**	4.29	4.04	3.71	3.35	3.05
White Diffused Lens	1501525W3D	**113-9597●**	4.29	4.04	3.71	3.35	3.05
24V AC / DC							
Red	15015350	**113-9603●**	3.19	3.00	2.74	2.49	2.29
Green	15015351	**113-9602●**	4.29	4.04	3.71	3.35	3.05
White Clear Lens	1501535W3	**113-9604●**	4.29	4.04	3.71	3.35	3.05
28V AC / DC							
White Clear Lens	1501545W3	**113-9610●**	4.29	4.04	3.71	3.35	3.05

For **White Single-Chip Based LEDs** see page 861

Solo LED - Filament Replacement Lamps

BA7, BA9s and T6.8



The Solo LED lamp offers a total solution to LED filament replacements. Intelligent circuitry allows operation with either AC or DC supply voltages of 8 to 48 volts, allowing optimum brightness levels to be achieved. This offers the additional advantage of reduced inventory/stock costs by eliminating the need to stock differing voltage options and stock profiles normally associated with instrumentation and equipment.

These LED's are sunlight readable and shock/vibration resistant.

- Single product multi-voltage operation
- BA9s and BA7 and T6.8 direct replacement
- Five high intensity colours
- Full internal encapsulation
- 8-48 Vac/dc - Bi-polar
- MTBF 100,000 hours
- Flat or domed top LED options

Please note this product will illuminate below 8V ac/dc but will not stabilise at 10mA until the 8 volt threshold has been reached.

Absolute maximum input voltage	50V ac/dc
Operating temperature	-20°C to +50°C

Colour	View Angle	Typ. Lum. Intensity (mcd) @ 20 mA	Peak Wavelength (nm)	Face
Red	120°	2750	660	Flat
Blue	120°	2000	470	Flat
Green	120°	6000	525	Flat
White	120°	3000	—	Flat

383406

Colour	Mftrs. List No.	Order Code	Price Each 1+	100+	250+	500+
BA9 Series - Flat Top						
Red	255-501-64-38	**973-8088●**	7.40	6.66	5.99	5.40
Blue	255-930-64-38	**973-8118●**	10.12	9.22	8.23	6.64
Green	255-532-64-38	**973-8100●**	10.64	9.22	8.23	6.64
White	255-997-64-38	**973-8126●**	11.90	10.33	9.23	7.44

RL Re-reeling available

Farnell

Single-Chip LED, Bulb Replacements

T3¼ Miniature, Screw (E10) and Bayonet (BA9s)

Dialight



E10



BA9s

- Large plastic lens cases
- Tinted lens to identify colour
- Use up to 90% less energy than incandescent
- Long life - up to 100K hours
- No heat generated
- Resistant to shock and vibration
- AlInGaP and InGaN technology

Colour	Wavelength Peak (nm)	Nominal Voltage	Forward Current (mA)	Intensity (mcd)	Mftrs. List No.
Miniature Screw - E10					
Red	630	12V dc	15	1050	586-2701-203F
Green	525	12V dc	15	1650	586-2702-203F
Green	525	24V dc	7.5	825	586-2702-205F
Miniature Bayonet - BA9s					
Red	630	24V dc	15	1050	586-2401-205F
Green	525	24V dc	15	1650	586-2402-205F
Amber	592	24V dc	15	1275	586-2403-205F
White		12V dc	15	825	586-2406-203F
White		24V dc	15	825	586-2406-205F
Red	—	6 - 36V ac/dc	10	1000	586-2401-220F
Green	—	6 - 36V ac/dc	10	1500	586-2402-220F

361080

Mftrs List No.	Order Code	Price Each 1+	10+	50+	100+	250+
Miniature Screw - E10						
586-2701-203F	**113-8274●**	5.03	4.14	3.39	3.21	2.73
586-2702-203F	**113-8276●**	5.76	4.74	3.88	3.68	3.13
586-2702-205F	**113-8277●**	5.76	4.74	3.88	3.68	3.13
Miniature Bayonet - BA9s						
586-2401-205F	**113-8291●**	5.03	4.14	3.39	3.21	2.73
586-2402-205F	**113-8293●**	5.76	4.74	3.88	3.68	3.13
586-2403-205F	**113-8295●**	5.03	4.14	3.39	3.21	2.73
586-2406-203F	**113-8299●**	5.76	4.74	3.88	3.68	3.13
586-2406-205F	**113-8300●**	5.76	4.74	3.88	3.68	3.13
586-2401-220F	**113-8301●**	6.29	5.19	4.25	4.02	3.42
586-2402-220F	**113-8302●**	7.00	5.78	4.73	4.48	3.81

T 3 1/4, T10 LED Bulbs

CML INNOVATIVE TECHNOLOGIES



E10(Style 1)
L=21, D = 10



E10(Style 2)
L=21, D = 10



E10(Style 3)
L = 25, D = 10



E10(Style 4)
L = 25, D = 10



E10(Style 5)
L = 25, D = 10



BA9s(style 1)
L=28, D=10



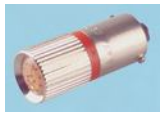
BA9s(Style 5)
L = 25, D = 10



BA9s(Style 2)
L = 28, D = 10



BA9s(style 3)
L=21, D = 10



BA9s(Style 4)
L = 28, D = 10



BA9s(Style 6)
L = 25, D = 10

486069

Colour	Luminous Intensity Typ. (mcd)	Mftrs. List No.	Order Code	Price Each 1+	10+	50+
BA9s(Style 2) - 24V						
Red	40	18240350	**136-8926●**	6.27	5.90	5.66
BA9s(Style 4) - 48V AC/DC						
Red	86	18310650	**136-8944●**	5.25	4.90	4.69
E10(Style 1) - 12VDC						
Red	117	15220250	**136-8922●**	5.80	5.45	5.22
Yellow	122	15220252	**136-8923●**	5.92	5.56	5.32
E10(Style 1) - 24VDC						
Green	175	15220351	**136-8924●**	5.17	4.86	4.66
Yellow	122	15220352	**136-8925●**	5.92	5.56	5.32
E10(Style 2) - 24V AC/DC						
Red	110	18290350	**136-8936●**	5.39	4.99	4.79
Yellow	115	18290352	**136-8938●**	5.28	4.89	4.70
Red	86	18290650	**136-8939●**	5.39	4.99	4.79
E10(Style 3-StarLED) - 6V DC						
Green	2550	18601151	**136-8950●**	4.32	4.02	3.85

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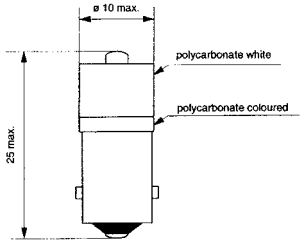
MBC/MCC (BA9s)

12V, 24V, 28V, 48V, 60V ac/dc with Full Bridge Rectification & 130V, 230V ac

CML INNOVATIVE TECHNOLOGIES



Colour identified by coloured band on low voltage types and by plastic shroud over the metal body on 130V/230V ac types.
Length = 25.0 max.



Note: 130V ac types are not suitable for use with a 240V ac supplies using a dropper resistor.

Supply Voltage ac/dc	24V	28V	48V
Luminous intensity (typ)			
Red	350mcd	350mcd	—
Green	1000mcd	1000mcd	530mcd
Yellow	300mcd	300mcd	—
Blue	400mcd	—	—
White Clear Lens	750mcd	750mcd	400mcd
White Diffused Lens	750mcd	—	—
Forward Current - ac/dc	15mA	15mA	7mA

Supply Voltage ac/dc	130V	230V
Luminous intensity (typ)		
Red	120mcd	70mcd
Green	330mcd	200mcd
Yellow	100mcd	—
White Clear Lens	75mcd	150mcd
Forward Current - ac	5mA	3mA

Wavelength (nm) Red, 630 Green, 525 Yellow, 587 Blue, 470 White N/A

Operating temperature range: -20°C to +60°C

231906

Colour	Mftrs. List No.	Order Code	Price Each 1+	10+	25+	50+
24V ac/dc Red	18602350	**110-5161●**	4.14	3.85	2.67	2.35
24V ac/dc Green	18602351	**110-5162●**	8.06	7.55	5.22	4.61
24V ac/dc Yellow	18602352	**110-5163●**	4.41	4.16	3.85	3.46
24V ac/dc Blue	18602357	**110-5165●**	6.33	5.97	5.22	4.61
24V ac/dc White	1860235W3	**110-5166●**	8.06	7.55	5.22	4.61
24V ac/dc White Diffused Lens	1860235W3D	**110-5167●**	8.06	7.55	5.22	4.61
28V ac/dc Red	18602450	**110-5168●**	5.48	5.09	3.54	3.11
28V ac/dc Green	18602451	**110-5169●**	6.49	6.13	5.22	4.61
28V ac/dc Yellow	18602452	**110-5170●**	4.33	4.09	3.77	3.39
28V ac/dc White Clear Lens	1860245W3	**110-5171●**	8.06	7.55	5.22	4.61
48V ac/dc Green	18602651	**110-5174●**	4.83	4.55	4.17	3.79
48V ac/dc White Clear Lens	1860265W3	**113-9568●**	4.83	4.55	4.17	3.79
130V ac Red	18606130	**110-5178●**	3.27	3.09	2.85	2.56
130V ac Green	18606131	**110-5179●**	4.88	4.61	4.23	3.84
130V ac Yellow	18606132	**110-5180●**	3.27	3.09	2.85	2.56
130V ac White Clear Lens	1860613W3	**110-5181●**	4.88	4.61	4.23	3.84
230V ac Red	18606230	**110-5182●**	3.27	3.09	2.85	2.56
230V ac Green	18606231	**110-5183●**	4.88	4.61	4.23	3.84
230V ac/dc White Clear Lens	1860623W3	**110-5184●**	4.88	4.61	4.23	3.84
230V ac White Diffused Lens	1860623W3D	**110-5185●**	4.88	4.61	4.23	3.84

BA9 and BA15

CML INNOVATIVE TECHNOLOGIES



Mftrs. List No.	Colour	Voltage Range	Current (mA)	LED's Number	Luminous Intensity (mCd)	Wavelength Dom. (nm)
BA9S Style						
1861015W	White	6V	75	1	245	6500K
18610351	Green	24V	30	1	306	525
18620350	Red	24V	17	3	400	630
18620351	Green	24V	17	3	1500	525
1862035W3	White	24V	17	3	1700	
1862035W3D	White	24V	17	3	850	
1862613W3	White	130V	5	3	500	
18626237	Blue	230V	3	3	200	470
1862623W3	White	230V	3	3	300	
1862623W3D	White	230V	3	3	150	
BA15D Style						
1858035W	White	24V	45	9	1500	
1858045W	White	28V	45	9	1500	
1858065W	White	48V	45	9	1500	
1858123W	White	230V	4	9	400	
1863035W3	White	24V	15	3	1500	
1864123W3	White	230V	5	6	300	

RL Re-reeling available

Farnell

Single Chip LED Bulb Replacements - continued

BA9 and BA15 - continued

451978

Colour	Spannung	Mftrs. List No.	Order Code	Price Each 1+	10+	25+	100+
T3 1/4, (10x28mm) BA9 Style - AC/DC(integrated bridge rectifier) Bulb Leds							
White	6 VAC/DC	1861015W	**123-2302●**	6.25	5.48	4.86	4.38
White	12 VAC/DC	1861025W	**123-2308●**	6.25	5.48	4.86	4.38
Green	24 VAC/DC	18610351	**123-2310●**	6.25	5.48	4.86	4.38
Red	24 VAC/DC	18620350	**123-2314●**	8.71	7.63	6.22	5.49
Green	24 VAC/DC	18620351	**123-2315●**	16.71	14.62	11.95	10.54
White	24 VAC/DC	1862035W3	**123-2318●**	12.63	11.05	9.82	8.84
White	24 VAC/DC	1862035W3D	**123-2321●**	16.71	14.62	11.95	10.54
White	130 VAC	1862613W3	**123-2326●**	13.30	11.64	10.35	9.31
Blue	230 VAC	18626237	**123-2333●**	13.30	11.64	10.35	9.31
White	230 VAC	1862623W3	**123-2334●**	13.30	11.64	10.35	9.31
White	230 VAC	1862623W3D	**123-2335●**	13.30	11.64	10.35	9.31
White	24 VAC/DC	1858035W	**123-2262●**	31.84	27.86	24.77	22.29
White	240 VAC	1858123W	**123-2294●**	33.95	29.71	26.42	23.78
White	24 VAC/DC	1863035W3	**123-2340●**	13.30	11.64	10.35	9.31
White		1864123W3	**123-2360●**	24.92	21.79	19.38	17.43
White		1858045W	**123-2264●**	31.84	27.86	24.77	22.29
White		1858065W	**123-2268●**	31.84	27.86	24.77	22.29

5mm Wedge Base LED's

T5 - White



Mftrs. List No.	Voltage (V_f) Range	Current (I_f)	Power (P_D) Dissipation	Luminous Intensity (I_V) Min.	Typ.	Max.
90008145	5 to 8V	18mA	108mW	340mcd	410mcd	480mcd
90008153	12 to 15V	18mA	216mW	340mcd	410mcd	480mcd
90008161	24 to 30V	14mA	336mW	340mcd	410mcd	480mcd

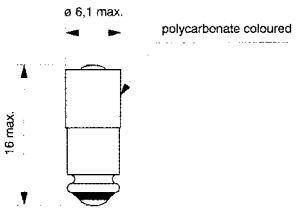
451973

Mftrs. List No.	Order Code	Price Each 1+	10+	25+	100+	+
90008145	**123-2227●**	2.77	2.38	2.18	1.98	– –
90008153	**123-2232●**	4.14	3.55	3.26	2.96	– –
90008161	**123-2236●**	4.14	3.55	3.26	2.96	– –

Midget Groove, T1¼

12V, 24V & 28V ac/dc with Half Wave Rectification





- Centre contact anode (+)
- Reverse polarity protection diode
- LED colour identified on body

	12V	24V
Supply Voltage ac/dc		
Luminous intensity (typ)		
Red	330mcd	330mcd
Green	910mcd	—
White Clear Lens	700mcd	700mcd
White Diffused Lens	350mcd	—
Forward Current	7/mA14	7/mA14

Operating temperature range: -20°C to +60°C

Wavelength (nm) Red, 630 Green, 525

231903

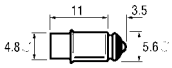
Colour	Mftrs. List No.	Order Code	Price Each 1+	10+	25+	50+	100+
12V ac/dc Red	1512125UR3	**110-5146●**	3.59	3.38	3.12	2.79	2.55
12V ac/dc Green	1512125UG3	**110-5147●**	6.13	5.76	4.83	4.26	3.90
12V ac/dc Yellow	1512125UY3	**110-5148●**	3.62	3.39	3.15	2.82	2.57
12V ac/dc White-Clear Lens	1512125W3	**113-9579●**	6.13	5.76	4.83	4.26	3.90
12V ac/dc White Diffused Lens	1512125W3D	**110-5149●**	6.02	5.67	4.83	4.26	3.90
24V ac/dc Red	1512135UR3	**110-5145●**	3.69	3.46	3.20	2.88	2.61
24V ac/dc Green	1512135UG3	**110-5150●**	6.13	5.76	4.83	4.26	3.90
24V ac/dc Yellow	1512135UY3	**110-5151●**	3.69	3.46	3.20	2.88	2.61
24V ac/dc Blue	1512135B3	**110-5153●**	6.13	5.76	4.83	4.26	3.90
24V ac/dc White-Clear Lens	1512135W3	**110-5154●**	7.60	6.97	4.83	4.26	3.90
24V ac/dc White Diffused Lens	1512135W3D	**110-5155●**	6.02	5.67	4.83	4.26	3.90

Colour	Mftrs. List No.	Order Code	Price Each 1+	10+	25+	50+	100+
28V ac/dc Red	1512145UR3	**110-5156●**	3.59	3.38	3.12	2.79	2.55
28V ac/dc Green	1512145UG3	**110-5157●**	5.86	5.52	4.83	4.26	3.90
28V ac/dc Yellow	1512145UY3	**110-5158●**	3.59	3.38	3.12	2.79	2.55
28V ac/dc White-Clear Lens	1512145W3	**110-5159●**	6.13	5.76	4.83	4.26	3.90
28V ac/dc White Diffused Lens	1512145W3D	**110-5160●**	5.97	5.64	4.83	4.26	3.90

Midget Groove - Sunlight Readable



These single chip, true sunlight readable LEDs incorporate an ultra-high bright LED which has been flat topped to provide wide angled switch illumination.



Centre contact anode (+), Colour by coloured band

Mean time between failure (MTBF) = 100,000 hours

Supply Voltage	12V	12V	28V	Wavelength (nm)
Luminous intensity (typ)				
Red	2750mcd	2750mcd		660
Green	6000mcd	6000mcd		525
Yellow	4500mcd	2750mcd	4500mcd	590
Forward Current	20mA	20mA	20mA	

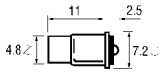
Viewing angle 85° Operating temperature range -20°to+50°C

206440

Voltage	Colour	Mftrs. List No.	Order Code	Price Each 1+	10+	25+	100+	250+
12V	Red	205-501-21-38	**973-8509●**	4.11	3.25	3.05	2.88	2.66
12V	Green	205-532-21-38	**973-8517●**	7.22	7.08	6.54	5.98	5.62
12V	Yellow	205-521-21-38	**973-8525●**	4.19	3.72	2.93	2.81	2.68
24V	Red	205-501-22-38	**973-8541●**	4.11	3.43	2.96	2.83	2.66
24V	Green	205-532-22-38	**973-8550●**	7.22	7.08	6.54	5.98	5.62
24V	Yellow	205-521-22-38	**973-8568●**	4.19	3.72	2.93	2.81	2.68
28V	Yellow	205-521-23-38	**973-8606●**	4.19	3.72	2.93	2.81	2.68

Midget Flange – Sunlight Readable





Centre contact anode (+), Colour identified by coloured band

Design features and specification are identical to Miget Groove range (see above.)

206441

Colour	Mftrs. List No.	Order Code	Price Each 1+	10+	25+	100+	250+
28Vdc Green	206-532-23-38	**973-8665●**	6.94	6.80	6.28	5.75	5.40
28Vdc Yellow	206-521-23-38	**973-8673●**	4.19	3.72	2.93	2.81	2.68

Slide LEDs

T5.5 Slide



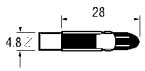
Colour	Voltage Supply V_{DC} (V)	Wavelength Dominant Typ. (nm)	Luminous Intensity (mcd)	Current Rating (mA)	Mftrs. List No.	Order Code
Green	24	565	84	14	15041351	136-8881
Yellow	24	585	59	14	15041352	136-8882
Green	24	565	90	30	15051251	136-8883
Yellow	12	585	63	30	15051252	136-8884
Red	24	630	36	15	15071350	136-8889
Green	24	565	90	15	15071351	136-8890

475949

Colour	Mftrs. List No.	Order Code	Price Each 1+	10+	50+
Green	15041351	**136-8881●**	2.70	2.55	2.43
Yellow	15041352	**136-8882●**	3.79	3.57	3.41
Green	15051251	**136-8883●**	3.79	3.57	3.41
Yellow	15051252	**136-8884●**	3.79	3.57	3.41
Red	15071350	**136-8889●**	3.10	2.90	2.77
Green	15071351	**136-8890●**	4.35	4.06	3.89

Telephone Slide, T5.5 – Sunlight Readable





Polarity indicated by (+), Colour identified by coloured dot.

Design features and specification are identical to Midget Groove range (see above).

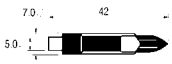
206443

RL Re-reeling available

Colour	Mftrs. List No.	Order Code	Price Each 1+	10+	25+	100+	250+
24Vdc Red	209-501-22-38	**973-8800●**	4.86	4.18	3.67	3.43	3.14
24Vdc Green	209-532-22-38	**973-8819●**	7.74	7.23	6.11	5.58	5.15
28Vdc Yellow	209-521-23-38	**973-8843●**	4.86	4.18	3.67	3.43	3.14

Telephone Slide, T6.8 - Sunlight Readable





Polarity indicated by (+), Colour identified by coloured dot.

Design features and specifications are identical to Midget Groove range (see above).

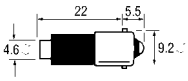
206444

Colour	Mftrs. List No.	Order Code	Price Each 1+	10+	25+	100+	250+
24Vdc Red	208-501-22-38	**973-8886●**	4.48	3.74	3.24	3.17	2.91
24Vdc Green	208-532-22-38	**973-8894●**	6.82	6.69	6.42	5.59	5.14
24Vdc Yellow	208-521-22-38	**973-8916●**	4.48	3.74	3.24	3.17	2.91

Bayonet Cap, BA9 – Sunlight Readable



Design Features and specifications are identified to Midget Groove range (see above)



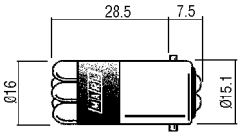
Centre contact anode (+), Colour identified by coloured band

206442

Colour	Mftrs. List No.	Order Code	Price Each 1+	10+	25+	100+	250+
24Vdc Red	215-501-22-38	**973-8720●**	4.21	3.60	3.12	3.06	2.82
24Vdc Green	215-532-22-38	**973-8738●**	7.22	6.16	5.72	5.32	4.90

BA 15d, - 2 pin Base





Bi-polar. Colour identified by a dot on side of body.

This range of bulb replacement LEDs are made up of a cluster of 6, 5mm LEDs. Please note that the intensities given are for a single 5mm LED.

Supply Voltage	24V
Luminous Intensity/LED (typ.)	
Red	3000mcd
Green	6000mcd
Blue	2000mcd
Forward Current (typ.)	25mA
Wavelength (nm)	Red=660,Green=525,Blue=470
Viewing angle to half intensity	30°
Operating temp. range	-40°C to +80°C

206526

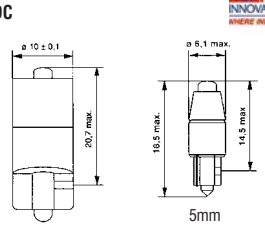
Colour	Mftrs. List No.	Order Code	Price Each 1+	5+	10+	25+	50+
Red	225-501-22	**973-6964●**	33.93	31.31	29.08	27.14	25.44
Green	225-532-22	**973-6972●**	26.44	25.91	25.40	24.89	24.40
Blue	225-930-22	**973-6999●**	26.56	26.03	25.52	25.01	24.37

Wedge Base - 5mm, 10mm

12V AC / DC, 24V AC / DC, 28V AC / DC



10mm 5mm



10mm 5mm

Supply Voltage	28V AC / DC, 28V AC / DC, 28V AC / DC		
Operating Current	5mm: 12mA	10mm: 14mA	
Maximum Reverse Voltage	80V		
Operating Temperature	-20°C to +60°C		

Typical Luminous Intensity (mcd) @ operating voltage

5mm Wedge Base		10mm Wedge Base	
Green	780	White	700
White	600	White	700
White	600	White	700

206572

5mm Wedge Base	Order Code	Price Each 1+	10+	25+	100+	250+
24V ac/dc Green	**113-9612●**	5.85	5.74	5.36	4.73	4.33
24V ac/dc White	**113-9613●**	7.29	7.16	5.36	4.73	4.32
28V ac/dc White	**113-9614●**	7.29	7.16	5.36	4.73	4.32
10mm Wedge Base						
12V ac/dc White	**113-9611●**	5.56	5.30	4.87	3.79	3.63
24V ac/dc White	**110-5186●**	5.56	4.91	4.51	3.55	3.40
28V ac/dc White	**110-5187●**	6.20	5.69	5.13	3.79	3.63

Machine Tower Indicator - Ba15d Base

24V dc



- LED Machine Tower Indicator
- 360° viewing angle
- Direct filament replacement
- Eliminates costly maintenance
- Bi-polar design
- MTBF 100,000 hours
- Standard Ba15d base for direct fitting

Dia.=35, L=42 (overall)

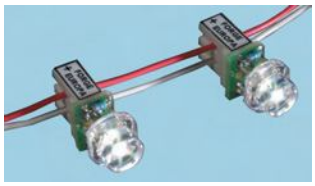
Operating Voltage:	24V dc	Operating Current:	40mA
Colour	Luminous Intensity @ 20mA	Wavelength	
Red	3500mcd	660nm	
Viewing angle:	360°	Operating temperature:	-20°C to +50°C

206586

Colour	Mftrs. List No.	Order Code	Price Each 1+	3+	5+	10+	15+
Red	234-501-22	**973-7758●**	35.69	34.98	31.87	30.01	26.32

LED Lamp Fascia Illuminator

FEL-F115 Series



- 'SPLED' Splined LED
- Designed to push fit into an 8mm round hole in a Vac Form cavity or fascia plate
- High intensity White illuminator for incandescent bulb replacement
- Range of decorative colours for special effects without filters
- Insulation Displacement Connector fitted for ease of wiring
- Low power consumption
- Water clear epoxy
- Class II EDS Rating
- Fitted with reverse voltage protection diode and current limiting resistor

Operating temperature -25°C to +80°C Supply voltage 12V DC

Colour	Dominant Wavelength	Luminous Flux	Current	Mftrs. List No.	Order Order
Red	635nm	3.3 lm	35mA	FEL-F115R2112V12	873-8955
Yellow	589nm	3.2 lm	35mA	FEL-F115Y1512V12	873-8963
Green	527nm	2.97 lm	35mA	FEL-F115G16V12	873-8971
Blue	460nm	0.85 lm	35mA	FEL-F115B15V12	873-8998
White	—	2.82 lm	30mA	FEL-F115W15V12	873-9005

383473/405983

Colour	Order Code	Price Each 1+	10+	25+	50+	100+
Red	**873-8955●**	1.28	1.13	1.04	0.95	0.87
Yellow	**873-8963●**	1.28	1.13	1.04	0.95	0.87
Green	**873-8971●**	1.75	1.56	1.43	1.30	1.18
Green	**873-8980●**	1.72	1.53	1.40	1.27	1.16
Blue	**873-8998●**	1.68	1.50	1.38	1.24	1.14
White	**873-9005●**	1.68	1.50	1.38	1.24	1.14

LED Lamp Replacements

Acsentio Series

Accent LED Lighting



- Integral transformer
- GX53 Lampholder
- 4 Voltages available - 12V, 24V, 130V and 240V
- Two choices of finish, either satin of clear
- Twin push-on terminals
- Flat construction
- Power 1.5 Watts
- Life 50,000 hours

451933

Mftrs. List No.	Colour	Finish	Order Code	Price Each 1+	10+	25+	50+
240 Volt Versions							
CML240RS	Red	Satin	**122-9087●**	23.44	21.48	19.84	18.42
CML240YS	Amber	Satin	**122-9091●**	23.44	21.48	19.84	18.42
CML240BC	Blue	Clear	**122-9094●**	17.02	16.08	15.23	14.48
CML240WC	White	Clear	**122-9097●**	23.44	21.48	19.84	18.42

RL Re-reeling available

LED Lamp Replacements - continued

LED Spotlight Engine

Humidity and Moisture Resistant



- Each unit contains 3 high power LED's
- Similar output to a 20W incandescent bulb
- 10 - 30 V ac/dc input
- Fully integrated with driver electronics and heat sink
- Rugged and Sealed
- High efficiency optics with 40° beam

LED Module - Dia. = 2.25", Depth = 1"

Colour	Wavelength Colour Temp. (Typical)	Current Input @ 12V	Power Consumption	Operating Temperature	Mftrs List No.
Cool White	5500K	500mA	3W	-40 to 55°C	ILL5A0001B

451468

Mftrs. List No.	Order Code	Price Each 1+	5+	10+
ILL5A0001B	**122-8865●**	69.13	64.19	62.39

LED Indicators, 3mm Lens Diameter

Cable Assemblies for Tab Terminals



- Suitable for all voltage ranges
- Flying lead length is 300mm in red and black
- Cable assemblies suitable for all indicators with 2.0 x 0.55mm and 2.8 x 0.8mm tab terminations
- These assemblies fit all of the EBT ranges of LED Indicators and Xenon Flash Indicators. The 2.0 x 0.55mm fit the 3 & 5mm ranges and the 2.8 x 0.8mm fit the 10 & 16mm ranges and the Xenon Indicators

206585

Order Multiple=5		Price Each				
2.0 x 0.5mm	**Order Code**	5+	25+	50+	100+	250+
Red, 300mm	**110-5189●**	0.44	0.38	0.36	0.28	0.27
Black, 300mm	**110-5191●**	0.44	0.38	0.36	0.28	0.27
2.8 x 0.8mm						
Red, 300mm	**110-5192●**	0.34	0.29	0.27	0.21	0.20
Black, 300mm	**110-5193●**	0.34	0.29	0.27	0.21	0.20

2x0.5mm Spade Connectors



497114

Mftrs. List No.	Order Code	Price Each 10+	100+	250+	+
40220040	**136-9049●**	0.172	0.161	0.149	– –

3mm



Panel mounting 3mm LEDs in chrome finished brass bezels. The indicator has a moulded polycarbonate lens.

Body length=17.0, Bezel dia=7.4
Mounting hole dia=6.3. Polarity indicator on rear nylon plug.
Max panel thickness=6.3.

Colour	I_F max.	V_F typ.	V_R max.	Order Code
Red	35mA	2 - 2.2V	5V	942-8968
Green	35mA	2 - 2.2V	5V	942-9026
Yellow	35mA	2 - 2.2V	5V	942-9034

221714

Colour	Order Code	Price Each 1+	100+	250+	500+
Red	**942-8968●**	3.40	1.22	1.15	0.92
Green	**942-9026●**	3.40	1.22	1.15	0.92
Yellow	**942-9034●**	3.40	1.22	1.15	0.92

£ € 40,000 PRICES REDUCED

3mm with Integral Resistor



Snap-in LED indicators with suitable series resistor built into one lead. Approved to **UL, CSA, OVE, DEMKO** specifications. Termination 200mm 16/0.2 flexible leads.

L=41 (excl. flexible leads)
Lens=4.8 x 7.5 dia., Bezel dia.=9.8
Panel cut-out=8.0 dia.
Panel thickness=0.8-1.6
Red lead indicates anode (+ve)

Operating Voltages 12–14V dc, 24–28V dc. Operating temperature: 85°C max.

	Typ. Lum. Intensity (mcd).	I_F@ Nom. V.	V_R max.
Red	1	20mA	5V
Green	1	20mA	5V
Amber	4	20mA	5V

221670

Colour	Order Code	Price Each 1+	25+	100+	250+	500+
12/14V dc						
Red	**942-8976●**	3.47	3.31	1.50	1.17	1.15
Green	**942-8984●**	2.00	1.91	1.77	0.99	0.86
24/28V dc						
Red	**942-8992●**	3.66	3.48	3.22	1.79	1.21
Green	**942-9000●**	3.66	3.48	3.22	1.79	1.49
Amber	**942-9018●**	2.46	2.01	1.54	1.29	1.12

3mm with Integral Resistor

Single and Bi-Colour



Prominent: Total L behind bezel=28.9
Recessed: Total L behind bezel=30.4
Flat-top: Total L behind bezel=32.4

All types: Bezel dia.=7, thread=M6x0.75, mounting hole dia.=6, tab connections=2x0.5, tinned tab indicates cathode (-), common cathode or bi-colour.

A range of panel mounting LED indicators with integral resistor to permit direct connection to 12V or 24V dc supplies. The 3mm LEDs are fitted in high quality satin chrome or black chrome plated brass housings, fitted with fixing nut and washer. Connection is by faston/solder tab terminals. **CE** approved.

	I_F @ V_s	Wavelength Peak	Luminous Intensity @ V_s	Order Code
Satin Chrome - Prominant , 12V				
HE Red	30mA	660nm	23.5mcd	113-9486
Yellow	30mA	590nm	41mcd	113-9488
Green	30mA	565nm	48mcd	110-5203
Satin Chrome - Prominant , 24V				
HE Red	18mA	660nm	15mcd	110-5208
Yellow	18mA	590nm	24.5mcd	113-9501
Green	18mA	565nm	28.5mcd	113-9497
Blue	18mA	475nm	1.8mcd	113-9494
HE Red, Green	—	—	9 / 11mcd	110-5200
Satin Chrome - Recessed, 12V				
HE Red	30mA	660nm	22mcd	110-5212
Green	30mA	565nm	50mcd	110-5213
Blue	30mA	475nm	mcd2.5	110-5214
HE Red, Green	—	—	/ 911mcd	110-5200
Satin Chrome - Recessed, 24V				
HE Red	18mA	660nm	14.5mcd	110-5217
Green	18mA	565nm	31mcd	110-5219
Blue	18mA	475nm	1.8mcd	110-5222
HE Red, Green	—	—	/ 1320mcd	110-5202
Satin Chrome - Flat-top, 12V				
HE Red	30mA	660nm	10mcd	110-5194
Yellow	30mA	590nm	16.4mcd	110-5196
Green	30mA	565nm	17.5mcd	110-5195
Satin Chrome - Flat-top, 24V				
HE Red	18mA	660nm	6.5mcd	110-5197
Yellow	18mA	590nm	9.4mcd	110-5199
Green	18mA	565nm	10mcd	110-5198
Black Chrome - Prominant, 12V				
HE Red	30mA	660nm	23.5mcd	110-5204
Green	30mA	565nm	48mcd	110-5205
Blue	30mA	475nm	2.5mcd	110-5207
Black Chrome - Prominant, 24V				
HE Red	18mA	660nm	15mcd	110-5209
Yellow	18mA	590nm	24.5mcd	110-5211
Green	18mA	565nm	28.5mcd	110-5210
Black Chrome - Recessed, 12V				
HE Red	30mA	660nm	22mcd	110-5215

RL Re-reeling available

Black Chrome - Recessed, 12V				
Green	30mA	565nm	50mcd	110-5216
Blue	30mA	475nm	2.5mcd	113-9481
Black Chrome - Recessed, 24V				
HE Red	18mA	660nm	14.5mcd	110-5223
Yellow	18mA	590nm	25mcd	113-9503
Green	18mA	565nm	31mcd	110-5224
Blue	18mA	475nm	1.8mcd	110-5225

206315

		Price Each				
	Order Code	1+	25+	100+	250+	500+
Satin Chrome - Prominent						
12VHE Red	**113-9486●**	2.61	2.48	1.81	1.65	1.58
12V Yellow	**113-9488●**	2.61	2.20	1.81	1.65	1.58
12V Green	**110-5203●**	2.61	1.87	1.81	1.65	1.58
24V HE Red	**110-5208●**	2.61	2.48	2.22	1.65	1.58
24V Yellow	**113-9501●**	2.61	2.48	2.22	1.65	1.58
24V Green	**113-9497●**	2.61	2.48	2.22	1.65	1.58
24V Blue	**113-9494●**	4.33	4.24	4.08	3.72	3.59
24V HE Red, Green	**110-5200●**	3.17	2.44	2.38	2.13	2.03
Satin Chrome - Recessed						
12V HE Red	**110-5212●**	2.61	2.48	1.81	1.65	1.58
12V Green	**110-5213●**	2.54	1.82	1.74	1.60	1.55
12V Blue	**110-5214●**	4.33	4.24	4.08	3.72	3.59
12V HE Red, Green	**110-5201●**	3.17	3.04	2.89	2.58	2.46
24V HE Red	**110-5217●**	2.61	2.48	2.22	1.65	1.58
24V Green	**110-5219●**	2.61	2.48	1.81	1.65	1.58
24V Blue	**110-5222●**	4.22	4.14	3.97	3.62	3.51
24V HE Red, Green	**110-5202●**	3.17	3.04	2.38	2.13	2.03
Satin Chrome - Flat-Top						
12V HE Red	**110-5194●**	3.13	2.67	2.45	1.90	1.85
12V Green	**110-5195●**	3.05	2.96	2.40	1.86	1.81
12V Yellow	**110-5196●**	3.13	2.67	2.45	1.90	1.85
24V HE Red	**110-5197●**	3.81	3.59	2.45	1.90	1.85
24V Green	**110-5198●**	3.81	2.67	2.45	1.90	1.85
24V Yellow	**110-5199●**	3.81	2.67	2.45	1.90	1.85
Black Chrome - Prominent						
12V HE Red	**110-5204●**	2.82	2.68	1.97	1.83	1.75
12V Green	**110-5205●**	2.82	2.68	1.97	1.83	1.75
12V Blue	**110-5207●**	4.54	4.44	4.34	3.95	3.82
24V HE Red	**110-5209●**	2.82	2.68	1.97	1.83	1.75
24V Green	**110-5210●**	2.82	2.68	1.97	1.83	1.75
24V Yellow	**110-5211●**	3.40	3.12	2.25	1.74	1.69
Black Chrome - Recessed						
12V HE Red	**110-5215●**	2.82	2.04	1.97	1.83	1.75
12V Green	**110-5216●**	2.82	2.04	1.97	1.83	1.75
12V Blue	**113-9481●**	4.33	4.24	4.16	3.97	3.82
24V HE Red	**110-5223●**	2.82	2.68	1.97	1.83	1.75
24V Green	**110-5224●**	2.82	2.68	2.38	1.83	1.75
24V Yellow	**113-9503●**	2.82	2.68	2.38	1.83	1.75
24V Blue	**110-5225●**	4.08	4.00	3.90	3.56	3.47

3mm

multicomp



A range of panel mounting LED indicators in high qualiy bright chrome or black chrome plated brass housings. Fitted with fixing nut and washer. **CE** approved.

Bezel=4 x 7 dia (Prominent),
3 x 7 dia (Recessed),
Total L behind bezel=11.5 (Prominent)
13.0 (Recessed),
Mounting hole dia.=6,
Shorter lead Cathode

Style	Colour	Typ. Lum. Intensity(mcd) @I_F=20mA	V_F (typ.) (V)	I_F (max) mA
Prominent	HE Red	17.5	2-2.6	45
Recessed	HE Red	15	2-2.6	45
Prominent	Green	27	2-2.6	45
Recessed	Green	34	2-2.6	45
Prominent	Yellow	32	2-2.6	45
Recessed	Yellow	28	2-2.6	45
Prominent	Orange	17.5	2-2.6	30
Recessed	Orange	15	2-2.6	30
Prominent	Blue	5	3.8-4.4	50
Recessed	Blue	6	3.8-4.4	50

206468

		Price Each				
Colour	Order Code	1+	25+	100+	250+	500+
Bright Chrome - Prominent						
HE Red	**110-5226●**	1.17	1.11	0.95	0.69	0.54
Green	**110-5227●**	1.17	1.11	0.95	0.69	0.67
Yellow	**110-5228●**	1.17	1.11	0.95	0.57	0.54
Orange	**113-9519●**	0.91	0.86	0.75	0.57	0.54
Blue	**113-9518●**	3.38	3.23	2.87	2.65	2.43
Bright Chrome - Recessed						
HE Red	**110-5229●**	1.17	1.11	0.95	0.69	0.67
Green	**110-5230●**	1.17	1.11	0.95	0.69	0.54
Yellow	**110-5232●**	1.17	1.11	0.95	0.69	0.54
Orange	**110-5233●**	0.91	0.86	0.75	0.57	0.54
Blue	**110-5234●**	2.18	2.09	1.94	1.53	1.47
Black Chrome - Prominent						
HE Red	**110-5235●**	1.33	1.22	1.06	0.64	0.62
Green	**110-5236●**	1.33	1.22	1.06	0.77	0.62
Yellow	**110-5237●**	1.33	1.22	1.06	0.64	0.62
Orange	**110-5238●**	0.91	0.89	0.82	0.64	0.62
Blue	**110-5239●**	2.31	2.21	1.98	1.62	1.54

		Price Each				
Colour	Order Code	1+	25+	100+	250+	500+
Black Chrome - Recessed						
HE Red	**110-5240●**	1.33	1.22	1.06	0.64	0.62
Green	**110-5241●**	1.33	1.22	1.06	0.64	0.62
Yellow	**110-5242●**	1.33	1.22	0.82	0.64	0.62
Orange	**110-5244●**	0.91	0.89	0.82	0.64	0.62

3mm/T1-Flush Mounting, Countersunk

SLOAN



Nickel plated brass body with a countersunk bezel, a fixed flat polycarbonate fresnel lens. The countersunk bezel enables these indicators to be mounted flush to the panel. Connection is via two insulated solder bucket terminals.

L=27.5 (overall), Lens dia=6.5, Bezel dia=9.2,
Mounting hole dia=6.2, Countersunk=9.4 dia x 0.5mm/45°,
Max panel thickness = 9.0(min = 5.0)

Colour	View Angle	Typ. Lum. Intensity (mcd) @ I_F=20mA	V_F (typ.)	I_F (mA) (max.)	PIV (max.)	Mftrs List No.
Red	60°	60	1.7	50	4	194-S-0-1-8R1-R310-0
Green	60°	15	2.1	50	4	194-S-0-1-8G1-G310-0
Amber	60°	24	2.2	50	4	194-S-0-1-8A1-Y310-0

206420

			Price Each		
Colour	Mftrs. List No.	Order Code	1+	5+	10+
Red	194-S-0-1-8R1-R310-0	**121-6274●**	4.51	4.35	4.03
Green	194-S-0-1-8G1-G310-0	**121-6275●**	4.80	4.42	4.03
Amber	194-S-0-1-8A1-Y310-0	**121-6276●**	4.80	4.42	4.03

6.35mm Panel Mount LED Indicators

OXLEY

New



Natural Aluminium - Recessed



Black Anodised - Prominent

Fixing Hole	(dia)	6.35mm
Bezel	(dia)	9mm
	(depth)	1.7mm
Length	(external)	13.5mm
	(behind bezel)	10.3mm
	(lead)	30mm

Forward Current 15mA

Colour	Luminous Intensity (typ) (mcd)	Wavelength (typ) (nm)	Voltage Rating (AC) (V)	Mftrs. List No.	Order Code
Black Anodised - Recessed					
Red	450	637	-	OXL/CLH/63/BB/FL30/ALGAAS RED	160-3456
Yellow	375	585	-	OXL/CLH/63/BB/FL30/YELLOW	160-3457
Green	470	525	-	OXL/CLH/63/BB/FL30/GREEN	160-3458
White	375	-	-	OXL/CLH/63/BB/FL30/WHITE	160-3459
Blue	450	470	-	OXL/CLH/63/BB/FL30/BLUE	160-3460
Red	450	637	12	OXL/CLH/63/BB/12AC/FL30/ALGAAS RED	160-3467
Yellow	375	585	12	OXL/CLH/63/BB/12AC/FL30/YELLOW	160-3468
Green	470	525	12	OXL/CLH/63/BB/12AC/FL30/GREEN	160-3469
White	375	-	12	OXL/CLH/63/BB/12AC/FL30/WHITE	160-3470
Blue	450	470	12	OXL/CLH/63/BB/12AC/FL30/BLUE	160-3471
Red	450	637	24	OXL/CLH/63/BB/24AC/FL30/ALGAAS RED	160-3478
Yellow	375	585	24	OXL/CLH/63/BB/24AC/FL30/YELLOW	160-3479
Green	470	525	24	OXL/CLH/63/BB/24AC/FL30/GREEN	160-3480
White	375	-	24	OXL/CLH/63/BB/24AC/FL30/WHITE	160-3481
Blue	450	470	24	OXL/CLH/63/BB/24AC/FL30/BLUE	160-3482
Black Anodised - Prominent					
Red	450	637	-	OXL/CLH/63/BB/P/FL30/ALGAAS RED	160-3517
Yellow	375	585	-	OXL/CLH/63/BB/P/FL30/YELLOW	160-3518
Green	470	525	-	OXL/CLH/63/BB/P/FL30/GREEN	160-3519
White	375	-	-	OXL/CLH/63/BB/P/FL30/WHITE	160-3520
Blue	450	470	-	OXL/CLH/63/BB/P/FL30/BLUE	160-3521
Red	450	637	12	OXL/CLH/63/BB/P/12AC/FL30/ALGAAS RED	160-3527
Yellow	375	585	12	OXL/CLH/63/BB/P/12AC/FL30/YELLOW	160-3529
Green	470	525	12	OXL/CLH/63/BB/P/12AC/FL30/GREEN	160-3531
White	375	-	12	OXL/CLH/63/BB/P/12AC/FL30/WHITE	160-3532
Blue	450	470	12	OXL/CLH/63/BB/P/12AC/FL30/BLUE	160-3533
Red	450	637	24	OXL/CLH/63/BB/P/24AC/FL30/ALGAAS RED	160-3539
Yellow	375	585	24	OXL/CLH/63/BB/P/24AC/FL30/YELLOW	160-3540
Green	470	525	24	OXL/CLH/63/BB/P/24AC/FL30/GREEN	160-3542
White	375	-	24	OXL/CLH/63/BB/P/24AC/FL30 WHITE	160-3543
Blue	450	470	24	OXL/CLH/63/BB/P/24AC/FL30/BLUE	160-3544
Natural Aluminium - Recessed					
Red	450	637	-	OXL/CLH/63/FL30/ALGAAS RED	160-3451
Yellow	375	585	-	OXL/CLH/63/FL30/YELLOW	160-3452
Green	470	525	-	OXL/CLH/63/FL30/GREEN	160-3453
White	375	-	-	OXL/CLH/63/FL30/WHITE	160-3454
Blue	450	470	-	OXL/CLH/63/FL30/BLUE	160-3455
Red	450	637	12	OXL/CLH/63/12AC/FL30/ALGAAS RED	160-3461
Yellow	375	585	12	OXL/CLH/63/12AC/FL30/YELLOW	160-3463
Green	470	525	12	OXL/CLH/63/12AC/FL30/GREEN	160-3464
White	375	-	12	OXL/CLH/63/12AC/FL30/WHITE	160-3465
Blue	450	470	12	OXL/CLH/63/12AC/FL30/BLUE	160-3466
Red	450	637	24	OXL/CLH/63/24AC/FL30/ALGAAS RED	160-3472
Yellow	375	585	24	OXL/CLH/63/24AC/FL30/YELLOW	160-3473
Green	470	525	24	OXL/CLH/63/24AC/FL30/GREEN	160-3475
White	375	-	24	OXL/CLH/63/24AC/FL30/WHITE	160-3476
Blue	450	470	24	OXL/CLH/63/24AC/FL30/BLUE	160-3477
Natural Aluminium - Prominent					
Red	450	637	-	OXL/CLH/63/P/FL30/ALGAAS RED	160-3511
Yellow	375	585	-	OXL/CLH/63/P/FL30/YELLOW	160-3512
Green	470	525	-	OXL/CLH/63/P/FL30/GREEN	160-3513
White	375	-	-	OXL/CLH/63/P/FL30/WHITE	160-3514

RL Re-reeling available

Farnell

LED Indicators, 3mm Lens Diameter - continued

6.35mm Panel Mount LED Indicators - continued

Colour	Luminous Intensity (typ) (mcd)	Wavelength (typ) (nm)	Voltage Rating (AC) (V)	Mftrs. List No.	Order Code
Natural Aluminium - Prominent					
Blue	450	470	-	OXL/CLH/63/P/FL30/BLUE	160-3515
Red	450	637	12	OXL/CLH/63/P/12AC/FL30/ALGAAS RED	160-3522
Yellow	375	585	12	OXL/CLH/63/P/12AC/FL30/YELLOW	160-3523
Green	470	525	12	OXL/CLH/63/P/12AC/FL30/GREEN	160-3524
White	375	-	12	OXL/CLH/63/P/12AC/FL30/WHITE	160-3525
Blue	450	470	12	OXL/CLH/63/P/12AC/FL30/BLUE	160-3526
Red	450	637	24	OXL/CLH/63/P/24AC/FL30/ALGAAS RED	160-3534
Yellow	375	585	24	OXL/CLH/63/P/24AC/FL30/YELLOW	160-3535
Green	470	525	24	OXL/CLH/63/P/24AC/FL30/GREEN	160-3536
White	375	-	24	OXL/CLH/63/P/24AC/FL30/WHITE	160-3537
Blue	450	470	24	OXL/CLH/63/P/24AC/FL30/BLUE	160-3538

515120

Colour	Voltage (AC)	Order Code	Price Each 1+	10+	50+	100+	+
Black Anodised - Recessed							
Red	—	160-3456●	4.76	4.08	3.57	2.86	– –
Yellow	—	160-3457●	4.76	4.08	3.57	2.86	– –
Green	—	160-3458●	7.42	6.36	5.56	4.45	– –
White	—	160-3459●	7.42	6.36	5.56	4.45	– –
Blue	—	160-3460●	7.42	6.36	5.56	4.45	– –
Red	12V	160-3467●	5.35	4.58	4.01	3.20	– –
Yellow	12V	160-3468●	5.35	4.58	4.01	3.20	– –
Green	12V	160-3469●	7.85	6.73	5.90	4.71	– –
White	12V	160-3470●	7.85	6.73	5.90	4.71	– –
Blue	12V	160-3471●	7.85	6.73	5.90	4.71	– –
Red	24V	160-3478●	5.35	4.58	4.01	3.20	– –
Yellow	24V	160-3479●	5.35	4.58	4.01	3.20	– –
Green	24V	160-3480●	7.85	6.73	5.90	4.71	– –
White	24V	160-3481●	7.85	6.73	5.90	4.71	– –
Blue	24V	160-3482●	7.85	6.73	5.90	4.71	– –
Black Anodised - Prominent							
Red	—	160-3517●	4.76	4.08	3.57	2.86	– –
Yellow	—	160-3518●	4.76	4.08	3.57	2.86	– –
Green	—	160-3519●	7.42	6.36	5.56	4.45	– –
White	—	160-3520●	7.42	6.36	5.56	4.45	– –
Blue	—	160-3521●	7.42	6.36	5.56	4.45	– –
Red	12V	160-3527●	5.35	4.58	4.01	3.20	– –
Yellow	12V	160-3529●	5.35	4.58	4.01	3.20	– –
Green	12V	160-3531●	7.85	6.73	5.90	4.71	– –
White	12V	160-3532●	7.85	6.73	5.90	4.71	– –
Blue	12V	160-3533●	7.85	6.73	5.90	4.71	– –
Red	24V	160-3539●	5.35	4.58	4.01	3.20	– –
Yellow	24V	160-3540●	5.35	4.58	4.01	3.20	– –
Green	24V	160-3542●	7.85	6.73	5.90	4.71	– –
White	24V	160-3543●	7.85	6.73	5.90	4.71	– –
Blue	24V	160-3544●	7.85	6.73	5.90	4.71	– –
Natural Aluminium - Recessed							
Red	—	160-3451●	4.43	3.79	3.32	2.65	– –
Yellow	—	160-3452●	4.43	3.79	3.32	2.65	– –
Green	—	160-3453●	7.18	6.15	5.39	4.30	– –
White	—	160-3454●	7.18	6.15	5.39	4.30	– –
Blue	—	160-3455●	7.18	6.15	5.39	4.30	– –
Red	12V	160-3461●	5.00	4.28	3.75	3.00	– –
Yellow	12V	160-3463●	5.00	4.28	3.75	3.00	– –
Green	12V	160-3464●	7.65	6.56	5.74	4.59	– –
White	12V	160-3465●	7.65	6.56	5.74	4.59	– –
Blue	12V	160-3466●	7.65	6.56	5.74	4.59	– –
Red	24V	160-3472●	5.00	4.28	3.75	3.00	– –
Yellow	24V	160-3473●	5.00	4.28	3.75	3.00	– –
Green	24V	160-3475●	7.65	6.56	5.74	4.59	– –
White	24V	160-3476●	7.65	6.56	5.74	4.59	– –
Blue	24V	160-3477●	7.65	6.56	5.74	4.59	– –
Natural Aluminium - Prominent							
Red	—	160-3511●	4.43	3.79	3.32	2.65	– –
Yellow	—	160-3512●	4.43	3.79	3.32	2.65	– –
Green	—	160-3513●	7.18	6.15	5.39	4.30	– –
White	—	160-3514●	7.18	6.15	5.39	4.30	– –
Blue	—	160-3515●	7.18	6.15	5.39	4.30	– –
Red	12V	160-3522●	5.00	4.28	3.75	3.00	– –
Yellow	12V	160-3523●	5.00	4.28	3.75	3.00	– –
Green	12V	160-3524●	7.65	6.56	5.74	4.59	– –
White	12V	160-3525●	7.65	6.56	5.74	4.59	– –
Blue	12V	160-3526●	7.65	6.56	5.74	4.59	– –
Red	24V	160-3534●	5.00	4.28	3.75	3.00	– –
Yellow	24V	160-3535●	7.65	6.56	5.74	4.59	– –
Green	24V	160-3536●	7.65	6.56	5.74	4.59	– –
White	24V	160-3537●	7.65	6.56	5.74	4.59	– –
Blue	24V	160-3538●	7.65	6.56	5.74	4.59	– –

LED Indicators, 4mm Lens Diameter

4mm

BULGIN



Recessed type Prominent type

Panel mounting 4mm LEDs housed in a choice of black anodised aluminium or bright chromium plated brass bezels. The bezels of the chrome finished types are polished to form high quality reflectors. The indicators are available with either recessed or prominent LEDs.

Body length=14, Bezel dia=7.6, Mounting hole dia=6.2
Thread=M6 x 0.75, Short lead is cathode

Operating temperature -25°C to +80°C Viewing angle 120°
Maximum power dissipation 70mW

Colour	I_F max.	V_F typ.	V_R max.	Typ. Lum. Intensity (mcd)
Red	25mA	1.9V	3V	1.5 @ 5mA
Green	25mA	2.1V	3V	3.5 @ 20mA
Amber	25mA	2.1V	3V	5 @ 20mA

206579

Colour	Order Code	Price Each 1+	25+	100+	250+
Prominent - Bright Chrome					
Red	170-160●	1.40	1.30	1.19	1.13
Green	170-161●	1.70	1.59	1.45	1.39
Amber	170-162●	1.70	1.59	1.45	1.39
Recessed - Bright Chrome					
Red	170-163●	1.40	1.30	1.19	1.13
Green	170-164●	1.70	1.59	1.45	1.39
Amber	170-165●	1.70	1.59	1.45	1.39
Prominent - Black anodised aluminium					
Red	170-585●	1.67	1.57	1.44	1.37
Green	170-586●	1.81	1.70	1.55	1.43
Amber	170-587●	1.81	1.70	1.55	1.43
Recessed - Black anodised aluminium					
Red	170-588●	1.40	1.30	1.23	1.13
Green	170-589●	1.70	1.59	1.45	1.39
Amber	170-590●	1.70	1.59	1.45	1.39

4mm with Jewelled Lens



Panel mounting 4mm LED housed in bright chromium plated brass bezel and fitted with coloured jewelled lens. The indicator is fitted with solder tags for easy connection.

Body length=13, Bezel dia=10, Mounting hole dia=8.2
Thread=M8 x 0.75, Colour marker indicates anode

Operating temperature -25°C to +80°C Viewing angle 120°
Maximum power dissipation 70mW

Colour	I_F max.	V_F typ.	V_R max.	Typ. Lum. Intensity (mcd)
Red	30	2	3	0.8
Green	30	2.1	3	1
Amber	30	2.1	3	2

206607

Colour	Order Code	Price Each 1+	50+	100+
Red	121-8549●	5.54	4.36	3.26
Green	121-8550●	5.54	4.36	3.26
Amber	121-8551●	5.54	4.36	3.26

4mm with Integral Resistor



The 4mm LED is housed in a bright chrome plated brass housing and has a protective lens. Connection is via solder tags.

Body length=32, Bezel dia=8.4, Mounting hole dia=7.2
Thread=M7 x 0.75, Colour marker indicates anode (+ve)

Operating temperature -25°C to +80°C

Colour	Nominal Operating Voltages	Typ. Lum. Intensity	I_F @ Nom. V.	V_R max.
Red	6, 12 and 24V dc	0.8mcd	10mA	3V
Green	6, 12 and 24V dc	1mcd	15mA	3V
Amber		2mcd	15mA	3V

206596

Colour	Order Code	Price Each 1+	50+	100+
5/6V dc				
Red	121-8540●	5.28	1.98	1.81
Green	121-8543●	5.28	3.32	2.63
12V dc				
Red	121-8544●	5.28	3.32	1.81
Green	121-8545●	5.28	3.32	2.42
24V dc				
Red	121-8546●	5.54	3.72	2.63
Amber	121-8548●	5.54	3.72	1.81

LED Indicators, 5mm Lens Diameter

Cable Assemblies for Tab Terminals

CML INNOVATIVE TECHNOLOGIES



- Suitable for all voltage ranges
- Flying lead length is 300mm in red and black
- Cable assemblies suitable for all indicators with 2.0 x 0.55mm and 2.8 x 0.8mm tab terminations
- These assemblies fit all of the EBT ranges of LED Indicators and Xenon Flash Indicators. The 2.0 x 0.55mm fit the 3 & 5mm ranges and the 2.8 x 0.8mm fit the 10 & 16mm ranges and the Xenon Indicators

206585

RL Re-reeling available

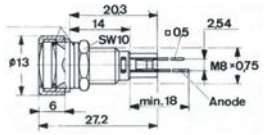
Farnell

Order Multiple=5				Price Each		
2.0 x 0.5mm	**Order Code**	5+	25+	50+	100+	250+
Red, 300mm	**110-5189●**	0.44	0.38	0.36	0.28	0.27
Black, 300mm	**110-5191●**	0.44	0.38	0.36	0.28	0.27
2.8 x 0.8mm						
Red, 300mm	**110-5192●**	0.34	0.29	0.27	0.21	0.20
Black, 300mm	**110-5193●**	0.34	0.29	0.27	0.21	0.20

IP65 Sealed 5mm Bezel LED

MENTOR





- Chrome bezel red LED
- Magnifying lens
- Watertight mounting to IP 65

Mftrs. List No.	LED Type	Colour	Wavelength (nm)	Lens Colour	Dispersion Angle
2672.8021	A5	red	700	red/diff.	±30°

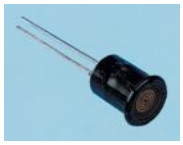
Mftrs. List No.	Fwd Voltage		Fwd Current Max	Luminous Intensity Lv(mcd) If=10mA			Peak Fwd Current	Rev. Voltage
	typ	max	mA	min	typ	max	A	V
2672.8021	2.0	2.5	25	3.2	-	8	0.15	5

249114

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
2672.8021	**121-5790**	4.43	4.06	3.82	3.66	3.55

5mm

BOSS INDUSTRIAL MOULDINGS



Flush mounting glass filled nylon body with integral LED and polycarbonate lens. Fluted sides for push-in fitting.
Approved to **BS EN 60-335-1, BS EN 60-065, BS EN61010-1** and **BS EN60950**

Operating temperature 0°C to +85°C Viewing angle 60°
Maximum power dissipation 225mW

Body length=10.0,, Bezel=1.0 x 9.5 dia,
Panel cut-out=8.0 dia.,
Panel thickness 0.5-3.5, Short lead is anode

Colour	I_F (typ)	V_F (typ)	V_R (typ)
Red	15mA	2V	3V
Green	40mA	2.5V	3V
Yellow	40mA	2.5V	3V

206457

Colour	Order Code	Price Each 1+	50+	100+	250+	500+
Red	**945-0874●**	1.21	1.05	0.84	0.48	0.47
Green	**945-0882●**	1.35	1.16	0.94	0.56	0.51
Yellow	**945-0890●**	1.38	1.22	0.98	0.47	0.45

5mm Panel Mount

Snap In Mounting

Dialight



- Front panel mounting
- Uniform illumination
- No additional hardware required
- Hole diameter 6.32 to 6.40mm
- High reliability - 100,000 hours life
- 355.6mm (14") leads

Depth (behind panel) 10.55mm
Length (overall) 15.88mm

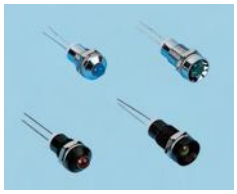
Colour	View angle	Peak wavelength (nm)	Luminous Intensity I_V (mcd)	If (mA) max	Operating V_f (V)	Mftrs List No.	Order Code
Diffused LED							
Green	60°	565	8	15	5	559-0202-007F	113-8323
Yellow	60°	583	8	15	5	559-0302-007F	113-8324
Red	60°	655	2	20	12	559-0103-007F	113-8325
Green	60°	565	4	20	12	559-0203-007F	113-8326
Yellow	60°	583	8	20	12	559-0303-007F	113-8328
HE Red	50°	650	7	10	2.2	559-2101-007F	113-8316
HE Green	65°	563	10	10	2.1	559-2201-007F	113-8317
HE Yellow	50°	585	6.3	10	2.1	559-2301-007F	113-8318
Red High Brightness	50°		34	25	2.1	559-5101-007F	113-8320
Non-Tinted, Non-Diffused (water clear) LED							
Red Ultra Bright	50°	635	2100	50	1.9	559-6101-007F	113-8321
Bi-Colour, Non-Tinted, Diffused LED (3 wire)							
HE Red, Green	65°	635/565	5/8	10	2.1/2.3	559-3501-007F	113-8319

361094/405984

Mftrs. List No.	Order Code	Price Each 1+	10+	50+	100+	250+
Diffused LED						
559-0202-007F	**113-8323●**	1.05	0.74	0.64	0.59	0.57
559-0302-007F	**113-8324●**	1.03	0.74	0.64	0.57	0.56
559-0103-007F	**113-8325●**	1.20	0.85	0.72	0.67	0.64
559-0203-007F	**113-8326●**	1.20	0.85	0.72	0.67	0.64
559-0303-007F	**113-8328●**	1.20	0.85	0.72	0.67	0.64
559-2101-007F	**113-8316●**	0.90	0.64	0.54	0.50	0.48
559-2201-007F	**113-8317●**	0.90	0.64	0.54	0.50	0.48
559-2301-007F	**113-8318●**	0.90	0.64	0.54	0.50	0.48
559-5101-007F	**113-8320●**	1.02	0.73	0.63	0.57	0.55
Non-Tinted, Non-Diffused (water clear) LED						
559-6101-007F	**113-8321●**	1.73	1.25	1.05	0.97	0.94
Bi-Colour, Non-Tinted, Diffused LED (3 wire)						
559-3501-007F	**113-8319●**	1.52	1.26	1.03	0.97	0.82

5mm

multicomp



A range of panel mounting LED indicators in high quality bright chrome or black chrome plated brass housings. Fitted with fixing nut and washer. **CE** approved.

Bezel=5.0 x 9.5 dia (Prominent), 3.0 x 9.5 (Recessed) Total L behind bezel=12.0 (Prominent), 15.0 (Recessed) Mounting hole dia=8.0, Shorter lead cathode

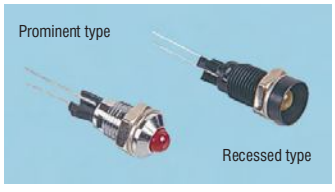
Colour	Luminous Intensity (typ)	Forward Current	Forward Voltage (max)	Wavelength (typ)	Mftrs. List No.	Order Code
Bright Chrome - Prominent						
HE Red	20mcd	45mA	2.6V	625nm	MC19040003	110-5245
Green	25mcd	45mA	2.6V	565nm	MC19040001	110-5246
Yellow	25mcd	45mA	2.6V	590nm	MC19040002	110-5247
Orange	20mcd	30mA	2.6V	625nm	MC19040008	110-5248
Blue	6mcd	50mA	4.4V	475nm	MC19040007	110-5249
Bright Chrome - Recessed						
HE Red	27mcd	45mA	2.6V	625nm	MC19050003	110-5250
Green	30mcd	45mA	2.6V	565nm	MC19050001	113-9520
Yellow	27mcd	45mA	2.6V	590nm	MC19050002	110-5251
Orange	27mcd	30mA	2.6V	625nm	MC19050008	110-5252
Blue	7mcd	50mA	4.4V	475nm	MC1905007	110-5253
Black Chrome - Prominent						
HE Red	20mcd	45mA	2.6V	625nm	MC19041003	110-5254
Green	25mcd	45mA	2.6V	565nm	MC19041001	110-5256
Yellow	25mcd	45mA	2.6V	590nm	MC19041002	110-5257
Orange	20mcd	30mA	2.6V	625nm	MC19041008	113-9523
Blue	6mcd	50mA	4.4V	475nm	MC19041007	110-5258
Black Chrome - Recessed						
HE Red	27mcd	45mA	2.6V	625nm	MC19051003	110-5259
Green	30mcd	45mA	2.6V	565nm	MC19051001	110-5260
Yellow	27mcd	45mA	2.6V	590nm	MC19051002	110-5261
Orange	27mcd	30mA	2.6V	625nm	MC19051008	113-9524
Blue	7mcd	50mA	4.4V	475nm	MC19051007	110-5262

206469

Colour	Order Code	Price Each 1+	25+	100+	250+	500+
Bright Chrome - Prominent						
HE Red	**110-5245●**	1.39	1.22	1.03	0.78	0.72
Green	**110-5246●**	1.39	1.22	0.75	0.58	0.54
Yellow	**110-5247●**	1.37	1.23	0.79	0.59	0.57
Orange	**110-5248●**	0.88	0.84	0.79	0.59	0.57
Blue	**110-5249●**	2.22	2.15	1.98	1.57	1.50
Bright Chrome - Recessed						
HE Red	**110-5250●**	1.37	1.23	0.79	0.59	0.57
Green	**113-9520●**	1.37	1.23	0.79	0.59	0.57
Yellow	**110-5251●**	1.37	1.23	0.79	0.59	0.57
Orange	**110-5252●**	0.88	0.84	0.79	0.59	0.57
Blue	**110-5253●**	2.22	2.15	1.98	1.57	1.50
Black Chrome - Prominent						
HE Red	**110-5254●**	1.45	1.33	0.82	0.67	0.62
Green	**110-5256●**	1.45	1.33	0.82	0.67	0.62
Yellow	**110-5257●**	1.45	1.33	0.82	0.67	0.62
Orange	**113-9523●**	0.91	0.89	0.82	0.67	0.62
Blue	**110-5258●**	2.36	2.25	2.13	1.64	1.59
Black Chrome - Recessed						
HE Red	**110-5259●**	1.45	1.33	1.15	0.67	0.62
Green	**110-5260●**	1.45	1.33	1.15	0.67	0.62
Yellow	**110-5261●**	1.45	1.33	1.15	0.67	0.62
Orange	**113-9524●**	0.91	0.89	0.82	0.67	0.62
Blue	**110-5262●**	2.36	2.25	2.13	1.64	1.59

5mm

MENTOR



Panel mounting LEDs in bright or black chrome plated brass bezels. The LED is detachable from its housing. The indicators are available with either recessed or prominent LEDs.

Body length (overall)= 22.3 (prominent), 23.3 (recessed)
Bezel dia=9.5 Mounting hole dia=8.2
Thread=M8 x 0.75 Short lead is cathode

Operating temperature -40°C to ++85°C Viewing angle 120°
Maximum power dissipation 100mW

RL Re-reeling available

Farnell

LED Indicators, 5mm Lens Diameter - continued

5mm - continued

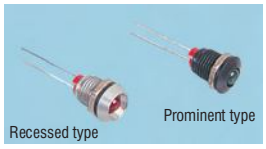
	I_F max.	V_F typ.	V_R max.	Typ. Lum. Intensity (mcd)
Red	50mA	1.6V	5V	6 @ 10mA
Green	30mA	2.4V	5V	9 @ 10mA
Yellow	30mA	2.4V	5V	9 @ 10mA

206590

Colour	Order Code	Price Each 1+	50+	100+
Prominent - Bright Chrome				
Red	**121-5783●**	3.66	2.83	2.15
Green	**121-5788●**	3.66	2.83	2.15
Yellow	**121-5786●**	3.66	2.83	2.15
Recessed - Bright Chrome				
Red	**121-5777●**	3.66	2.83	2.15
Yellow	**121-5779●**	3.66	2.83	2.15
Prominent - Black Chrome				
Red	**121-5785●**	3.01	2.27	1.81
Green	**121-5789●**	3.38	2.55	2.03
Yellow	**121-5787●**	3.38	2.55	2.03
Recessed - Black Chrome				
Red	**121-5778●**	3.26	2.52	1.94
Green	**121-5782●**	3.38	2.55	1.39
Yellow	**121-5780●**	3.01	1.29	1.24

5mm, Sealed

BULGIN



Body length=14.2, Bezel dia=10.3
Mounting hole
dia=8.0 Thread=0.312" x 32 TPI
Max panel thickness=5.6
Long lead is cathode

Waterproofed to **IP66**. The aluminium threaded bodies are either clear or black anodised, and are available with either prominent or recessed LEDs.

Operating temperature -40°C to +100°C Maximum power dissipation 105mW

	I_F max.	V_F typ.	V_R max.	Typ. Lum. Intensity (mcd)
Red	35mA	2V	5V	6 @ 20mA
Green	35mA	2.2V	5V	6 @ 20mA
Yellow	35mA	2.1V	5V	6 @ 20mA

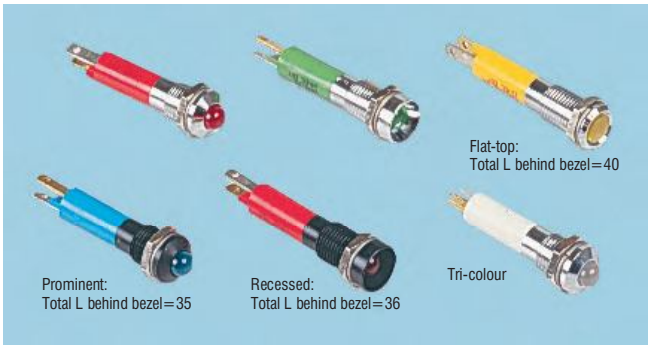
206245

Colour	Order Code	Price Each 1+	25+	100+	250+	500+
Red	**178-171●**	5.00	4.67	4.46	4.26	4.06
Green	**178-172●**	5.00	4.67	4.46	4.26	4.06
Yellow	**178-173●**	5.00	4.67	4.46	4.26	4.07
Red	**178-174●**	5.00	4.67	4.46	4.26	4.06
Green	**178-175●**	5.00	4.67	4.46	4.26	4.06
Yellow	**178-176●**	5.00	4.67	4.46	4.26	4.07
Red	**178-177●**	5.17	4.68	4.13	3.79	3.49
Green	**178-178●**	5.44	4.93	4.34	3.80	3.50
Yellow	**178-179●**	5.44	4.93	4.34	3.80	3.50
Red	**178-180●**	5.18	4.69	4.14	3.80	3.50
Green	**178-181●**	5.44	4.93	4.34	3.80	3.50
Yellow	**178-182●**	5.18	4.69	4.14	3.80	3.50

5mm with Integral Resistor

Single, Flashing and Tri-colour

CML INNOVATIVE TECHNOLOGIES



All types: Bezel dia.=9.5, Thread=M8 x 0.75, Mounting hole dia.=8.
Tab connections=2.8 x 0.8 (except tri-colour tabs=2 x 0.5).
Tinned tab indicates cathode (–), common cathode on tri/colour.

A range of panel mounting LED indicators with integral resistor to permit direct connection to 12V or 24V dc supplies. The 5mm LEDs are fitted in high quality bright chrome or black chrome plated brass housings, fitted with fixing nut and washer. Connection is by faston/solder tab terminals.

Available in dome-top, recessed and flat-top LED styles. The tri-colour indicators have HE red and green LEDs, both LEDs connected gives yellow. **CE** approved.

Typ. Luminous Intensity at Operating Current	Red	HE Red	Green	Yellow	Blue
Prominent 12V	—	30mcd	40mcd	38mcd	12mcd
Prominent 24V	—	22mcd	27mcd	27mcd	10mcd
Recessed 12V	—	38mcd	50mcd	40mcd	12mcd
Recessed 24V	—	30mcd	35mcd	30mcd	10mcd
Flat-top 12V	—	14.5mcd	13.5mcd	12.5mcd	—
Flat-top 24V	1.2mcd	11mcd	10mcd	9mcd	—
Flashing	—	12.5mcd	—	—	—
Tri-colour Prominent/Recessed	Red 10mcd + Green 20mcd				
Tri-colour Flat-top	Red 2.5mcd + Green 2.5mcd				

206328

Colour	Order Code	Price Each 1+	25+	100+	250+
Bright Chrome - Flat-Top					
12V HE Red	**110-5264●**	4.04	3.74	3.18	1.92
12V Red	**110-5263●**	4.04	3.74	2.47	1.92
12V Yellow	**113-9487●**	4.04	3.74	3.18	1.92
12V Green	**113-9482●**	4.04	3.74	2.47	1.92
24V Red	**110-5265●**	4.04	2.69	2.47	1.92
24V HE Red	**110-5268●**	4.04	3.74	2.47	1.92
24V Yellow	**113-9500●**	4.04	3.74	2.47	1.92
24V Green	**110-5266●**	4.04	3.74	3.18	1.92
12V HE Red, Green, Yellow	**110-5269●**	3.39	3.32	3.08	2.42
24V HE Red, Green, Yellow	**113-9499●**	6.82	5.98	3.97	3.11
Bright Chrome - Dome-Top					
12V HE Red	**110-5270●**	3.11	2.87	1.81	1.69
12V Yellow	**110-5272●**	2.77	1.75	1.61	1.51
12V Green	**110-5271●**	3.11	1.96	1.81	1.69
12V Blue	**113-9479●**	4.84	4.75	4.66	3.85
24V HE Red	**110-5273●**	3.11	2.87	1.81	1.69
24V Yellow	**110-5275●**	2.77	2.56	1.61	1.51
24V Green	**110-5274●**	3.11	2.87	1.81	1.69
24V Blue	**110-5276●**	5.39	4.91	4.81	3.85
12V HE Red, Green, Yellow	**110-5278●**	4.44	4.27	3.20	2.51
24V HE Red, Green, Yellow	**110-5281●**	4.17	3.92	2.61	2.44
Black Chrome - Dome-Top					
12V HE Red	**110-5290●**	2.96	2.74	1.84	1.71
12V Yellow	**110-5293●**	2.96	1.97	1.84	1.71
12V Green	**110-5291●**	2.96	2.74	1.84	1.71
12V Blue	**110-5294●**	3.57	3.40	3.24	3.09
24V HE Red	**110-5295●**	2.96	2.74	1.84	1.71
24V Yellow	**110-5297●**	2.96	2.74	1.84	1.71
24V Green	**110-5296●**	2.96	2.74	1.84	1.71
24V Blue	**110-5298●**	4.83	4.72	4.63	4.04
12V HE Red, Green, Yellow	**110-5312●**	4.66	3.82	3.54	2.75
24V HE Red, Green, Yellow	**110-5311●**	4.44	3.56	2.98	2.69
Bright Chrome - Recessed					
12V HE Red	**110-5282●**	2.77	1.75	1.61	1.51
12V Yellow	**110-5284●**	2.77	1.75	1.61	1.51
12V Green	**110-5283●**	2.77	2.56	2.22	1.51
12V Blue	**110-5285●**	4.09	4.01	3.91	3.44
24V HE Red	**110-5286●**	2.77	2.56	1.61	1.51
24V Yellow	**110-5288●**	2.77	1.75	1.61	1.51
24V Green	**110-5287●**	2.77	2.56	1.61	1.51
24V Blue	**110-5289●**	4.09	4.01	3.91	3.44
12V HE Red, Green, Yellow	**110-5307●**	3.63	3.45	3.20	2.51
24V HE Red, Green, Yellow	**110-5308●**	4.17	2.80	2.61	2.44
Black Chrome - Recessed					
12V HE Red	**110-5299●**	2.96	2.74	1.84	1.71
12V Yellow	**110-5301●**	2.96	2.74	1.84	1.71
12V Green	**110-5300●**	2.96	2.74	1.84	1.71
12V Blue	**110-5302●**	4.74	4.66	4.56	4.04
24V Red	**110-5315●**	3.17	2.55	2.14	1.94
24V HE Red	**110-5303●**	2.96	2.74	1.84	1.71
24V Yellow	**110-5305●**	2.96	1.97	1.84	1.71
24V Green	**110-5304●**	2.96	1.97	1.84	1.71
24V Blue	**110-5306●**	4.74	4.66	4.56	4.04
12V HE Red, Green, Yellow	**110-5314●**	4.03	3.82	3.54	2.75
24V HE Red, Green, Yellow	**110-5313●**	4.34	3.52	2.96	2.62
Bright Chrome - Dome-Top - Flashing					
24V Red	**110-5277●**	2.85	2.68	1.83	1.73
Black Chrome - Dome-Top - Flashing					
24V Red	**110-5316●**	3.59	2.91	2.44	2.24
Black Chrome - Recessed - Flashing					
24V Red	**113-9533●**	3.59	2.91	2.44	2.24

5mm, Sunlight Readable with Integral Resistor

24V / 28V, ac / dc

NLD Electronic GmbH



Prominent

- On-board half-wave rectifier
- 500mm wire terminals
- IP67 rated
- 8mm diameter mounting hole

New



Recessed

LED Size	5mm
Viewing Angle	60°
Operating Current (AC)	9mA
Operating Current (DC)	17mA
Operating Temperature	-20°C to +60°C

Colour	Voltage Rating (V)	Luminous Intensity (mcd)	Dominant Wavelength (nm)	Mftrs. List No.	Order Code
Prominent - Satin Chrome Bezel					
Red	24	1250	630	NLD29W803500500	165-5539
Yellow	24	1200	589	NLD29W803520500	165-5540
Green	24	1400	525	NLD29W803550500	165-5542
Blue	24	700	470	NLD29W803570500	165-5543

RL Re-reeling available

Farnell

Colour	Voltage Rating	Luminous Intensity	Dominant Wavelength	Mftrs. List No.	Order Code
Prominent - Satin Chrome Bezel					
White	24	1100	—	NLD29W8035W0500	165-5544
Red	28	1250	630	NLD29W804500500	165-5545
Yellow	28	1200	589	NLD29W804520500	165-5546
Green	28	1400	525	NLD29W804550500	165-5547
Blue	28	700	470	NLD29W804570500	165-5548
White	28	1100	—	NLD29W8045W0500	165-5549
Prominent - Black Chrome Bezel					
Red	24	1250	630	NLD29W813500500	165-5550
Yellow	24	1200	589	NLD29W813520500	165-5551
Green	24	1400	525	NLD29W813550500	165-5552
Blue	24	700	470	NLD29W813570500	165-5554
White	24	1100	—	NLD29W8135W0500	165-5555
Red	28	1250	630	NLD29W814500500	165-5556
Yellow	28	1200	589	NLD29W814520500	165-5557
Green	28	1400	525	NLD29W814550500	165-5558
Blue	28	700	470	NLD29W814570500	165-5559
White	28	1100	—	NLD29W8145W0500	165-5560
Recessed - Satin Chrome Bezel					
Red	24	1250	630	NLD29W903500500	165-5561
Yellow	24	1200	589	NLD29W903520500	165-5562
Green	24	1400	525	NLD29W903550500	165-5563
Blue	24	700	470	NLD29W903570500	165-5564
White	24	1100	—	NLD29W9035W0500	165-5566
Red	28	1250	630	NLD29W904500500	165-5567
Yellow	28	1200	589	NLD29W904520500	165-5568
Green	28	1400	525	NLD29W904550500	165-5569
Blue	28	700	470	NLD29W904570500	165-5570
White	28	1100	—	NLD29W9045W0500	165-5571
Recessed - Black Chrome Bezel					
Red	24	1250	630	NLD29W913500500	165-5572
Yellow	24	1200	589	NLD29W913520500	165-5573
Green	24	1400	525	NLD29W913550500	165-5574
Blue	24	700	470	NLD29W913570500	165-5575
White	24	1100	—	NLD29W9135W0500	165-5576
Red	28	1250	630	NLD29W914500500	165-5578
Yellow	28	1200	589	NLD29W914520500	165-5579
Green	28	1400	525	NLD29W914550500	165-5580
Blue	28	700	470	NLD29W914570500	165-5581
White	28	1100	—	NLD29W9145W0500	165-5582

525397

Colour	Voltage	Order Code	Price Each 1+	10+	25+	100+	250+
Prominent - Satin Chrome Bezel							
Red	24V	**165-5539●**	3.99	3.23	2.76	2.45	2.33
Yellow	24V	**165-5540●**	4.35	3.52	3.01	2.67	2.54
Green	24V	**165-5542●**	5.07	4.10	3.50	3.11	2.97
Blue	24V	**165-5543●**	5.05	4.08	3.49	3.10	2.95
White	24V	**165-5544●**	5.33	4.31	3.68	3.26	3.11
Red	28V	**165-5545●**	3.99	3.23	2.76	2.45	2.33
Yellow	28V	**165-5546●**	4.35	3.52	3.01	2.67	2.54
Green	28V	**165-5547●**	5.07	4.10	3.50	3.11	2.97
Blue	28V	**165-5548●**	5.05	4.08	3.49	3.10	2.95
White	28V	**165-5549●**	5.33	4.31	3.68	3.26	3.11
Prominent - Black Chrome Bezel							
Red	24V	**165-5550●**	4.14	3.35	2.86	2.54	2.42
Yellow	24V	**165-5551●**	4.54	3.67	3.14	2.78	2.66
Green	24V	**165-5552●**	5.28	4.27	3.65	3.24	3.09
Blue	24V	**165-5554●**	5.28	4.27	3.65	3.24	3.09
White	24V	**165-5555●**	5.50	4.44	3.80	3.37	3.21
Red	28V	**165-5556●**	4.14	3.35	2.86	2.54	2.42
Yellow	28V	**165-5557●**	4.54	3.67	3.14	2.78	2.66
Green	28V	**165-5558●**	5.28	4.27	3.65	3.24	3.09
Blue	28V	**165-5559●**	5.28	4.27	3.65	3.24	3.09
White	28V	**165-5560●**	5.50	4.44	3.80	3.37	3.21
Recessed - Satin Chrome Bezel							
Red	24V	**165-5561●**	3.99	3.23	2.76	2.45	2.33
Yellow	24V	**165-5562●**	4.35	3.52	3.01	2.67	2.54
Green	24V	**165-5563●**	5.07	4.10	3.50	3.11	2.97
Blue	24V	**165-5564●**	5.05	4.08	3.49	3.10	2.95
White	24V	**165-5566●**	5.33	4.31	3.68	3.26	3.11
Red	28V	**165-5567●**	3.99	3.23	2.76	2.45	2.33
Yellow	28V	**165-5568●**	4.35	3.52	3.01	2.67	2.54
Green	28V	**165-5569●**	5.07	4.10	3.50	3.11	2.97
Blue	28V	**165-5570●**	5.05	4.08	3.49	3.10	2.95
White	28V	**165-5571●**	5.33	4.31	3.68	3.26	3.11
Recessed - Black Chrome Bezel							
Red	24V	**165-5572●**	4.14	3.35	2.86	2.54	2.42
Yellow	24V	**165-5573●**	4.54	3.67	3.14	2.78	2.66
Green	24V	**165-5574●**	5.28	4.27	3.65	3.24	3.09
Blue	24V	**165-5575●**	5.28	4.27	3.65	3.24	3.09
White	24V	**165-5576●**	5.50	4.44	3.80	3.37	3.21
Red	28V	**165-5578●**	4.14	3.35	2.86	2.54	2.42
Yellow	28V	**165-5579●**	4.54	3.67	3.14	2.78	2.66
Green	28V	**165-5580●**	5.28	4.27	3.65	3.24	3.09
Blue	28V	**165-5581●**	5.28	4.27	3.65	3.24	3.09
White	28V	**165-5582●**	5.50	4.44	3.80	3.37	3.21

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5mm, High Contrast with Integral Resistor, IP67 Rated

24V dc



Total L behind bezel=38, Bezel dia.=9.5, Thread=M8 x 0.75, Mounting hole dia.=8, Tab Connections=2.8 x 0.8

A range of LED panel-mounting indicators with integral resistor to permit direct connection to 24V dc supplies. They incorporate a white diffused 5mm LED to give a high 'on/off' contrast and are fitted in high quality prominent or recessed, bright chrome or black chrome brass housings, fitted with fixing nut and washer. Connection is by faston/solder tab terminals.

Operating voltage: 24V dc
Operating Temperature: -20°C to +50°C
Reverse Voltage (max.) 80V
Operating current: 17mA

Typical luminous intensity (mcd)	HE Red	Green	Yellow
	60	40	40

206577

Colour	Order Code	Price Each 1+	10+	25+	50+	100+
Matt Chrome (Brushed Satin) - Prominent						
HE Red	**110-5340●**	2.90	2.77	2.55	2.01	1.89
Green	**110-5341●**	2.90	2.77	2.55	2.01	1.89
Yellow	**110-5342●**	2.90	2.77	2.55	2.01	1.89
Matt Chrome (Brushed Satin) - Recessed						
HE Red	**110-5347●**	2.90	2.77	2.55	2.01	1.89
Green	**110-5348●**	2.90	2.77	2.55	2.01	1.89
Yellow	**110-5349●**	2.90	2.77	2.55	2.01	1.89
Black Chrome - Prominent						
HE Red	**110-5343●**	2.90	2.77	2.55	2.01	1.89
Green	**110-5344●**	2.90	2.77	2.55	2.01	1.89
Yellow	**110-5345●**	2.90	2.77	2.55	2.01	1.89
Black Chrome - Recessed						
HE Red	**110-5350●**	2.90	2.77	2.55	2.01	1.89
Green	**110-5351●**	2.90	2.77	2.55	2.01	1.89
Yellow	**110-5352●**	2.90	2.77	2.55	2.01	1.89

5mm with Integral Resistor

12V ac and 24V ac



A range of panel mounting indicators with integral resistor to permit direct connection to 12V ac and 24V ac supplies. They are fitted in a high quality satin chrome or black chrome brass housing, fitted with fixing nut and washer. Connection is by faston/solder tab terminals. **CE** approved.

Prominent: Total L behind bezel=44, Recessed: Total L behind bezel=46,
All types: Bezel dia=9.5, thread=M8 x 0.75, mounting hole dia=8, tab connections=2.8 x 0.8

Operating voltage (±10%) 12V ac, 24V ac
Operating current (max.) 20mA
Operating temperature range -55°Cto +70°C
Life Expectancy 60000 hours min

Typical luminous intensity (mcd) at operating current:

	HE Red	Green	Yellow
Prominent 12Vac	23	30	—
Prominent 24Vac	16.5	20	20
Recessed 12Vac	28.5	37.5	—
Recessed 24Vac	22.5	26.5	22.5

206470

Colour	Order Code	Price Each 1+	25+	100+	250+	500+
Bright Chrome - Prominent						
12V ac HE Red	**113-9522●**	2.71	2.63	1.92	1.75	1.69
12V ac Green	**110-5324●**	2.71	2.63	1.92	1.75	1.69
24V ac HE Red	**110-5325●**	2.66	2.56	2.42	1.72	1.66
24V ac Green	**110-5326●**	2.71	2.63	2.47	1.75	1.69
24V ac Yellow	**110-5327●**	2.71	2.00	1.94	1.75	1.69
Bright Chrome - Recessed						
12V ac HE Red	**110-5330●**	2.66	1.96	1.89	1.72	1.66
12V ac Green	**110-5331●**	1.85	1.66	1.52	1.40	1.29
24V ac HE Red	**110-5332●**	2.71	2.63	1.94	1.75	1.69
24V ac Green	**110-5333●**	2.71	2.63	1.94	1.75	1.69
24V ac Yellow	**110-5335●**	2.58	1.91	1.85	1.68	1.61
Black Chrome - Prominent						
24V ac HE Red	**110-5328●**	2.83	2.09	2.00	1.85	1.81
24V ac Green	**110-5329●**	2.83	2.09	2.00	1.85	1.81
Black Chrome - Recessed						
24V ac HE Red	**110-5337●**	2.83	2.73	2.57	1.85	1.81
24V ac Green	**110-5338●**	2.75	2.68	1.96	1.81	1.74
24V ac Yellow	**110-5339●**	2.75	2.02	1.96	1.81	1.74

Over 480,000 products online GO

RL Re-reeling available

Farnell

LED Indicators, 5mm Lens Diameter - continued

5mm, Sunlight Readable with Integral Resistor, IP67 Rated

24V dc



Total L behind bezel=38, Bezel dia.=9.5, Thread=M8 x 0.75, Mounting hole dia.=8, Tab Connections=2.8 x 0.8

A range of Sunlight Readable panel-mounting indicators with integral resistor to permit direct connection to 24V dc supplies. The 5mm LED's are fitted in high quality prominent or recessed, bright chrome or black chrome brass housings, fitted with fixing nut and washer. Connection is by faston/solder tab terminals.

Operating voltage: 24V dc Reverse Voltage (max.) 80V
Operating Temperature: -20°Cto +50°C Operating current: 17mADC / 9mA AC

Typical luminous intensity (cd/m²)	Mega Red	Mega Green	Mega Yellow	Mega Blue	White
	24750	99440	38500	21640	46410

206578

Colour	Order Code	Price Each 1+	10+	25+	50+	100+
Bright Chrome - Prominent						
Red	**110-5353●**	4.91	4.58	4.11	3.45	3.03
Green	**110-5355●**	11.21	10.42	9.41	8.48	7.77
Yellow	**110-5354●**	6.08	5.66	5.06	4.90	4.73
Blue	**113-9506●**	9.75	9.20	8.27	7.84	7.14
White	**113-9511●**	9.04	8.50	7.75	6.16	5.82
Bright Chrome - Recessed						
Red	**110-5356●**	4.52	4.20	3.79	3.68	3.32
Green	**110-5357●**	10.21	9.28	8.03	7.67	6.42
White	**110-5359●**	8.25	7.68	6.91	6.40	6.15
Black Chrome - Prominent						
Red	**110-5361●**	4.72	4.42	3.97	3.30	2.51
Green	**110-5362●**	10.17	9.45	8.53	7.02	6.42
Black Chrome - Recessed						
Red	**110-5363●**	4.90	4.79	4.26	3.77	3.11
Yellow	**110-5364●**	6.31	5.87	5.28	4.92	4.70

5mm with Integral Resistor

110V ac and 240V ac



Prominent: Total L behind bezel=44
Recessed: Total L behind bezel = 46

All types: Bezel dia.=9.5, thread=M8 x 0.75, mounting hole dia.=8, Tab connections=2.8 x 0.8

A range of panel mounting indicators with integral resistor to permit direct connection to 110V ac and 240V ac supplies. The 5mm LEDs are fitted in high quality satin chrome or black chrome brass housings, fitted with fixing nut and washer. Connection is by faston/solder tab terminals. **CE** approved.

Operating voltage: 110V nom., 135V max. 110V nom., 135V max. Operating temperature range -55°C to +60°C
Operating current (nom.)6mA(110V)6mA(230) Life Expectancy 60000 hours min.

Typ. luminous intensity at operating current

		Red	Green	Yellow
Prominent / Recessed	110V	36mcd	10mcd	15mcd
Prominent / Recessed	230V	22mcd	10mcd	15mcd

206313

Colour	Order Code	Price Each 1+	25+	50+	100+	250+
Satin Chrome - Prominent						
110V Red	**110-5320●**	6.10	4.05	3.88	3.55	3.40
110V Green	**110-5321●**	6.10	4.05	3.88	3.55	3.40
110V Yellow	**110-5323●**	6.10	4.05	3.88	3.55	3.40
230V Red	**113-9490●**	6.10	5.98	3.88	3.55	3.40
230V Green	**113-9489●**	6.10	4.05	3.88	3.55	3.40
Satin Chrome - Recessed						
110V Red	**113-9477●**	6.10	4.05	3.88	3.55	3.40
110V Green	**110-5370●**	6.10	4.05	3.88	3.55	3.40
110V Yellow	**110-5372●**	6.10	4.05	3.88	3.55	3.40
230V Red	**110-5373●**	6.10	4.05	3.88	3.55	3.40
230V Green	**110-5374●**	6.10	4.05	3.88	3.55	3.40
230V Yellow	**110-5375●**	6.10	5.98	3.88	3.55	3.40
Black Chrome - Prominent						
110V Red	**110-5365●**	6.49	4.32	4.16	3.77	3.63
110V Green	**110-5366●**	6.49	6.37	4.16	3.77	3.63
230V Red	**110-5367●**	6.49	4.32	4.16	3.77	3.63
230V Green	**110-5368●**	6.49	6.37	4.16	3.77	3.63
230V Yellow	**110-5369●**	6.49	4.32	4.16	3.77	3.63

Colour	Order Code	Price Each 1+	25+	50+	100+	250+
Black Chrome - Recessed						
110V Green	**110-5376●**	6.49	4.32	4.16	3.77	3.63
230V Red	**110-5378●**	6.49	4.32	4.16	3.77	3.63
230V Green	**110-5379●**	6.32	4.20	4.06	3.67	3.55
230V Yellow	**110-5380●**	5.34	3.55	3.43	3.10	3.00

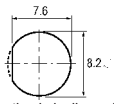
5mm/T1¾ - IP64 Rated

SLOAN

Damage Resistant, Rotation Proof



L=29.0 (overall), Bezel=1.5 x 11.5 dia
Max panel thickness=10.0, Polarity indicated on base, Tab connections 2.8 x 0.5



Mounting hole dimensions

Waterproofed to **IP64** rating. Rugged, damage resistant indicators with a 'D' shaped mounting hole making them rotation proof. Nickel plated, low profile, brass body with a fixed poly-carbonate transparent fresnel lens. The indicators seal to panels with an inset 'O' ring. Fitted with fixing nut and washer. Connection is via two faston/solder tab terminals.

Colour	Typ Lum Intensity (mcd) @ I_F = 20mA	V_F (mA) (max)	I_F (mA) (max)	PIV (max)	Mftrs. List No.
Red	160	1.7	50	4	344-4-S-1-R1-R510-0
Blue	18	3.4	40	5	344-4-S-1-C1-B61D-0

206445

Colour	Mftrs. List No.	Order Code	Price Each 1+	5+	10+
Red	344-4-S-1-R1-R510-0	**121-6271●**	6.61	6.21	5.95
Blue	344-4-S-1-C1-B61D-0	**121-6273●**	6.61	6.21	5.95

Panel Mounting – IP64 Rated

SLOAN

24Volt DC, Wide Viewing Angle



High quality, panel mounting, multi-chip indicators waterproofed to **IP64** rating. Nickel plated brass body with integral resistor. The domed lens offering a very wide angle of visibility. Seals to panel with an inset 'O' ring. Connection is via two solder bucket terminals

L=27.5 (overall), Lens dia=5.6, Bezel dia=10.2
Mounting hole dia=6.2, Max. panel thickness 6.5

Viewing angle = 180°, No. of chips = 6
Supply Voltage = 24V
Forward current 20mA
Operating Temperature -30°C to +60°C

206421

Colour	Luminous Intensity (typ.)	Peak Wavelength
Red	35mcd	635nm
Green	30mcd	565nm

Colour	Mftrs. List No.	Order Code	Price Each 1+	5+	10+
Red	614-4-S-1-R5M9-D	**121-6277●**	8.05	7.56	7.24
Green	614-4-S-1-G5M9-D	**121-6278●**	8.05	7.56	7.24

8.1mm Panel Mount - IP67 Rated



Stainless steel
534 Series



Black anodised aluminium
698 Series



Bright nickel plated brass
537 Series

Dia. - Bezel = 12.7mm, Mounting Hole = 8.1mm
Depth (Behind Panel) = 24mm

- Operates over a wide voltage range
- Full internal potting to resist shock and vibration
- Sealed to IP67
- Fitted with internal diode to provide re-verse voltage protection to 1000V dc

534 Series - Stainless Steel

Colour	Lum.Intensity I_v@ 20mA (mcd)	Wavelength (nm)	Mftrs. List No.	Order Code
12 - 24V dc				
Red	11000	643	534-501-63	149-8499
Yellow	16000	591	534-521-63	149-8500
Green	23000	527	534-532-63	149-8501
Blue	7000	470	534-930-63	149-8503
White	14000	–	534-997-63	149-8504

RL Re-reeling available

Colour	Mftrs. List No.	Order Code	Price Each 1+	10+	25+	50+	100+
12 - 24V dc							
Red	534-501-63	**149-8499●**	15.67	12.93	11.50	10.77	10.34
Yellow	534-521-63	**149-8500●**	15.67	12.93	11.50	10.77	10.34
Green	534-532-63	**149-8501●**	16.85	13.90	12.35	11.58	11.12
Blue	534-930-63	**149-8503●**	16.85	13.90	12.35	11.58	11.12
White	534-997-63	**149-8504●**	16.85	13.90	12.35	11.58	11.12

537 Series - Bright Nickel Plated Brass

Colour	Lum.Intensity I_v@ 20mA (mcd)	Wavelength (nm)	Mftrs. List No.	Order Code
12 - 28V dc				
Red	11000	643	537-501-63	149-8510
Yellow	16000	591	537-521-63	149-8511
Green	23000	527	537-532-63	149-8512
Blue	7000	470	537-930-63	149-8513
White	14000	–	537-997-63	149-8515
110V ac				
Red	11000	643	537-501-75	149-8516

Colour	Mftrs. List No.	Order Code	Price Each 1+	10+	25+	50+	100+
12 - 28V dc							
Red	537-501-63	**149-8510●**	12.52	10.33	9.18	8.61	8.26
Yellow	537-521-63	**149-8511●**	12.52	10.33	9.18	8.61	8.26
Green	537-532-63	**149-8512●**	14.01	11.56	10.27	9.63	9.24
Blue	537-930-63	**149-8513●**	14.01	11.56	10.27	9.63	9.24
White	537-997-63	**149-8515●**	14.01	11.56	10.27	9.63	9.24
110V ac							
Red	537-501-75	**149-8516●**	12.52	10.33	9.18	8.61	8.26

698 Series - Black Anodised Aluminium

Colour	Lum.Intensity I_v@ 20mA (mcd)	Wavelength (nm)	Mftrs. List No.	Order Code
12 - 28V dc				
Red	11000	643	698-501-63	149-8557
Yellow	16000	591	698-521-63	149-8558
Green	23000	527	698-532-63	149-8559
Blue	7000	470	698-930-63	149-8560
White	14000	–	698-997-63	149-8561

497194

Colour	Mftrs. List No.	Order Code	Price Each 1+	10+	25+	50+	100+
12 - 28V dc							
Red	698-501-63	**149-8557●**	16.29	13.44	11.94	11.20	10.75
Yellow	698-521-63	**149-8558●**	16.29	13.44	11.94	11.20	10.75
Green	698-532-63	**149-8559●**	17.46	14.41	12.81	12.01	11.53
Blue	698-930-63	**149-8560●**	17.46	14.41	12.81	12.01	11.53
White	698-997-63	**149-8561●**	17.46	14.41	12.81	12.01	11.53

5mm – IP67 Rated



Overall L=22.8
Total L behind bezel=9.8
Bezel dia. (Hexagonal)=10.2 (9.5AF)
Mounting hole=6.35 dia.

This range of LED indicators have a flat top fresnel lens. They are sealed to **IP67** rating fitted with sealing rings, fixing nut and washer.

Colour	View Angle	Lum Intensity (mcd) @ I_F = 20mA (typ.)	I_F (max)	V_F (typ.)	PIV (max)	Order Code
Red	130°	100	30	2.2V	3	973-7251
Green	130°	160	30	2.2V	3	973-7260
Yellow	130°	100	30	2.2V	3	973-7278
Operating Temperature		-40°C to +86°C				

206522

Colour	Order Code	Price Each 1+	10+	25+	50+	100+
Red	**973-7251●**	14.32	12.61	11.81	9.51	8.70
Green	**973-7260●**	14.32	12.61	11.81	9.51	8.70
Yellow	**973-7278●**	14.32	12.61	11.81	9.51	8.70

5mm, Black Plastic Bezel, Snap-In Fixing

2V dc, 12V dc, 24V dc Standard and Flashing



A range of cost effective snap-in fixing LED panel-mounting indicators with integral resistors to permit direct connection to 12V dc and 24V dc they are also available without the resistors. The LED's are fitted in black housings with a choice of either prominent or recessed bezel.

Body Length behind bezel=10.0 (Prominent), 12.0 (Recessed), Bezel dia.=9.5,
Mounting hole dia.=8, Panel Thickness=1.0 - 3.0, Flying Lead Length=450mm or 900mm

Operating Temperature -20°C to +50°C

Luminous intensity (mcd) typ.@ V_s, I_F

	HE Red	Green	Yellow
2V dc @ 10mA	45	40	40
12V dc @ 16mA	70	40	40
24V dc @ 10mA	45	25	25
3.5 - 13.5V dc @ 38 - 56mA Flashing	45	-	-
24V dc @38 - 56mA Flashing	45	-	-

454489

Colour	Order Code	Price Each 1+	25+	50+	100+	250+
Prominent - 450mm Flying Leads						
2V dc HE Red	**110-5381●**	0.94	0.89	0.83	0.56	0.52
2V dc Green	**110-5384●**	0.94	0.89	0.83	0.56	0.52
2V dc Yellow	**110-5382●**	0.94	0.89	0.83	0.56	0.52
12V dc HE Red	**110-5385●**	0.98	0.91	0.86	0.70	0.59
12V dc Green	**110-5386●**	0.98	0.91	0.86	0.70	0.59
12V dc Yellow	**110-5387●**	0.98	0.91	0.86	0.70	0.59
24V dc HE Red	**110-5388●**	1.10	1.04	0.98	0.66	0.58
24V dc Green	**110-5389●**	0.98	0.91	0.86	0.70	0.59
24V dc Yellow	**110-5390●**	0.98	0.91	0.86	0.70	0.59
Prominent Flashing - 450mm Flying Leads						
3.5-13.5V dc HE Red	**110-5391●**	1.05	0.98	0.88	0.82	0.62
24V dc HE Red	**110-5392●**	1.26	1.14	1.06	0.76	0.64
Prominent - 900mm Flying Leads						
2V dc HE Red	**110-5393●**	0.94	0.89	0.83	0.56	0.52
2V dc Green	**110-5396●**	0.94	0.89	0.83	0.56	0.52
2V dc Yellow	**110-5394●**	0.94	0.89	0.83	0.56	0.52
12V dc HE Red	**110-5397●**	0.98	0.91	0.86	0.70	0.59
12V dc Green	**110-5398●**	0.98	0.91	0.86	0.70	0.59
12V dc Yellow	**110-5399●**	0.98	0.91	0.86	0.70	0.59
24V dc HE Red	**110-5400●**	0.98	0.91	0.86	0.70	0.59
24V dc Green	**110-5402●**	0.98	0.91	0.86	0.70	0.59
24v dc Yellow	**110-5403●**	0.98	0.91	0.86	0.70	0.59
Prominent Flashing - 900mm Flying Leads						
3.5-13.5V dc HE Red	**110-5404●**	1.05	0.98	0.88	0.78	0.62
Recessed - 450mm Flying Leads						
2V dc HE Red	**110-5405●**	0.94	0.89	0.83	0.56	0.52
2V dc Green	**110-5407●**	0.67	0.63	0.59	0.40	0.37
2V dc Yellow	**110-5406●**	0.94	0.89	0.83	0.56	0.52
12V dc HE Red	**110-5408●**	0.98	0.91	0.86	0.70	0.59
12V dc Green	**110-5409●**	0.98	0.91	0.86	0.70	0.59
12V dc Yellow	**110-5410●**	0.98	0.91	0.86	0.70	0.59
24V dc HE Red	**110-5411●**	1.10	1.04	0.98	0.66	0.58
24V dc Green	**110-5412●**	0.96	0.89	0.84	0.66	0.58
24V dc Yellow	**110-5414●**	0.98	0.91	0.86	0.70	0.59
Recessed Flashing - 450mm Flying Leads						
3.5-13.5V dc HE Red	**110-5404●**	1.05	0.98	0.88	0.78	0.62
Recessed - 900mm Flying Leads						
2V dc HE Red	**110-5417●**	0.94	0.89	0.83	0.56	0.52
2V dc Green	**110-5419●**	0.94	0.89	0.83	0.56	0.52
2V dc Yellow	**110-5418●**	0.94	0.89	0.83	0.56	0.52
12V dc HE Red	**110-5420●**	0.98	0.91	0.86	0.70	0.59
12V dc Green	**110-5421●**	0.98	0.91	0.86	0.70	0.59
24V dc HE Red	**110-5422●**	0.98	0.91	0.86	0.70	0.59
24V dc Green	**110-5423●**	0.98	0.91	0.86	0.70	0.59
24V dc Yellow	**110-5424●**	0.98	0.91	0.86	0.70	0.59

LED Indicators, 7mm Lens Diameter

Cable Assemblies for Tab Terminals



- Suitable for all voltage ranges
- Flying lead length is 300mm in red and black
- Cable assemblies suitable for all indicators with 2.0 x 0.55mm and 2.8 x 0.8mm tab terminations
- These assemblies fit all of the EBT ranges of LED Indicators and Xenon Flash Indicators. The 2.0 x 0.55mm fit the 3 & 5mm ranges and the 2.8 x 0.8mm fit the 10 & 16mm ranges and the Xenon Indicators

206585

Order Multiple=5		Price Each				
2.0 x 0.5mm	**Order Code**	5+	25+	50+	100+	250+
Red, 300mm	**110-5189●**	0.44	0.38	0.36	0.28	0.27
Black, 300mm	**110-5191●**	0.44	0.38	0.36	0.28	0.27
2.8 x 0.8mm						
Red, 300mm	**110-5192●**	0.34	0.29	0.27	0.21	0.20
Black, 300mm	**110-5193●**	0.34	0.29	0.27	0.21	0.20

12V dc, 24V dc, Sunlight Readable

Stainless Steel Housing



- Unique design
- Robust stainless steel housing for operating in harsh environments
- Low profile lens style
- Sealed to **IP67**
- Sunlight visible
- Full internal encapsulation

Mounting hole dia.=8.1, Overall L=36
Total L behind bezel=34, Bezel dia.=12.7, Tab connections 2.8 x 0.5

Typical luminous Intensity @ 20mA (mcd)	Red	Green	Yellow
12V dc	2750	6000	6000
24V dc	2750	6000	4800

RL Re-reeling available

LED Indicators, 7mm Lens Diameter - continued

12V dc, 24V dc, Sunlight Readable - continued

Stainless Steel Housing - continued

221726

Colour	Order Code	Price Each 1+	25+	50+	100+	250+
12V dc						
Red	**973-7898**	12.53	10.63	10.41	10.22	8.74
Green	**973-7901**	14.54	12.30	12.05	10.86	10.32
Yellow	**973-7910**	12.75	10.81	10.60	10.32	8.99
24V dc						
Red	**973-7928**	12.53	10.63	10.41	10.22	8.74
Green	**973-7936**	14.54	12.30	12.05	10.86	10.32
Yellow	**973-7944**	12.75	10.81	10.60	10.32	8.99

7mm, Sunlight Readable - IP66 Rated

12V & 24V dc



- 8.1mm mounting dia. panel indicator
- Sealed to **IP66**
- Sunlight readability
- Nickel plated Brass housing
- MTBF 90,000 hours
- Designed for push on spade connectors

L=33.0 (overall), Length behind bezel=29.3, Mounting hole dia.=8.1, Bezel dia.=11.5

Operating Voltage: 12V dc, 24V dc Operating Current: 20mA

Colour	Luminous Intensity @ 20mA	Wavelength
Red	2750mcd	660nm
Green	6000mcd	525nm
Yellow	4500mcd	595nm
White	3000mcd	–

Viewing angle: 120° Operating Temperature: - 20°C to +60°C

206571

Colour	Mftrs. List No.	Order Code	Price Each 1+	25+	50+	100+	250+
12V dc Red	508-501-21	**973-7448**	10.07	9.43	8.78	8.63	8.44
12V dc Green	508-532-21	**973-7464**	10.35	9.70	9.47	9.27	8.80
12V dc Yellow	508-521-21	**973-7456**	10.07	9.43	8.78	8.63	8.44
12V dc White	508-997-21	**973-7472**	10.35	9.70	9.47	9.27	8.80
24V dc Red	508-501-22	**973-7480**	10.07	9.43	8.78	8.63	8.44
24V dc Green	508-532-22	**973-7502**	10.35	9.70	9.47	9.27	8.80
24V dc Yellow	508-521-22	**973-7499**	11.35	10.63	9.91	9.73	9.52

7mm, IP67 Rated - Sunlight Readable

With Integral Resistor - 12V dc, 24V dc and 28V dc



A range of sunlight readable, high performance, panel mounting LED indicators. Sealed to **IP67** rating. Black anodised housing fitted with fixing nut and washer. Connection is via faston/solder tab terminals.

L=33.0 (overall), Length behind bezel=29.3,
Mounting Hole dia=8.1,
Tab connections=2.8 x 0.8, Polarity indicated on tab terminals

Operating Voltages	12V	24V	28V	Wavelength (nm)
Typ. Luminous Intensity				
Red	2750 mcd	2750 mcd	2750 mcd	660
Green	6000 mcd	6000 mcd	6000 mcd	525
Yellow	4500 mcd	4500 mcd	4500 mcd	590
Blue	2000 mcd	2000 mcd	2000 mcd	450
Reverse voltage protection		1000Vdc	Operating temp. range	-20°C to +60°C
Operating Current	20mA		Viewing angle	140°C

206437

Colour	Mftrs. List No.	Order Code	Price Each 1+	5+	10+	25+	50+
12V dc Red	677-501-21-R	**973-8398**	10.54	10.25	9.35	9.03	8.50
12V dc Green	677-532-21-G	**973-8401**	12.02	11.78	11.55	11.31	10.68
12V dc Yellow	677-521-21-Y	**973-8410**	9.72	9.53	9.33	9.15	8.62
12V dc Blue	677-930-21-B	**973-8428**	12.02	11.78	11.55	11.31	10.68
24V dc Red	677-501-22-R	**973-8436**	10.54	10.25	9.35	9.03	8.50
24V dc Green	677-532-22-G	**973-8444**	11.55	11.32	11.10	10.87	10.66
24V dc Yellow	677-521-22-Y	**973-8452**	10.54	10.25	9.35	9.03	8.50
24V dc Blue	677-930-22-B	**973-8460**	12.02	11.78	11.55	11.31	11.09
28V dc Red	677-501-23-R	**973-8479**	10.54	10.25	9.35	9.03	8.50
28V dc Green	677-532-23-G	**973-8487**	12.02	11.78	11.55	11.31	11.09
28V dc Yellow	677-521-23-Y	**973-8495**	9.34	9.10	8.30	8.01	7.55

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Panel Mount Indicators

7mm Mounting Hole



	Dimensions	Prominent
	Depth: Lamp to panel / Body	4.07mm / 22.10mm
	Diameter - Lens	4.07mm
	Diameter - Bezel	8.13mm
	Diameter - Mounting Hole	7mm
	Panel thickness (Max)	7mm
	Material - Housing	Chrome plated Brass
	Operating Temperature	-25°C to +85°C
	Expected Life	100,000 hours

Colour	Luminous Intensity I_V (mcd)	Forward Current If max (mA)	Forward Voltage V_f (V)	Mftrs. List No.	Order Code
Red	8	15	6	607-1112-120F	113-8333
Red	8	15	12	607-1112-130F	113-8336

361100

Colour	Voltage (V dc)	Order Code	Price Each 1+	10+	50+	100+	250+
Red	6	**113-8333**	2.69	1.85	1.54	1.40	1.22
Red	12	**113-8336**	2.98	2.05	1.67	1.58	1.34

LED Indicators, 7.5mm Lens Diameter

7.5mm, Domed Lens Nut Fixing

BOSS INDUSTRIAL MOULDINGS



Nickel plated body with polycarbonate fresnel lens.

Colour	I_F max. (mA)	V_F typ.	V_R max.	Typ. Lum. Intensity (mcd)
Red	80	2	3	2
Green	80	2.5	3	4.5
Yellow	80	2.5	3	4.5

L=14 (body & lens), Dia.=7.5, Mounting hole=6.5, Panel thickness=2.5

229062

	Order Code	Price Each 1+	50+	100+	250+	500+
Red	**945-0840**	1.43	1.34	1.19	1.00	0.92
Green	**945-0858**	2.42	2.21	1.92	1.44	1.30
Yellow	**945-0866**	2.42	2.21	1.92	1.44	1.30

Snap-In Fixing

8.0mm Dia. panel cutout



- Dual voltage - 110/230V ac rated
- Integral resistor and diode
- Quick snap-in fixing
- Panel thickness 0.8 to 1.6mm

L=30.9mm (overall), D=7.50mm (lens)

Mftrs. List No:	=	Order Code	L295000MAC	=	963-0805
L295000MAA	=	963-0783	L295000MAD	=	963-0813

These mains voltage rated LED indicators are direct fit replacement for standard neon indicators. They are more robust, less susceptible to damage and vibration and are flicker free. 4 colours are available: red, amber, green, blue and a clear version.

413863

Colour	Order Code	Price Each 1+	25+	100+
Red	**963-0783**	1.29	1.19	1.14
Green	**963-0805**	2.30	2.15	2.05
Blue	**963-0813**	2.18	2.04	1.95

Nut Fixing

7.1mm Dia. panel cut-out



- Dual voltage - 110/230V ac rated
- Integral resistor and diode
- Terminated by 2 x 200mm PVC flying leads
- Panel thickness 6.3mm max.

L=26.7mm (overall), D=7.6mm (lens)

These mains voltage rated LED indicators are direct fit replacement for standard neon indicators. They are more robust, less susceptible to damage and vibration and are flicker free. 4 colours are available: red, amber, green, blue and a clear version.

Mftrs. List No:	=	Order Code	Mftrs. List No:	=	Order Code	Mftrs. List No:	=	Order Code
L024500MAA	=	963-0732	L024500MAC	=	963-0759	L024500MAD	=	963-0767
L024500MAB	=	963-0740						

413861

Colour	Order Code	Price Each 1+	25+	100+
Red	**963-0732**	2.01	1.86	1.79
Amber	**963-0740**	2.01	1.86	1.79
Green	**963-0759**	2.47	2.29	2.20
Blue	**963-0767**	2.47	2.29	2.20

£ € **40,000 PRICES REDUCED**

RL Re-reeling available

Farnell

LED Indicators, 8mm Lens Diameter

12mm Snap-In LED Indicators

8mm LED



- Operating Temp: -20°C to +60°C
- Voltage tolerance: +10%

L=18, Dia=12, 500mm Lead Length, 13.5mm length behind bezel

496634

Mftrs. List No.	Colour	Order Code	Price Each 1+	10+	25+
Standard, I_F=30mA, V_F = 2.2V max					
1981000050500	Red	**136-9078●**	0.91	0.86	0.83
1981000051500	Green	**136-9079●**	0.91	0.86	0.83
1981000052500	Yellow	**136-9080●**	0.91	0.86	0.83
12 VDC (Built in resistor), 16mA current consumption					
1981000250500	Red	**136-9081●**	1.04	0.98	0.93
1981000251500	Green	**136-9082●**	1.04	0.98	0.93
1981000252500	Yellow	**136-9083●**	0.75	0.69	0.66
24 VDC (Built in resistor), 10mA current consumption					
1981000350500	Red	**136-9084●**	1.04	0.98	0.93
1981000351500	Green	**136-9085●**	0.75	0.69	0.66
Flashing, 3.5V to 13.5VDC (built in resistor), 38 to 56mA current consumption					
1981010050500	Red	**136-9087●**	1.08	1.01	0.98

M12, LED Indicators



- Operating Temp: -20°C to +60°C
- Voltage tolerance: +10%
- IP67 Protected
- Wiring Protection tube included with high voltage versions
- 6mA(130VAC), 3mA(230VAC), 9/17mA(24V AC/DC & 12V AC/DC), current consumption

L=32, Dia(thread)=12, Dia (Bezel)=14, 9mm tab length

496570

Mftrs. List No.	Colour	Order Code	Price Each 1+	10+	25+
Satin Chrome Bezel, 12V AC/DC					
192D0250	Red	**136-9253●**	4.81	4.46	4.28
192D0251	Green	**136-9254●**	7.68	7.15	6.85
Black Chrome Bezel, 12V AC/DC					
192D1251	Green	**136-9267●**	7.70	7.17	6.86
Satin Chrome Bezel, 24V AC/DC					
192D0350	Red	**136-9255●**	4.81	4.46	4.28
192D0351	Green	**136-9256●**	7.68	7.15	6.85
192D0352	Yellow	**136-9257●**	5.71	5.31	5.09
192D0357	Blue	**136-9259●**	5.48	5.10	4.89
192D035W	White	**136-9261●**	7.68	7.15	6.85
Satin Chrome Bezel, 130 VAC					
192D0130	Red	**136-9245●**	5.42	5.03	4.83
Satin Chrome Bezel, 230 VAC					
192D0230	Red	**136-9249●**	5.42	5.03	4.83
192D0231	Green	**136-9250●**	8.76	8.16	7.79
192D0232	Yellow	**136-9251●**	6.44	5.99	5.74
192D023W	White	**136-9252●**	8.76	8.16	7.79
Black Chrome Bezel, 230V AC					
192D1230	Red	**136-9263●**	5.53	5.14	4.92
192D1231	Green	**136-9264●**	8.91	8.29	7.95
192D1232	Yellow	**136-9265●**	6.55	6.09	5.85
192D1237	Blue	**136-9266●**	8.91	8.29	7.95

8mm



Panel mounting 8mm LEDs housed in a choice of bright or black chrome plated brass bezels. The bezels of the bright chrome types are polished to form high quality reflectors.

Body length (overall)=19.5, Bezel dia=14
Mounting hole dia.=12.3, Thread=M12 x 0.75
Short lead is cathode

Operating Temperature -40°C to +85°C

Colour	I_F max.	V_F typ.	V_R max.	Typ. Lum. Intensity (mcd)
Bright Chrome				
Red	20mA	2V	3V	25 @ 20mA
Green	20mA	2.1V	3V	14 @ 25mA
Yellow	20mA	2.1V	3V	35 @ 25mA
Black Chrome				
Red	20mA	2V	3V	25 @ 20mA
Green	20mA	2.1V	3V	14 @ 25mA

206265

Colour	Order Code	Price Each 1+	50+	100+
Bright Chrome				
Red	**121-5791●**	4.16	3.37	1.82
Green	**121-5794●**	5.37	4.37	2.33
Yellow	**121-5793●**	5.21	4.37	2.33
Black Chrome				
Red	**121-5792●**	4.82	3.95	2.09
Green	**121-5795●**	4.90	4.18	2.11

M8 LED Panel Indicators















- Storage Temp: -25°C to +80°C
- Op Temp: -20°C to +60°C
- Voltage tolerance: 10%
- Prominent and Recessed options

476985

Colour	V_F/V_{SUP} (V)	IP67?	List No.	Order Code	Price Each 1+	10+	25+
Style A (Satin Chrome Bezel)							
Red	2		19040053	**136-8969●**	1.98	1.85	1.75
Red	2	✓	190403IP	**136-9156●**	1.42	1.31	1.27
Yellow	2.1		19040052	**136-8968●**	1.98	1.85	1.75
Yellow	2.1	✓	190402IP	**136-9152●**	1.42	1.31	1.27
Green	2.2		19040051	**136-8967●**	1.98	1.85	1.75
Green	2.2	✓	190401IP	**136-9151●**	1.42	1.31	1.27
Blue	4.5		19040057	**136-8970●**	2.49	2.32	2.22
Blue	4.5	✓	190407IP	**136-9162●**	2.32	2.16	2.06
Style A (Black Chrome Bezel)							
Red	2		19041053	**136-8973●**	2.09	1.96	1.88
Red	2	✓	190413IP	**136-9166●**	1.45	1.35	1.30
Yellow	2.1		19041052	**136-8972●**	2.09	1.96	1.88
Yellow	2.1	✓	190412IP	**136-9164●**	1.45	1.35	1.30
Green	2.2		19041051	**136-8971●**	2.09	1.96	1.88
Green	2.2	✓	190411IP	**136-9163●**	1.45	1.35	1.30
Blue	4.5	✓	190417IP	**136-9171●**	1.73	1.62	1.54
Style C (Satin Chrome Bezel)							
Red	2		19050053	**136-8976●**	1.98	1.85	1.75
Yellow	2.1		19050052	**136-8975●**	1.98	1.85	1.75
Green	2.2		19050051	**136-8974●**	1.46	1.37	1.31
Style C (Black Chrome Bezel)							
Green	2.2	✓	190511IP	**136-9185●**	1.45	1.35	1.30
Red	2	✓	190513IP	**136-9190●**	1.04	0.96	0.92
Style C (Black Chrome Bezel)							
Green	2.2		19051051	**136-8981●**	2.09	1.95	1.87
Style C (Satin Chrome Bezel)							
Red	2	✓	190503IP	**136-9176●**	1.01	0.93	0.90
Yellow	2.1	✓	190502IP	**136-9173●**	1.42	1.31	1.27
Green	2.2	✓	190501IP	**136-9172●**	1.42	1.31	1.27
Style C (Satin Chrome Bezel) - Multicolour							
RGY	2.2		19130054	**136-8999●**	2.70	2.53	2.42
RGY	2.2	✓	19100054	**136-8996●**	3.11	2.90	2.76
Style C (Black Chrome Bezel) - Multicolour							
Style A (Satin Chrome Bezel) - Multicolour							
RGY	2.2	✓	19120054	**136-8997●**	2.70	2.53	2.42
Style A (Black Chrome Bezel) - Multicolour							
RGY	2.2	✓	19121054	**136-8998●**	2.83	2.63	2.53
Style B (Black Chrome Bezel) (Built in resistor)							
Red	3.5 to 13VDC		190610A3	**136-9195●**	2.54	2.37	2.26
Style B (Satin Chrome Bezel) (with built in resistor) VAC/VDC							
Red	12		190402Z3	**136-9154●**	2.66	2.48	2.39
Red	12		190A0250	**136-9198●**	2.66	2.51	2.41
Green	12		190402Z1	**136-9153●**	2.66	2.48	2.39
Green	12		190A0251	**136-9199●**	1.90	1.79	1.71
Red	24		190403Z3	**136-9159●**	2.66	2.48	2.39
Yellow	24		190403Z2	**136-9158●**	2.66	2.48	2.39
Green	24		190403Z1	**136-9157●**	2.66	2.48	2.39
Blue	24		190403Z7	**136-9160●**	2.87	2.65	2.55
Style B (Black Chrome Bezel) (with built in resistor) VAC/VDC							
Red	24		190413Z3	**136-9169●**	2.82	2.62	2.52
Green	24		190413Z1	**136-9168●**	2.01	1.87	1.80
Yellow	12		190412Z2	**136-9165●**	2.01	1.87	1.80
Style D (Satin Chrome Bezel) (with built in resistor) VAC/VDC							
Red	12	✓	190502Z3	**136-9175●**	2.66	2.48	2.39
Red	12		190B0250	**136-9203●**	1.90	1.79	1.71
Green	12	✓	190502Z1	**136-9174●**	2.66	2.48	2.39
Green	12		190B0251	**136-9204●**	2.66	2.51	2.41
Red	24	✓	190503Z3	**136-9181●**	2.66	2.48	2.40
Green	24	✓	190503Z1	**136-9177●**	2.66	2.48	2.40
Yellow	24	✓	190503Z2	**136-9178●**	1.90	1.78	1.70
Blue	24	✓	190503Z7	**136-9182●**	2.87	2.65	2.55
Style D (Black Chrome Bezel) (with built in resistor) VAC/VDC							
Red	12	✓	190512Z3	**136-9187●**	2.01	1.87	1.81
Blue	12	✓	190512Z7	**136-9188●**	3.31	3.08	2.97
Red	24	✓	19051363UL	**136-9189●**	2.39	2.20	2.12
Red	24	✓	190513Z3	**136-9193●**	2.01	1.87	1.81
Green	24	✓	190513Z1	**136-9191●**	2.82	2.62	2.53

RL Re-reeling available

LED Indicators, 8mm Lens Diameter - continued

M8 LED Panel Indicators - continued

Colour	V_F/Vs_{up} (V)	IP67?	List No.	Order Code	Price Each 1+	10+	25+
Style E (Satin Chrome Bezel) (with built in resistor)							
Red	24VDC		1980000350500	**136-9061●**	0.97	0.89	0.86
Green	24VDC		1980000351500	**136-9062●**	0.97	0.89	0.86
Style F (Black Chrome Bezel) (with built in resistor)							
Green	24VDC		1980100251500	**136-9070●**	0.97	0.89	0.86
Green	24VDC		1980100351500	**136-9073●**	0.97	0.89	0.86
Style F (Satin Chrome Bezel) (with built in resistor)							
Red	24VDC		1980110050500	**136-9075●**	1.24	1.14	1.10
Red			190700A3	**136-9196●**	2.14	1.99	1.91
White			1909025W	**136-9197●**	8.43	7.74	7.42
Red			1980000050500	**136-9053●**	0.90	0.85	0.82
Green			1980000051500	**136-9054●**	0.90	0.85	0.82
Yellow			1980000052500	**136-9055●**	0.90	0.85	0.82
Red			1980000150500	**136-9056●**	0.91	0.86	0.84
Green			1980000151500	**136-9057●**	0.91	0.86	0.84
Green			1980000251500	**136-9059●**	0.97	0.89	0.86
Red			1980100050500	**136-9067●**	0.90	0.85	0.82
Style D AC/DC (Satin Chrome Bezel)							
Red	24		190B0350	**136-9206●**	2.66	2.51	2.41
Green	24		190B0351	**136-9207●**	2.66	2.51	2.41
Yellow	24		190B0352	**136-9208●**	2.66	2.51	2.41
Style B AC/DC (Satin Chrome Bezel)							
Red	24		190A0350	**136-9200●**	1.90	1.79	1.71
Green	24		190A0351	**136-9201●**	2.66	2.51	2.41
Yellow	24		190A0352	**136-9202●**	2.66	2.51	2.41
Style D AC/DC (Satin Chrome Bezel)							
Red	12		19080250	**136-8984●**	4.24	3.95	3.79
Green	12		19080255	**136-8985●**	9.77	9.00	8.61
Style D AC/DC (Black Chrome Bezel)							
Green	12		19081255	**136-8987●**	9.77	9.00	8.61
Style D AC/DC (Satin Chrome Bezel)							
Red	12		19090250	**136-8988●**	4.24	3.95	3.79
Yellow	12		19090252	**136-8991●**	5.41	3.95	3.79
Green	12		19090255	**136-8992●**	9.77	9.00	8.61
Blue	12		19090257	**136-8993●**	10.92	9.00	8.61
Style D AC/DC (Black Chrome Bezel)							
Yellow	230		19510232	**136-9029●**	5.82	5.43	5.18

8mm - IP67 Rated



A range of panel mounting LED indicators in a high quality bright chrome or black chrome brass housing fitted with fixing nut and washer. The gap between the LED and bezel and the gap between the bezel and front-plate are sealed to IP67 rating when using the supplied gasket.

Total L behind bezel=34.5, Body L (overall)=18.5, Bezel dia.=14,
Thread=M12 x 0.75, Mounting hole dia.=12.3, Short lead cathode

Operating Temperature -40°C to +60°C Reverse Voltage (max): 5V

	I_F max.	V_F typ.	Typical luminous intensity (mcd)
Red	30	2.0	60
Green	25	2.2	40
Yellow	30	2.1	40

206620

Colour	Order Code	Price Each 1+	25+	50+	100+	250+
Bright Chrome						
Red	**110-5427●**	2.82	2.69	2.45	1.88	1.68
Green	**110-5428●**	2.82	2.69	2.45	1.88	1.68
Yellow	**110-5429●**	2.82	2.69	2.45	1.88	1.68
Black Chrome						
Red	**113-9530●**	2.85	2.71	2.47	1.90	1.69
Green	**113-9529●**	2.85	2.71	2.47	1.90	1.69
Yellow	**113-9531●**	2.85	2.71	2.47	1.90	1.69

10.15mm Panel Mount LED Indicators

OXLEY

New



Recessed



Prominent

Forward Current 20mA

Fixing Hole (dia) 10.15mm
Bezel (dia) 12.7mm
(depth) 1.2mm

Length (external) 17.7mm
(behind bezel) 16.5mm
(lead) 30mm

Colour	Luminous Intensity (mcd)	Forward Current (mA)	Voltage Rating (V)	Mftrs. List No.	Order Code
Recessed					
Red	1200	20	—	OXL/CLH/100/FL30/ALGAAS RED	160-3483
Blue	1200	20	—	OXL/CLH/100/FL30/BLUE	160-3488
Green	1250	20	—	OXL/CLH/100/FL30/GREEN	160-3485
White	1000	20	—	OXL/CLH/100/FL30/WHITE	160-3487
Yellow	1000	20	—	OXL/CLH/100/FL30/YELLOW	160-3484
Red	450	7.5	12	OXL/CLH/100/12AC/FL30/ALGAAS RED	160-3489
Blue	450	7.5	12	OXL/CLH/100/12AC/FL30/BLUE	160-3493
Green	470	7.5	12	OXL/CLH/100/12AC/FL30/GREEN	160-3491
White	375	7.5	12	OXL/CLH/100/12AC/FL30/WHITE	160-3492
Yellow	375	7.5	12	OXL/CLH/100/12AC/FL30/YELLOW	160-3490
Red	450	7.5	24	OXL/CLH/100/24AC/FL30/ALGAAS RED	160-3494
Blue	450	7.5	24	OXL/CLH/100/24AC/FL30/BLUE	160-3499
Green	470	7.5	24	OXL/CLH/100/24AC/FL30/GREEN	160-3496
White	375	7.5	24	OXL/CLH/100/24AC/FL30/WHITE	160-3497
Yellow	375	7.5	24	OXL/CLH/100/24AC/FL30/YELLOW	160-3495
Red	300	5	110	OXL/CLH/100/110/FL30/ALGAAS RED	160-3500
Blue	300	5	110	OXL/CLH/100/110/FL30/BLUE	160-3505
Green	315	5	110	OXL/CLH/100/110/FL30/GREEN	160-3502
White	250	5	110	OXL/CLH/100/110/FL30/WHITE	160-3503
Yellow	250	2.5	110	OXL/CLH/100/110/FL30/YELLOW	160-3501
Red	150	2.5	240	OXL/CLH/100/230/FL30/ALGAAS RED	160-3506
Blue	150	2.5	240	OXL/CLH/100/230/FL30/BLUE	160-3510
Green	160	2.5	240	OXL/CLH/100/230/FL30/GREEN	160-3508
White	125	2.5	240	OXL/CLH/100/230/FL30/WHITE	160-3509
Yellow	125	1	240	OXL/CLH/100/230/FL30/YELLOW	160-3507
Prominent					
Red	1200	20	—	OXL/CLH/100/P/FL30/ALGAAS RED	160-3545
Blue	1200	20	—	OXL/CLH/100/P/FL30/BLUE	160-3549
Green	1250	20	—	OXL/CLH/100/P/FL30/GREEN	160-3547
White	1000	20	—	OXL/CLH/100/P/FL30/WHITE	160-3548
Yellow	1000	20	—	OXL/CLH/100/P/FL30/YELLOW	160-3546
Red	450	7.5	12	OXL/CLH/100/P/12AC/FL30/ALGAAS RED	160-3550
Blue	450	7.5	12	OXL/CLH/100/P/12AC/FL30/BLUE	160-3555
Green	470	7.5	12	OXL/CLH/100/P/12AC/FL30/GREEN	160-3552
White	375	7.5	12	OXL/CLH/100/P/12AC/FL30/WHITE	160-3554
Yellow	375	7.5	12	OXL/CLH/100/P/12AC/FL30/YELLOW	160-3551
Red	450	7.5	24	OXL/CLH/100/P/24AC/FL30/ALGAAS RED	160-3556
Blue	450	7.5	24	OXL/CLH/100/P/24AC/FL30/BLUE	160-3560
Green	470	7.5	24	OXL/CLH/100/P/24AC/FL30/GREEN	160-3558
White	375	7.5	24	OXL/CLH/100/P/24AC/FL30/WHITE	160-3559
Yellow	375	7.5	24	OXL/CLH/100/P/24AC/FL30/YELLOW	160-3557
Red	300	5	110	OXL/CLH/100/P/110/FL30/ALGAAS RED	160-3561
Blue	300	5	110	OXL/CLH/100/P/110/FL30/BLUE	160-3566
Green	315	5	110	OXL/CLH/100/P/110/FL30/GREEN	160-3563
White	250	5	110	OXL/CLH/100/P/110/FL30/WHITE	160-3564
Yellow	250	2.5	110	OXL/CLH/100/P/110/FL30/YELLOW	160-3562
Red	150	2.5	240	OXL/CLH/100/P/230/FL30/ALGAAS RED	160-3567
Blue	150	2.5	240	OXL/CLH/100/P/230/FL30/BLUE	160-3571
Green	160	2.5	240	OXL/CLH/100/P/230/FL30/GREEN	160-3569
White	125	2.5	240	OXL/CLH/100/P/230/FL30/WHITE	160-3570
Yellow	125	1	240	OXL/CLH/100/P/230/FL30/YELLOW	160-3568

517206

Colour	Voltage	Order Code	Price Each 1+	10+	50+	100+	+
Recessed							
Red	—	**160-3483●**	5.99	5.13	4.49	3.59	– –
Blue	—	**160-3488●**	8.54	7.32	6.41	5.12	– –
Green	—	**160-3485●**	8.54	7.32	6.41	5.12	– –
White	—	**160-3487●**	8.54	7.32	6.41	5.12	– –
Yellow	—	**160-3484●**	5.99	5.13	4.49	3.59	– –
Red	12V	**160-3489●**	6.60	5.66	4.95	3.96	– –
Blue	12V	**160-3493●**	9.05	7.75	6.78	5.43	– –
Green	12V	**160-3491●**	9.05	7.75	6.78	5.43	– –
White	12V	**160-3492●**	9.05	7.75	6.78	5.43	– –
Yellow	12V	**160-3490●**	6.60	5.66	4.95	3.96	– –
Red	24V	**160-3494●**	6.60	5.66	4.95	3.96	– –
Blue	24V	**160-3499●**	9.05	7.75	6.78	5.43	– –
Green	24V	**160-3496●**	9.05	7.75	6.78	5.43	– –
White	24V	**160-3497●**	9.05	7.75	6.78	5.43	– –
Yellow	24V	**160-3495●**	6.60	5.66	4.95	3.96	– –
Red	110V	**160-3500●**	7.82	6.71	5.87	4.69	– –
Blue	110V	**160-3505●**	9.89	8.49	7.43	5.94	– –
Green	110V	**160-3502●**	9.89	8.49	7.43	5.94	– –
White	110V	**160-3503●**	9.89	8.49	7.43	5.94	– –
Yellow	110V	**160-3501●**	7.82	6.71	5.87	4.69	– –
Red	240V	**160-3506●**	7.82	6.71	5.87	4.69	– –
Blue	240V	**160-3510●**	9.89	8.49	7.43	5.94	– –
Green	240V	**160-3508●**	9.89	8.49	7.43	5.94	– –
White	240V	**160-3509●**	9.89	8.49	7.43	5.94	– –
Yellow	240V	**160-3507●**	7.82	6.71	5.87	4.69	– –
Prominent							
Red	—	**160-3545●**	6.02	5.16	4.52	3.61	– –
Blue	—	**160-3549●**	8.54	7.32	6.41	5.12	– –
Green	—	**160-3547●**	8.54	7.32	6.41	5.12	– –
White	—	**160-3548●**	8.54	7.32	6.41	5.12	– –
Yellow	—	**160-3546●**	6.02	5.16	4.52	3.61	– –
Red	12V	**160-3550●**	6.67	5.71	5.00	4.00	– –
Blue	12V	**160-3555●**	9.05	7.75	6.78	5.43	– –
Green	12V	**160-3552●**	9.05	7.75	6.78	5.43	– –
White	12V	**160-3554●**	9.05	7.75	6.78	5.43	– –
Yellow	12V	**160-3551●**	6.67	5.71	5.00	4.00	– –
Red	24V	**160-3556●**	6.67	5.71	5.00	4.00	– –
Blue	24V	**160-3560●**	9.05	7.75	6.78	5.43	– –
Green	24V	**160-3558●**	9.05	7.75	6.78	5.43	– –
White	24V	**160-3559●**	9.05	7.75	6.78	5.43	– –
Yellow	24V	**160-3557●**	6.67	5.71	5.00	4.00	– –
Red	110V	**160-3561●**	7.82	6.71	5.87	4.69	– –
Blue	110V	**160-3566●**	9.89	8.49	7.43	5.94	– –
Green	110V	**160-3563●**	9.89	8.49	7.43	5.94	– –
White	110V	**160-3564●**	9.89	8.49	7.43	5.94	– –
Yellow	110V	**160-3562●**	7.82	6.71	5.87	4.69	– –

RL Re-reeling available

Farnell

Colour	Voltage	Order Code	Price Each 1+	10+	50+	100+	+
Prominent							
Red	240V	**160-3567●**	7.82	6.71	5.87	4.69	– –
Blue	240V	**160-3571●**	9.89	8.49	7.43	5.94	– –
Green	240V	**160-3569●**	9.89	8.49	7.43	5.94	– –
White	240V	**160-3570●**	9.89	8.49	7.43	5.94	– –
Yellow	240V	**160-3568●**	7.82	6.71	5.87	4.69	– –

LED Indicators, 10mm Lens Diameter

Panel Mount Indicators

9mm Mounting Hole



Prominent green



Recessed yellow

Dimensions	Prominent	Recessed
Diameter - Bezel	10.92mm	10.92mm
Diameter - Mounting hole	9.3mm	9.3mm
Panel thickness (Max)	7.5mm	7.5mm
Material - Housing	Chrome plated Brass or Black finished Brass	
Current	15mA	
Temperature - Operating	-25°C to +85°C	
Expected life	100,000 hours	

361115

Colour	Voltage (V dc)	Voltage (V dc)	Order Code	Price Each 1+	10+	50+
Chrome Plated Brass Housing						
Prominent LED						
Green	6	609-1212-120F	**113-8348●**	2.81	1.94	1.59
Red	12	609-1112-130F	**113-8350●**	2.81	1.94	1.59
Green	12	609-1212-130F	**113-8351●**	2.81	1.94	1.59
Yellow	12	609-1312-130F	**113-8353●**	2.81	1.94	1.59
Red	24	609-1112-140F	**113-8360●**	2.81	1.94	1.59
Green	24	609-1212-140F	**113-8361●**	2.81	1.94	1.59
Yellow	24	609-1312-140F	**113-8362●**	2.81	1.94	1.59
Recessed LED						
Red	12	609-2112-130F	**113-8357●**	2.81	1.94	1.59
Green	12	609-2212-130F	**113-8358●**	2.81	1.94	1.59
Red	24	609-2112-140F	**113-8363●**	2.81	1.94	1.59
Green	24	609-2212-140F	**113-8365●**	2.81	1.94	1.59
Yellow	24	609-2312-140F	**113-8366●**	2.81	1.94	1.59
Black Coated Brass Housing						
Prominent LED						
Red	24	609-1122-140F	**113-8380●**	3.04	2.09	1.73
Green	24	609-1222-140F	**113-8381●**	2.78	2.51	1.95

Cable Assemblies for Tab Terminals



- Suitable for all voltage ranges
- Flying lead length is 300mm in red and black
- Cable assemblies suitable for all indicators with 2.0 x 0.55mm and 2.8 x 0.8mm tab terminations
- These assemblies fit all of the EBT ranges of LED Indicators and Xenon Flash Indicators. The 2.0 x 0.55mm fit the 3 & 5mm ranges and the 2.8 x 0.8mm fit the 10 & 16mm ranges and the Xenon Indicators

206585

Order Multiple=5			Price Each				
2.0 x 0.5mm	**Order Code**	5+	25+	50+	100+	250+
Red, 300mm	**110-5189●**	0.44	0.38	0.36	0.28	0.27
Black, 300mm	**110-5191●**	0.44	0.38	0.36	0.28	0.27
2.8 x 0.8mm						
Red, 300mm	**110-5192●**	0.34	0.29	0.27	0.21	0.20
Black, 300mm	**110-5193●**	0.34	0.29	0.27	0.21	0.20

10mm, Black Plastic Bezel with Integral Resistor, IP67 Rated

24V dc



Total L behind bezel = 58, Bezel dia. = 18.3, Thread = M16 x 1, Mounting hole dia. = 16.2, Tab connections = 2.8 x 0.8

A range of LED panel mounting indicators with integral resistors to permit direct connection to a 24V dc supply. The LEDs are fitted in a black plastic (polycarbonate) housing.
Connection is by faston/solder tab terminals.

Operating voltage	24V dc
Operating temperature	-25°C to +60°C
Reverse voltage	5V

	Red	Green	White
Luminous intensity typ. (mcd)	95	85	255
Operating current typ.	15mA	15mA	14mA

228788

Colour	Order Code	Price Each 1+	25+	100+	250+	500+
Red	**113-9509●**	8.18	6.26	4.98	3.97	3.77
Green	**113-9508●**	8.18	6.26	4.98	3.97	3.77
White	**113-9515●**	11.54	10.67	8.49	6.45	5.64

12V dc, 24V dc, Sunlight Readable

Stainless Steel Housing



- Unique design
- Robust stainless steel housing for operating in harsh environments
- Low profile lens style
- Sealed to **IP67**
- Sunlight visible
- Full internal encapsulation

Mounting hole dia.=13.0, Overall L=38
Total L behind bezel=35,
Bezel dia.= 17, Tab connections 2.8 x 0.5

Operating Voltage: 12V dc @ 20mA, 24V dc @ 20mA, 230V ac 3mA

Colour	Luminous intensity @ operating voltage	Wavelength
Red	2750mcd	660nm
Green	6000mcd	525nm
Yellow	4500mcd	590nm

221727

Colour		Price Each				
12V dc	**Order Code**	1+	5+	10+	15+	25+
Red	**973-7952●**	13.23	11.60	11.22	10.86	10.07
Green	**973-7960●**	15.21	13.35	12.92	11.50	11.00
Yellow	**973-7979●**	16.51	14.46	14.01	13.73	13.34
24V dc						
Red	**973-7987●**	13.23	11.60	11.22	10.86	10.07
Green	**973-7995●**	15.21	13.35	12.92	11.50	11.00
Yellow	**973-8002●**	17.18	15.85	14.71	14.28	13.88
230V ac						
Red	**973-8029●**	17.02	15.63	14.46	14.16	13.41

Snap-In Fixing

9.5mm Dia. panel cutout



- Dual voltage - 110/230V ac rated
- Integral resistor and diode
- Quick snap-in fixing
- Terminated with 2 x 6.3mm tabs
- Panel thickness 0.8 to 2.8mm

L=59.2mm (overall), D=12mm (lens)

These mains voltage rated LED indicators are direct fit replacement for standard neon indicators. They are more robust, less susceptible to damage and vibration and are flicker free. 4 colours are available: red, amber, green, blue and a clear version.

Mftrs. List No:	=	Order Code	Mftrs. List No:	=	Order Code
C0276AAMAA	=	963-0880	C0276AAMAD	=	963-0910
C0276AAMAC	=	963-0902			

413866

Colour	Order Code	Price Each 1+	25+	100+
Red	**963-0880●**	1.42	1.33	1.27
Green	**963-0902●**	1.52	1.41	1.35
Blue	**963-0910●**	1.89	1.76	1.68

Nut Fixing

10mm Dia. panel cutout



L=57.7mm (overall), D=15.6mm (lens)

- Dual voltage - 110/230V ac rated
- Integral resistor and diode
- Chrome bezel/flush lens
- Nut fixing
- Terminated with 2 x 6.3mm tabs
- Panel thickness 11.5mm max.

These mains voltage rated LED indicators are direct fit replacement for standard neon indicators. They are more robust, less susceptible to damage and vibration and are flicker free. 4 colours are available: red, amber, green, blue and a clear version.

Mftrs. List No:	=	Order Code	Mftrs. List No:	=	Order Code
C027500MAA	=	963-0937	C027500MAD	=	963-0961
C027500MAB	=	963-0945	C027500MAE	=	963-0970
C027500MAC	=	963-0953			

413867

Colour	Order Code	Price Each 1+	25+	100+
Red	**963-0937●**	2.66	2.48	2.36
Amber	**963-0945●**	2.66	2.48	2.36
Green	**963-0953●**	3.07	2.85	2.72
Blue	**963-0961●**	2.46	2.27	2.18
Clear	**963-0970●**	3.07	2.85	2.72

RL Re-reeling available

LED Indicators, 10mm Lens Diameter - continued

10mm, Superbright with Reflecting Mirror & Lens



A range of superbright panel mounting LED indicators that use a reflecting mirror and lens to give a high luminous radiation. They are fitted in high quality bright chrome or black chrome brass housing fitted with fixing nut and washer.

Total L behind bezel=38, Bezel dia.=13, Thread=M8 x 0.75.
Mounting hole dia.=8, Tab connections=2.8 0.8

Operating Voltage: 12V dc @ 30mA, 24V dc @ 22mA
Operating Temperature: -55°C to +70°C Reverse Voltage (max): 80V

Typical luminous intensity (mcd) @ I_F=20mA	HE Red	Green	Yellow
12V dc	1000	220	290
24V dc	370	160	220

206606

Colour	Order Code	Price Each 1+	25+	50+	100+	250+
Bright Chrome						
12V dc HE Red	**110-5430●**	3.75	3.52	3.18	3.11	3.02
12V dc Green	**110-5431●**	3.75	3.52	3.18	3.11	3.02
12V dc Yellow	**110-5432●**	3.75	3.52	3.18	3.11	3.02
24V dc HE Red	**110-5433●**	3.75	3.52	3.18	3.11	3.02
24V dc Green	**110-5434●**	3.75	3.52	3.18	3.11	3.02
24V dc Yellow	**110-5435●**	3.75	3.52	3.18	3.11	3.02

Snap-In Fixing

9.0mm Dia. panel cutout



- Dual voltage - 110/230V ac rated
- Integral resistor and diode
- Quick snap-in fixing
- Terminated with 2 x 6.3mm tabs
- Panel thickness 2.0mm max.

L=39mm (overall), D=9.5mm (lens)

These mains voltage rated LED indicators are direct fit replacement for standard neon indicators. They are more robust, less susceptible to damage and vibration and are flicker free. 4 colours are available: red, amber, green, blue and a clear version.

Mftrs. List No:	=	Order Code	C027300MAC	=	963-0856
C027300MAA	=	963-0830			

413864

Colour	Order Code	Price Each 1+	25+	100+
Red	**963-0830●**	1.58	1.45	1.40
Green	**963-0856●**	2.04	1.88	1.81

14mm Snap-In LED Indicators

10mm LED



- Operating Temp: -20°C to +60°C
- Voltage tolerance: +10%

L=21, Dia=14, 500mm Lead Length, 15mm length behind bezel

496639

Mftrs. List No.	Colour	Order Code	Price Each 1+	10+	25+
Standard, I_F=30mA, V_F=2.2V max					
1982000050500	Red	**136-9091●**	1.04	0.98	0.93
1982000051500	Green	**136-9092●**	1.04	0.98	0.93
24 VDC (built in resistor), 10mA current consumption					
1982000350500	Red	**136-9094●**	1.18	1.11	1.06
1982000351500	Green	**136-9095●**	1.18	1.11	1.06
Flashing, 3.5V to 13.5VDC (built in resistor), 38 to 56mA current consumption					
1982010050500	Red	**136-9097●**	1.57	1.46	1.42

Large Area

With or Without Resistor



Body length=31.5
Bezel dia=15.7
Mounting hole dia=12.7
Flying lead length=150.0

Large high brightness, push-fit panel mounting LEDs in bright chrome nylon housing with an attractive chrome bezel and coloured lens. Built in reflector giving a wide viewing angle of 140°. These LEDs are available either with or without a current limiting resistor. Connection is via 0.187" push-on/solder lug terminals or by flying leads.

Without Resistor	Typ. Lum. Intensity	V_F typ.	@	I_F	V_R max.	Mftrs. List No.	Order Code
●Green	5mcd	2.2V		30mA	5V	6340-005-505G	110-5436
◆Green	5mcd	2.2V		30mA	5V	6340-305-505G	113-9534
●Amber	10mcd	2.2V		30mA	5V	6340-001-505A	113-9532

With Resistor		Typ. Lum. Intensity	@	Operating Current	V_R max.	Mftrs. List No.	Order Code
●Red	5V dc	13mcd		30mA	5V	6342-002-505R	113-9528
●Red	28V dc	7mcd		17mA	5V	6346-002-505R	110-5439
●Green	28V dc	3mcd		17mA	5V	6346-005-505G	110-5440
●Amber	28V dc	5mcd		17mA	5V	6346-001-505A	110-5441

●Tab terminals ◆Flying leads

221719

Order Multiple=1 Colour	Voltage	Order Code	Price Each 1+	50+	100+
Green	—	**110-5436●**	2.560	2.060	1.970
Green	—	**113-9534●**	2.700	2.010	1.890
Amber	—	**113-9532●**	2.850	2.220	1.990
Red	5V dc	**113-9528●**	2.850	2.220	1.970
Amber	5V dc	**113-9527●**	2.850	2.220	1.970
Red	28V dc	**110-5439●**	4.050	3.200	2.660
Green	28V dc	**110-5440●**	4.050	3.200	2.660
Amber	28V dc	**110-5441●**	4.050	3.200	2.660
Order Multiple=5			**5+**	**50+**	**100+**
Mounting Clip		**110-5438●**	0.210	0.153	0.134

12.7mm Panel Mount - IP67 Rated

531 Series



- Operates over a wide voltage range
- Bright nickel plated brass housing
- Full internal potting to resist shock and vibration
- Sealed to IP67
- Fitted with internal diode to provide reverse voltage protection to 1000V dc

Dia. - Bezel = 17mm, Mounting Hole = 13mm.
Depth (Behind Panel) = 29mm,

Lum.Intensity I_v@ 20mA (mcd)	Wavelength (nm)	Colour	Operating Voltage	Mftrs. List No.	Order Code
11000	643	Red	12 to 28V dc	531-501-63	149-8488
16000	591	Yellow	12 to 28V dc	531-521-63	149-8489
23000	527	Green	12 to 28V dc	531-532-63	149-8490
7000	470	Blue	12 to 28V dc	531-930-63	149-8491
14000		White	12 to 28V dc	531-997-63	149-8492

497168

Colour	Mftrs. List No.	Order Code	Price Each 1+	10+	25+	50+	100+
12 - 28V dc							
Red	531-501-63	**149-8488●**	17.00	14.03	12.46	11.69	11.22
Yellow	531-521-63	**149-8489●**	17.00	14.03	12.46	11.69	11.22
Green	531-532-63	**149-8490●**	17.00	14.03	12.46	11.69	11.22
Blue	531-930-63	**149-8491●**	17.00	14.03	12.46	11.69	11.22
White	531-997-63	**149-8492●**	17.00	14.03	12.46	11.69	11.22

12.7mm Panel Mount - IP67 Rated

699 Series



- Operates over a wide voltage range
- Black anodised aluminium housing
- Full internal potting to resist shock and vibration
- Sealed to IP67
- Fitted with internal diode to provide reverse voltage protection to 1000V dc

Dia. - Bezel = 17mm, Mounting Hole = 13mm.
Depth (Behind Panel) = 29mm,

Lum.Intensity I_v@ 20mA (mcd)	Wavelength (nm)	Colour	Operating Voltage	Mftrs. List No.	Order Code
11000	643	Red	12 to 28V dc	699-501-63	149-8521
16000	591	Yellow	12 to 28V dc	699-521-63	149-8522
23000	527	Green	12 to 28V dc	699-532-63	149-8523
7000	470	Blue	12 to 28V dc	699-930-63	149-8524
14000		White	12 to 28V dc	699-997-63	149-8525

497201

Colour	Mftrs. List No.	Order Code	Price Each 1+	10+	25+	50+	100+
12 - 28V dc							
Red	699-501-63	**149-8521●**	18.61	15.35	13.65	12.79	12.28
Yellow	699-521-63	**149-8522●**	18.61	15.35	13.65	12.79	12.28
Green	699-532-63	**149-8523●**	19.84	16.37	14.56	13.65	13.10
Blue	699-930-63	**149-8524●**	19.84	16.37	14.56	13.65	13.10
White	699-997-63	**149-8525●**	19.84	16.37	14.56	13.65	13.10

£ € 40,000 PRICES REDUCED

RL Re-reeling available

Farnell

12.7mm Panel Mount - IP67 Rated

538 Series



- Operates over a wide voltage range
- Robust stainless steel housing
- Full internal potting to resist shock and vibration
- Sealed to IP67
- Fitted with internal diode to provide reverse voltage protection to 1000V dc

Dia. - Bezel = 17mm, Mounting Hole = 13mm.
Depth (Behind Panel) = 29mm,

Lum.Intensity I_v@ 20mA (mcd)	Wavelength (nm)	Colour	Operating Voltage	Mftrs. List No.	Order Code
11000	643	Red	12 to 28V dc	538-501-63	149-8568
16000	591	Yellow	12 to 28V dc	538-521-63	149-8569
23000	527	Green	12 to 28V dc	538-532-63	149-8570
7000	470	Blue	12 to 28V dc	538-930-63	149-8571
14000		White	12 to 28V dc	538-997-63	149-8572

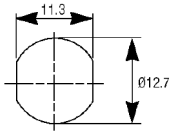
497226

Colour	Mftrs. List No.	Order Code	Price Each 1+	10+	25+	50+	100+
12 - 28V dc							
Red	538-501-63	**149-8568●**	18.85	15.56	13.83	12.96	12.44
Yellow	538-521-63	**149-8569●**	18.85	15.56	13.83	12.96	12.44
Green	538-532-63	**149-8570●**	21.45	17.70	15.73	14.75	14.16
Blue	538-930-63	**149-8571●**	21.45	17.70	15.73	14.75	14.16
White	538-997-63	**149-8572●**	21.45	17.70	15.73	14.75	14.16

10mm – IP67 Rated

12V dc, 24V dc & 240V ac





Mounting Hole
Overall L=38.5
Total L behind bezel=26.5
Bezel dia.=17, Max panel thickness=8
Tab connections 2.8 x 0.5

Operating Temperature -40°C to +86°C

This range of LED indicators have 10mm tinted diffused LEDs in black anodised aluminium housings which are fully internally potted and sealed to **IP67** rating making them suitable for applications where vibration occurs. Fitted with sealing ring, fixing nut and washer.

Colour	Luminous Intensity (typ)	Forward Voltage (max)	Forward Current	Mftrs. List No.	Order Code
Red	90mcd	12V	20mA	651-102-21	973-9068
Green	40mcd	12V	20mA	651-114-21	973-9092
Red	90mcd	24V	20mA	651-102-22	973-9106
Red	90mcd	24V	20mA	651-105-22	973-9114
Green	40mcd	24V	20mA	651-114-22	973-9130
Red	90mcd	240V	3mA	651-102-76	973-9149
Red	500mcd	240V	3mA	651-105-76	973-9157
Green	40mcd	240V	4mA	651-114-76	973-9165

206518

Colour	Order Code	Price Each 1+	10+	25+	50+	100+
12V dc						
Red	**973-9068●**	14.99	12.68	10.98	9.68	8.71
Green	**973-9092●**	14.99	12.68	10.98	9.68	8.71
24V dc						
Red	**973-9106●**	14.99	12.68	10.98	9.68	8.71
Red	**973-9114●**	14.99	12.68	10.98	9.68	8.71
Green	**973-9130●**	14.99	12.68	10.98	9.68	8.71
240V ac						
Red	**973-9149●**	14.69	12.06	10.71	9.64	8.71
Red	**973-9157●**	14.69	12.06	10.71	9.64	8.71
Green	**973-9165●**	14.69	12.06	10.71	9.64	8.71

12V dc, 24V dc and 230V ac



- Bright nickel plated brass housing
- Robust termination tags accept push-on connectors
- Sealed to IP67
- Full internal encapsulation

This range of LED Indicators is the nickel plated brass bodied versions of the above black anodised type from Marl. They have the same benefits and features.

Mounting hole dia.=12.7, Overall L=38.5
Total L behind bezel=26.5, Bezel dia.=17,
Max. panel thickness=8,
Tab Connections=2.8 x 0.5

Operating Temperature -40°C to +85°C

Colour	Luminous Intensity (typ)	Forward Voltage (max)	Forward Current	Mftrs. List No.	Order Code
Red	200mcd	12V	20mA	514-102-21	973-7804
Red	40mcd	24V	20mA	514-105-22	973-7812
Red	200mcd	24V	20mA	514-102-22	973-7820
Green	40mcd	24V	20mA	514-114-22	973-7839
Yellow	40mcd	24V	20mA	514-111-22	973-7847
Red	5mcd	240V	3mA	514-105-76	973-7855
Red	15mcd	240V	3mA	514-102-76	973-7863
Green	3mcd	240V	3mA	514-114-76	973-7871
Yellow	5mcd	240V	3mA	514-111-76	973-7880

221723

Colour	Order Code	Price Each 1+	10+	25+
12V dc				
Red	**973-7804●**	11.34	10.70	10.19
24V dc				
Red	**973-7812●**	11.34	10.70	10.19
Red	**973-7820●**	11.34	10.70	10.19
Green	**973-7839●**	11.34	10.70	10.19
Yellow	**973-7847●**	11.34	10.70	10.19
240V ac				
Red	**973-7855●**	10.75	10.15	9.95
Red	**973-7863●**	10.75	10.15	9.95
Green	**973-7871●**	10.75	10.15	9.95
Yellow	**973-7880●**	10.75	10.15	9.95

10mm Wire Ended

2.5V dc



A range of panel mounted, wire ended indicators. They are fitted in high quality bright chrome or black chrome brass housings, fitted with fixing nut and washer. **CE approved**.

L behind bezel=19, Bezel dia.=16,
Thread=M14 x 1, Mounting hole dia.=14.5

Operating Voltage 2.5V dc
Operating temperature -55°C to +70°C
Operating current (max.) 30mA
Typical luminous intensity @ 20mA HE Red 65mcd, Green 20mcd, Yellow 23mcd

206348

Colour	Order Code	Price Each 1+	25+	100+	250+	500+
HE Red	**110-5458●**	3.67	2.89	2.34	1.69	1.39
Green	**110-5459●**	3.67	2.89	2.34	1.69	1.39
Yellow	**110-5460●**	3.67	2.89	2.34	1.69	1.39
Black Chrome						
HE Red	**110-5461●**	3.86	2.96	2.41	1.77	1.48
Green	**113-9535●**	3.86	2.96	2.41	1.77	1.48
Yellow	**110-5463●**	3.75	2.89	2.35	1.72	1.45

M14 LED Panel Indicators



- Storage Temp: -25°C to +80°C
- Operating Temp: -20°C to +60°C
- Voltage Tolerance: +10%
- Diffused Lens
- Degree of protection: IP67 in accordance with DIN EN 60529 - when used with supplied gasket.

486432

Colour	V_F max/(Vsup) (V)	Luminous Int Typ, (mcd)	Mftrs. List No.	Order Code	Price Each 1+	10+	25+
Satin Chrome Bezel							
Green	2.2	70	19210051	**136-9001●**	3.33	3.11	2.98
Red	2	150	19210053	**136-9004●**	3.33	3.11	2.98
Black Chrome Bezel							
Green	2.2	70	19211051	**136-9005●**	3.26	3.04	2.92
Yellow	2.1	70	19211052	**136-9006●**	3.26	3.04	2.92
Red	2	150	19211053	**136-9007●**	3.26	3.04	2.92
Satin Chrome Bezel (Built in resistor)							
Red	(3.5 to 13)	200	19220053	**136-9008●**	4.51	4.16	3.97
Black Chrome Bezel (Built in resistor)							
Red	(3.5 to 13)	100	19221053	**136-9011●**	4.62	4.24	4.09
Satin Chrome Bezel (Built in resistor)							
Green	(12)	70	192102Z1	**136-9211●**	2.90	2.65	2.54
Red	(12)	150	192102Z3	**136-9212●**	4.06	3.72	3.56
Satin Chrome Bezel (Built in resistor)							
Green	(24)	70	192103Z1	**136-9213●**	4.06	3.72	3.56
Yellow	(24)	70	192103Z2	**136-9214●**	2.90	2.65	2.54
Red	(24)	150	192103Z3	**136-9215●**	4.06	3.72	3.56
Black Chrome Bezel (Built in resistor)							
Green	(24)	70	192113Z1	**136-9216●**	2.95	2.70	2.58
Satin Chrome Bezel (Built in resistor)							
Green	(24 to 36)	105	19290A51	**136-9218●**	8.91	8.20	7.84
Red	(48 to 65)	125	19290B50	**136-9220●**	11.23	10.33	9.88
Green	(48 to 65)	105	19290B51	**136-9221●**	12.60	11.59	11.09
Yellow	(48 to 65)	165	19290B52	**136-9223●**	11.23	10.33	9.88
Black Chrome Bezel (Built in resistor)							
Red	(24 to 36)	125	19291A50	**136-9224●**	8.99	8.26	7.91
Green	(24 to 36)	105	19291A51	**136-9225●**	8.99	8.26	7.91
AC/DC Satin Chrome Bezel (Built in resistor)							
Red	(24AC/DC)	60	192B0350	**136-9239●**	4.24	3.95	3.77
Green	(24AC/DC)	40	192B0351	**136-9240●**	4.24	3.95	3.77

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Farnell

LED Indicators, 10mm Lens Diameter - continued

10mm with Integral Resistor

12V dc to 24V dc and 110Vac to 240Vac – Single, Flashing and Tri-colour



Total L behind bezel=42, Bezel dia.=16, Thread=M14 x 1
Mounting hole dia.=14.5
Tab connections=2.8 x 0.8

A range of panel mounting LED indicators with integral resistor to permit direct connection to 12V and 24V dc supplies. The 10mm LEDs are fitted in high quality bright chrome or black chrome brass housings, fitted with fixing nut and washer. Connection is by faston/solder tab terminals. The tri-colour indicators have HE red and green LEDs, both LEDs connected gives yellow. **CE** approved.

Operating Voltage 12V dc, 24V dc ±10% Reverse voltage (max.) 5V
Operating current (max.) 30mA (12V), 22mA (24V) Operating temperature range -25°C to +70°C

Typical Luminous Intensity @ I_F=20mA

	HE Red	Green	Yellow
12V	90mcd	30mcd	35mcd
24V	70mcd	22mcd	25mcd

206283

Colour	Order Code	Price Each 1+	25+	50+	100+	250+
Satin Chrome - Flashing						
24V DC, Red	**110-5446●**	5.48	4.59	3.95	3.63	3.40
Satin Chrome - Single						
12V DC, Yellow	**110-5442●**	4.05	3.05	2.82	2.63	2.48
12V DC, Green	**113-9483●**	4.54	3.42	3.15	2.95	2.78
12V DC, HE Red	**113-9485●**	4.26	4.09	3.71	2.63	2.48
24V DC, Yellow	**110-5445●**	4.42	3.34	3.07	2.87	2.72
24V DC, Green	**110-5444●**	3.95	3.79	2.74	2.56	2.43
110V DC, Blue (neon)	**113-9180●**	5.62	5.18	5.02	4.57	4.41
110V AC, Yellow	**110-5476●**	7.55	5.81	5.40	5.02	4.73
110V AC, Red	**110-5475●**	6.95	5.43	5.00	4.68	4.40
230V AC, Red	**110-5477●**	6.95	5.43	5.00	4.68	4.40
Satin Chrome - Tri-colour						
12V DC, HE Red, Green, Yellow	**110-5447●**	5.92	4.94	4.22	3.86	3.63
24V DC, HE Red, Green, Yellow	**110-5448●**	5.92	5.39	4.97	4.20	3.94
Black Chrome - Flashing						
24V DC, Red	**110-5455●**	5.68	4.22	3.92	3.86	3.79
Black Chrome - Single						
12V DC, Yellow	**110-5453●**	4.20	3.16	2.94	2.72	2.56
12V DC, Green	**110-5452●**	4.11	3.09	2.86	2.67	2.49
12V DC, HE Red	**110-5451●**	4.30	4.14	2.86	2.67	2.49
24V DC, Yellow	**110-5454●**	4.11	3.09	2.86	2.67	2.49
24V DC, Green	**113-9495●**	4.11	3.92	2.86	2.67	2.49
24V DC, HE Red	**113-9498●**	4.30	4.14	2.86	2.67	2.49
Black Chrome - Tri-colour						
12V DC, HE Red, Green, Yellow	**110-5456●**	6.08	5.57	4.30	3.94	3.71
24V DC, HE Red, Green, Yellow	**110-5457●**	6.08	5.57	4.30	3.94	3.71

10mm, High Contrast with Integral Resistor, IP67 Rated

24V dc



Total L behind bezel=41, Bezel dia.=16, Thread=M14 x 1, Mounting hole dia.=14.5, Tab Connections=2.8 x 0.8

A range of LED panel-mounting indicators with integral resistor to permit direct connection to 24V dc supplies. They incorporate a white diffused 10mm LED to give a high 'on/off' contrast and are fitted in high quality prominent, bright chrome or black chrome brass housings, fitted with fixing nut and washer. Connection is by faston/solder tab terminals.

Operating Voltage: 24V dc Reverse voltage (max.) 80V
Operating Temperature: -20°C to +50°C Operating current: 17mA

Typical Luminous Intensity (mcd)	HE Red	Green	Yellow
	60	40	40

206576

Colour	Order Code	Price Each 1+	10+	25+	50+	100+
Matt Chrome (Brushed Satin) - Prominent						
24Vdc HE Red	**110-5468●**	4.43	4.24	3.90	3.11	2.91
24Vdc Green	**110-5469●**	4.43	3.92	3.62	2.85	2.71
24Vdc Yellow	**110-5470●**	4.43	4.24	3.90	3.11	2.91
Black Chrome - Prominent						
24Vdc HE Red	**110-5471●**	4.43	3.92	3.62	2.85	2.71
24Vdc Green	**110-5472●**	4.43	4.24	3.90	3.11	2.91
24Vdc Yellow	**110-5473●**	4.43	4.24	3.90	3.11	2.91

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10mm, with Lamp Test Facility and Integral Resistor, IP67 Rated

24V AC / DC Matt Chrome (Brushed Satin) Finish



Total L behind bezel=41, Bezel dia.=16, Thread=M14 x 1, Mounting hole dia.=14.5, Tab Connections=2.8 x 0.8

A range of LED panel mounting indicators with a lamp test facility suitable for both ac and dc operation. Integral resistors permit direct connection to the stated supply. The LED's are fitted in a high quality Matt Chrome (Brushed Satin) housing, giving protection to IP67 rating, fitted with 'O' ring, fixing nut and washer. Connection is by faston/solder tab terminals.

	Red	Green	Yellow	Blue	White
Luminous intensity (typ)	80mcd	60mcd	60mcd	350mcd	650mcd
Forward Current			17mA		
Reverse Voltage			80V		
Operating Temperature			-20°C to +50°C		

206574

Colour	Order Code	Price Each 1+	10+	25+	50+	100+
HE Red	**110-5464●**	4.54	4.35	4.00	3.11	2.97
Green	**110-5465●**	4.54	4.35	4.00	3.11	2.97
Yellow	**110-5466●**	4.54	4.35	4.00	3.11	2.97
Blue	**110-5467●**	9.98	9.53	8.75	6.82	6.50
White	**113-9569●**	9.98	9.53	8.75	6.82	6.50

10mm, Sunlight Readable with Integral Resistor, IP67 Rated

24V dc



Total L behind bezel=38.5, Bezel dia.=16, Thread=M14 x 1, Mounting hole dia.=14.5, Tab Connections=2.8 x 0.8

A range of Sunlight Readable panel-mounting indicators with integral resistor to permit direct connection to 24V dc supplies. The 10mm LED's are fitted in high quality bright chrome or black chrome brass housings, fitted with fixing nut and washer. Connection is by faston/solder tab terminals.

Operating voltage: 24V dc Reverse voltage (max.) 80V
Operating Temperature: -20°C to +50°C Operating current: 17mA

Typical luminous intensity (cd/m²)	Mega Red	Mega Green	Mega Yellow	Mega Blue	White
	3700	40900	15500	4480	29650

206580

Colour	Order Code	Price Each 1+	10+	25+	50+	100+
Bright Chrome						
24Vdc Red	**110-5495●**	6.34	6.07	5.45	4.34	4.12
24Vdc Green	**110-5497●**	12.92	12.37	11.20	8.90	8.43
24Vdc Yellow	**110-5496●**	9.09	8.68	7.88	6.26	5.92
24Vdc Blue	**113-9504●**	11.12	10.67	9.64	7.67	7.26
24Vdc White	**113-9512●**	11.54	11.05	10.00	7.95	7.53
Black Chrome						
24Vdc Red	**110-5499●**	5.77	5.53	5.01	4.00	3.77
24Vdc Green	**110-5501●**	11.67	11.16	10.12	8.03	7.62
24Vdc Yellow	**110-5500●**	5.97	5.70	5.15	4.12	3.89
24Vdc Blue	**113-9505●**	11.26	10.76	9.74	7.75	7.35
24Vdc White	**113-9510●**	11.67	11.16	10.12	8.03	7.62

10mm, Sunlight Readable - IP67 Rated

12V & 24V dc, 110V & 240V ac



- 12.7mm mounting dia. panel indicator
- Sealed to **IP67**
- Sunlight readability
- Nickel plated Brass housing
- MTBF 90,000 hours
- Designed for push on spade connectors

L=33.0 (overall), Length behind bezel=26.5, Mounting hole dia.=12.7, Bezel dia.=17

Operating Voltage: 12Vdc @ 20Ma, 24Vdc @ 20mA, 110Vac @ 9mA, 240Vac @ 4mA

Colour	Luminous Intensity @ 20mA	Wavelength
Red	3500mcd	660nm
Green	6000mcd	525nm
Yellow	6200mcd	595nm
White	3000mcd	—

Viewing angle: 120° Operating Temperature: -20°C to +60°C

206567

Colour	Mftrs. List No.	Order Code	Price Each 1+	5+	10+	25+	50+
12V dc Red	512-501-21	**973-7529●**	17.66	16.33	13.50	12.24	10.31
12V dc Green	512-532-21	**973-7545●**	16.56	13.76	12.65	11.82	9.94
12V dc Yellow	512-521-21	**973-7537●**	17.31	16.01	13.23	12.00	10.10
12V dc White	512-997-21	**973-7553●**	17.37	14.45	13.29	12.40	10.44
24V dc Red	512-501-22	**973-7561●**	17.66	14.69	13.50	12.24	10.31

RL Re-reeling available

Colour	Mftrs. List No.	Order Code	Price Each 1+	5+	10+	25+	50+
24V dc Green	512-532-22	**973-7588●**	14.40	13.76	12.86	11.09	9.81
24V dc Yellow	512-521-22	**973-7570●**	17.13	14.25	13.10	11.87	10.00
24V dc White	512-997-22	**973-7596●**	17.62	15.95	14.31	12.27	10.10
110V ac Red	512-501-75	**973-7600●**	19.46	16.20	14.87	13.46	11.35
110V ac Green	512-532-75	**973-7626●**	13.39	13.12	12.32	10.71	9.91
110V ac Yellow	512-521-75	**973-7618●**	19.46	16.20	14.87	13.46	11.35
240V ac Red	512-501-76	**973-7634●**	19.46	16.20	14.87	13.46	11.35
240V ac Green	512-532-76	**973-7650●**	16.73	15.12	14.08	10.26	9.38
240V ac White	512-997-76	**973-7669●**	15.28	14.90	14.08	11.93	9.87

M14, 12V AC/DC LED Indicator

Sunlight Visibility



- 9mA(AC) / 17mA(DC) current consumption
- Operating Temp: -20°C to +60°C
- Voltage tolerance: +10%
- IP67 Protected

L=32, Dia(thread)=14, Dia(Bezel)=16, 9mm tab length

496569

Mftrs. List No.	Colour	Order Code	Price Each 1+	10+	25+
Satin Chrome Bezel					
192A0250	Red	**136-9230●**	3.86	3.59	3.45
192A0252	Yellow	**136-9231●**	6.61	6.17	5.89
192A0255	Green	**136-9232●**	5.40	5.04	4.80
192A0257	Blue	**136-9233●**	5.40	5.04	4.80
Black Chrome Bezel					
192A1250	Red	**136-9235●**	3.86	3.60	3.45
192A1252	Yellow	**136-9236●**	6.42	5.99	5.74

10mm with Integral Resistor

12V ac and 24V ac



Total L behind bezel=42, Bezel dia.=16,
Thread=M14 x 1,
Mounting hole dia.=14.5,
Tab connections=2.8 x 0.8

A range of panel mounting indicators with integral resistor to permit direct connection to 12V ac and 24V ac supplies. They are fitted in a high quality bright chrome or black chrome brass housing fitted with fixing nut and washer. Connection is by faston/solder tab terminals. **CE** approved.

			Typical luminous intensity (mcd) at operating current:		
Operating voltage (±10%)	12V ac, 24V ac		HE Red	Green	Yellow
Operating current (max.)	20mA				
Operating temperature range	-55°C to +70°C	12V ac	67	22	26
Life expectancy	60,000 hours min	24V ac	52	16	19

206472

Colour	Order Code	Price Each 1+	25+	50+	100+	250+
Bright Chrome						
12V ac HE Red	**110-5485●**	4.13	3.33	3.18	2.92	2.77
12V ac Green	**110-5487●**	3.94	3.17	3.03	2.77	2.65
24V ac HE Red	**110-5488●**	4.04	3.25	3.11	2.85	2.71
24V ac Green	**110-5489●**	4.13	3.33	3.18	2.92	2.77
24V ac Yellow	**110-5490●**	4.13	3.33	3.18	2.92	2.77
Black Chrome						
24V ac Green	**110-5493●**	4.11	3.30	3.17	2.90	2.76
24V ac Yellow	**110-5494●**	4.11	3.30	3.17	2.90	2.76

10mm with Integral Resistor

110V ac and 240V ac



Total L behind bezel=67, Bezel dia.=16,
Thread=M14 x 1
Mounting hole dia.=14.5.
Tab connections=2.8 x 0.8

A range of panel mounting indicators with integral resistor to permit direct connection to 110V ac and 240V ac supplies. The 10mm LEDs are fitted in high quality bright chrome or black chrome brass housings, fitted with fixing nut and washer. A matching blue indicator is available using a fluorescent (neon) tube. Connection is by faston/solder tab terminals. **CE** approved.

Note: 110V ac types are not suitable for use on 240V ac supply by using a dropper resistor.

Operating Voltage:	110V nom, 135V max. 230V nom, 250V max.	Operating current (nom.) Operating temperature range	6mA (110V), 3mA (230V) -25°C to +60°C

		Red	Green	Yellow	Blue
Typical Luminous Intensity	110V	47mcd	34mcd	27mcd	7.5mcd
	230V	18mcd	11mcd	8mcd	7.5mcd
Life expectancy	LED	60,000 hours min.			
	Fluorescent	25,000 hours min.			

206284

Colour	Order Code	Price Each 1+	25+	50+	100+	250+
Bright Chrome						
110V Red	**110-5475●**	6.95	5.43	5.00	4.68	4.40
110V Green	**113-9476●**	7.55	5.81	5.40	5.02	4.73
110V Yellow	**110-5476●**	7.55	5.81	5.40	5.02	4.73
240V Blue (neon)	**113-9180●**	5.62	5.18	5.02	4.57	4.41
240V Red	**110-5477●**	6.95	5.43	5.00	4.68	4.40
240V Green	**110-5478●**	7.55	5.81	5.40	5.02	4.73
240V Yellow	**113-9492●**	7.55	5.81	5.40	5.02	4.73
Black Chrome						
110V Green	**110-5481●**	7.68	6.02	5.58	5.19	4.88
240V Red	**110-5482●**	7.13	5.62	5.18	4.85	4.55
240V Green	**110-5483●**	7.68	6.02	5.58	5.19	4.88
240V Yellow	**113-9493●**	7.68	6.02	5.58	5.19	4.88
240V Blue (neon)	**110-5484●**	5.76	5.42	5.19	4.75	4.56

LED Indicators, M16 Thread Diameter

M16, LED Indicators

- Operating Temp: -20°C to +60°C
- Voltage tolerance: +10%
- IP67 Protected
- 6mA(130VAC), 3mA (230VAC), 9/17mA(24V AC/DC & 12V AC/DC), current consumption

496595

Mftrs. List No.	Colour	Order Code	Price Each 1+	10+	25+
Satin Chrome Bezel, 12V AC/DC					
19370250M	Red	**136-9275●**	7.45	6.94	6.62
Satin Chrome Bezel, 24V AC/DC					
19370350M	Red	**136-9279●**	7.45	6.94	6.62
19370352M	Yellow	**136-9281●**	7.45	6.94	6.62
19370357M	Blue	**136-9282●**	9.82	9.13	8.75
1937035WM	White	**136-9284●**	9.82	9.13	8.75
Black Chrome Bezel, 24V AC/DC					
19371352M	Yellow	**136-9291●**	7.57	7.05	6.72
19371357M	Blue	**136-9292●**	9.93	9.24	8.84

M16, LED Indicators



- Operating Temp: -20°C to +60°C
- Voltage tolerance: +10%
- IP67 Protected
- 9/17mA(24V AC/DC), 8/16mA(12V AC/DC) current consumption

L=52(including tab), Dia(thread)=16, Dia(Bezel)=18.3

496599

Mftrs. List No.	Colour	Order Code	Price Each 1+	10+	25+
Satin Chrome Bezel, 12V AC/DC					
19380250M	Red	**136-9293●**	7.45	6.94	6.62
Satin Chrome Bezel, 24V AC/DC					
19380350M	Red	**136-9297●**	7.45	6.94	6.62
19380351M	Green	**136-9298●**	7.45	6.94	6.62
19380352M	Yellow	**136-9299●**	7.45	6.94	6.62
Black Chrome Bezel, 24V AC/DC					
19381350M	Red	**136-9305●**	7.57	7.05	6.72
1938135WM	White	**136-9308●**	9.93	9.24	8.84

M16, LED Indicators



- Operating Temp: -20°C to +60°C
- Voltage tolerance: +10%
- IP67 Protected
- Wiring protection tube included
- 6mA(130VAC), 3mA(230VAC)

L=58(including tab), Dia(thread)=16, Dia(Bezel)=18.3

496609

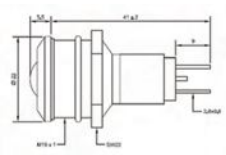
Mftrs. List No.	Colour	Order Code	Price Each 1+	10+	25+
Satin Chrome Bezel, 130VAC					
1940013WM	White	**136-9309●**	10.34	9.61	9.20
Satin Chrome Bezel, 230VAC					
19400230M	Red	**136-9310●**	6.01	5.58	5.35
19400231M	Green	**136-9311●**	6.01	5.58	5.35

LED Indicators, M19 Thread Diameter

M19, AC/DC Round Lens



Style B, L=67.5, Dia(thread)=19, Dia bezel=22



Style A, L=46.5(including 9mm tab), Dia(thread)=19, Dia bezel=22

RL Re-reeling available

LED Indicators, M19 Thread Diameter - continued

M19, AC/DC Round Lens - continued

- Operating Temp: -20°C to +60°C
- Voltage tolerance: +10%
- IP67 rated

496675

Mftrs. List No.	Colour	Order Code	Price Each 1+	10+	25+
Style A, Satin Chrome Bezel, 24 V AC/DC					
1970035W	White	**136-9375●**	8.44	7.85	7.53
Style B, Satin Chrome Bezel, 230 V AC					
19730230TS	Red	**136-9376●**	8.18	7.61	7.30
19730231TS	Green	**136-9377●**	8.18	7.61	7.30
19730232TS	Yellow	**136-9378●**	7.45	6.93	6.64
1973023WTS	White	**136-9379●**	9.52	8.85	8.47
Style B, Black Chrome Bezel, 230 V AC					
19731230TS	Red	**136-9380●**	7.56	7.02	6.73
Style B, Matt Chrome Bezel, 230 V AC					
19732230TS	Red	**136-9381●**	7.56	7.02	6.73

M22, AC/DC Round Lens

With Lamp Test Facility



- Operating Temp: -20°C to +60°C
- Voltage tolerance: +10%
- IP67 rated
- 6mA current consumption

Round lens, L=60.5 (including 18mm tab), Dia (thread)=22, Dia bezel=25

496664

Mftrs. List No.	Colour	Order Code	Price Each 1+	10+	25+
Black Chrome Bezel, 230 V AC (round lens)					
195G1230	Red	**136-9370●**	8.91	8.40	8.02
195G1231	Green	**136-9371●**	11.54	10.83	10.38
195G1232	Yellow	**136-9372●**	6.36	5.98	5.72

LED Indicators, 16mm Lens Diameter

Cable Assemblies for Tab Terminals



- Suitable for all voltage ranges
- Flying lead length is 300mm in red and black
- Cable assemblies suitable for all indicators with 2.0 x 0.55mm and 2.8 x 0.8mm tab terminations
- These assemblies fit all of the EBT ranges of LED Indicators and Xenon Flash Indicators. The 2.0 x 0.55mm fit the 3 & 5mm ranges and the 2.8 x 0.8mm fit the 10 & 16mm ranges and the Xenon Indicators

206585

Order Multiple=5 2.0 x 0.5mm	Order Code	Price Each 5+	25+	50+	100+	250+
Red, 300mm	**110-5189●**	0.44	0.38	0.36	0.28	0.27
Black, 300mm	**110-5191●**	0.44	0.38	0.36	0.28	0.27
2.8 x 0.8mm						
Red, 300mm	**110-5192●**	0.34	0.29	0.27	0.21	0.20
Black, 300mm	**110-5193●**	0.34	0.29	0.27	0.21	0.20

16mm, with Lamp Test Facility and Integral Resistor, IP67 Rated

24V dc Matt Chrome (Brushed Satin) Finish



Total L behind bezel=58, Bezel dia.=25, Thread=M22 x 1.5, Mounting hole dia.=22.5, Tab Connections=2.8 x 0.8

A range of LED panel-mounting indicators with a lamp test facility. Integral resistors permit direct connection to the stated supply. The LED's are fitted in a high quality Matt Chrome (Brushed Satin) housing, giving protection to **IP67** rating, fitted with 'O' ring, fixing nit and washer. Connection is by faston/solder tab terminals.

	Red	Green	Yellow
Typical luminous intensity (mcd)	160	120	350
Forward current:	19mA	19mA	19mA

Reverse Voltage (max): 80V Operating Temperature: -20°C to +50°C

206573

Colour	Order Code	Price Each 1+	10+	25+	50+	100+
Matt Chrome (Brush satin) 24V dc						
HE Red	**110-5519●**	11.52	11.02	10.15	8.06	7.91
Green	**110-5520●**	11.52	11.02	10.15	8.06	7.91
Yellow	**110-5521●**	11.80	11.29	10.40	8.27	8.10

M16, LED Indicators



- Operating Temp: -20°C to +60°C
- Voltage tolerance: +10%
- IP67 Protected
- Wiring protection tube included
- 6mA(130VAC), 3mA(230VAC)

L=58(including tab), Dia(thread)=16, Dia(Bezel)=18.3

496609

Mftrs. List No.	Colour	Order Code	Price Each 1+	10+	25+
Satin Chrome Bezel, 130VAC					
1940013WM	White	**136-9309●**	10.34	9.61	9.20
Satin Chrome Bezel, 230VAC					
19400230M	Red	**136-9310●**	6.01	5.58	5.35
19400231M	Green	**136-9311●**	6.01	5.58	5.35

16mm, Black Plastic Bezel with Integral Resistor, IP67 Rated

24V dc, 28V ac, 130V ac, 230V ac



Total L behind bezel=58, Bezel dia.=25, Thread=M22 x 1.5, Mounting hole dia.=22.5, Tab Connections=2.8 x 0.8

A range of LED panel-mounting indicators with integral resistors to permit direct connection to the stated supplies. The LED's are fitted in black plastic (polycarbonate) housings with a choice of either a flat or a rounded lens, fitted with fixing nut. Connection is by faston/solder tab terminals.

There are two negative terminals provided for ease of wiring to a number of indicators. **CE** approved.

Note: The spare terminal should be insulated if not being used. 130V ac types are not suitable for use on 240V ac supply by using a dropper resistor.

Typical luminous intensity (mcd) @ operating voltage, forward current

	Red	Green	Yellow
24V dc, 16mA	160	400	
230V ac, 4mA	120	300	260

Operating temperature: -20°C to +50°C

206575

Colour Round Lens	Order Code	Price Each 1+	10+	25+	50+	100+
24V dc						
Red	**110-5523●**	7.85	7.49	6.90	5.49	5.12
Green	**110-5524●**	10.68	10.21	9.38	7.46	6.97
230V ac						
Green	**110-5525●**	12.10	11.58	10.66	8.47	7.91
Flat Lens 24V dc						
Green	**113-9507●**	7.91	7.57	6.95	5.53	5.16
230V ac						
Red	**110-5526●**	8.87	8.52	7.82	6.20	5.80
Green	**110-5527●**	11.37	11.15	10.64	8.26	7.90
Yellow	**110-5529●**	9.10	8.73	8.02	6.37	5.96

16mm with Integral Resistor, IP67

12V dc, 24V dc, 12V ac, 24V ac, 130V ac & 230V ac



Total L behind bezel=58, Bezel dia.=22, Thread=M22 x 1.5 Mounting hole dia.=22, Tab connections=2.8 x 0.8

A range of panel mounting indicators with integral resistor to permit direct connections to the stated voltages. They are fitted in a high quality bright chrome or black chrome brass housings, giving protection to **IP67**, fitted with 'O' ring, fixing nut and washer. Connection is by faston/solder tab terminals. There are two negative terminals provided for ease of wiring to a number of indicators. **CE** approved.

Note the spare terminal should be insulated if not being used. 110V ac types are not suitable for use on 240V ac supply by using a dropper resistor.

	12V DC	24V DC	24V AC	230V AC
Operating Voltage				
Forward Current	38mA	19mA	20mA	4mA
Operating Temperatre		-25°C to + 60°C		
Life Expectancy		60000h		

RL Re-reeling available

Luminous Intensity (typ):	Red	Green	Yellow
12 / 24V DC	160mcd	120mcd	350mcd
12 / 24V AC	265mcd	—	350mcd
130 / 230V AC	28mcd	20mcd	48mcd

206505

Colour Bright Chrome	Order Code	Price Each 1+	10+	25+	50+	100+
12V dc Red	110-5502●	10.02	9.81	9.58	8.74	7.59
12V dc Green	110-5503●	9.77	9.57	9.34	8.53	7.41
12V dc Yellow	110-5505●	10.02	9.81	9.58	8.74	7.59
24V dc Red	110-5508●	10.02	9.81	9.58	8.74	7.59
24V dc Green	113-9536●	10.02	9.81	9.58	8.74	7.59
24V dc Yellow	110-5509●	10.02	9.81	9.58	8.74	7.59
24V acRed	110-5506●	10.33	10.14	9.87	9.02	7.82
230V ac Red	110-5512●	11.27	11.05	10.77	9.83	8.55
230V ac Green	110-5513●	11.27	11.05	10.77	9.83	8.55
230V ac Yellow	110-5514●	11.27	11.05	10.77	9.83	8.55

M22, AC/DC LED Indicators

With Lamp Test Facility



- Operating temp: -20°C to +60°C
- Voltage tolerance: +10%
- IP67 protected
- 8mA(AC) / 16mA(DC) current consumption

L=61(including 18mm tab), Dia(thread)=22, Dia(Bezel)=25

496618

Mftrs. List No.	Colour	Order Code	Price Each 1+	10+	25+
Satin Chrome Bezel, 12 V AC/DC					
195C0250M	Red	136-9343●	8.48	7.88	7.55
195C0251M	Green	136-9344●	8.65	8.04	7.70
Satin Chrome Bezel, 24 V AC/DC					
195C0350M	Red	136-9346●	6.17	5.73	5.49
195C0351M	Green	136-9347●	6.17	5.73	5.49
195C035WM	White	136-9352●	9.59	8.92	8.55

M22, AC/DC Flat Lens

With Lamp Test Facility



- Operating Temp: -20°C to +60°C
- Voltage tolerance: +10%
- IP67 rated
- 8/16mA(12V AC/DC),

L=60.5(including 18mm tab), Dia(thread)=22, Dia bezel=25

496642

Mftrs. List No.	Colour	Order Code	Price Each 1+	10+	25+
Satin Chrome Bezel, 12 V AC/DC					
195D0250M	Red	136-9355●	6.17	5.73	5.49
195D0251M	Green	136-9356●	6.17	5.73	5.49
Satin Chrome Bezel, 24 V AC/DC					
195D0350M	Red	136-9357●	6.17	5.73	5.49
195D0351M	Green	136-9358●	6.17	5.73	5.49
195D0352M	Yellow	136-9359●	8.65	8.04	7.70
Matt Chrome Bezel, 24 V AC/DC					
195D2350M	Red	136-9363●	8.80	8.19	7.84
195D2351M	Green	136-9364●	6.27	5.85	5.59

M22, AC/DC Round Lens

With Lamp Test Facility



- Operating Temp: -20°C to +60°C
- Voltage tolerance: +10%
- IP67 rated
- 6mA current consumption

Round lens, L=60.5 (including 18mm tab), Dia (thread)=22, Dia bezel=25

496664

Mftrs. List No.	Colour	Order Code	Price Each 1+	10+	25+
Black Chrome Bezel, 230 V AC (round lens)					
195G1230	Red	136-9370●	8.91	8.40	8.02
195G1231	Green	136-9371●	11.54	10.83	10.38
195G1232	Yellow	136-9372●	6.36	5.98	5.72

Nut Fixing

12.7mm Dia. panel cutout



L=62mm (overall), D=14.6mm (lens)

- Dual voltage - 110/230V ac rated
- Integral resistor and diode
- Chrome bezel
- Nut fixing
- Terminated with 2 x 6.3mm tabs
- Panel thickness 12mm max.

These mains voltage rated LED indicators are direct fit replacement for standard neon indicators. They are more robust, less susceptible to damage and vibration and are flicker free. 4 colours are available: red, amber, green, blue and a clear version.

413868

Colour	Mftrs. List No.	Order Code	Price Each 1+	25+	100+
Red	C027700MAA	963-0988●	2.66	2.48	2.36
Amber	C027700MAB	963-0996●	2.66	2.48	2.36
Green	C027700MAC	963-1003●	3.07	2.85	2.72
Blue	C027700MAD	963-1011●	3.07	2.85	2.72
Clear	C027700MAE	963-1020●	3.07	2.85	2.72

Snap-In Fixing

12.7mm Dia. panel cutout



- Dual voltage - 110/230V ac rated
- Integral resistor and diode
- Quick snap-in fixing
- Terminated with 2 x 6.3mm tabs
- Panel thickness 0.75 to 2mm

L=37.7mm (overall), D=13.6mm (lens)

These mains voltage rated LED indicators are direct fit replacement for standard neon indicators. They are more robust, less susceptible to damage and vibration and are flicker free. 4 colours are available: red, amber, green, blue and a clear version.

413869

Colour	Mftrs. List No.	Order Code	Price Each 1+	25+	100+
Red	C287000MAA	963-1089●	1.42	1.33	1.27
Amber	C287000MAB	963-1097●	1.42	1.33	1.27
Green	C287000MAC	963-1100●	1.89	1.76	1.68

Vandal Resistant

12.1mm Dia. panel cutout



- Rugged stainless steel body
- Low profile front panel projection
- Wide viewing angle
- Front panel sealed to IP67
- Rear of panel fixing
- Colour coded insulators
- Solder tag/2.8mm terminals
- Panel thickness 3 to 11.3mm

L=41.2mm (overall), D=5mm (lens), D=15mm(bezel)

LED (ratings @ 20mA)

Red	Yellow	Green	Blue
2000mcd	400mcd	100mcd	1575mcd

Operating temperature	-40 to 80°C
Operating current (typical)	20mA

413924

Colour	Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+
12V operating						
Red	DX0505/RD/12	963-0201●	6.06	5.70	5.45	5.21
Yellow	DX0505/YL/12	963-0210●	6.06	5.70	5.45	5.21
Green	DX0505/GN/12	963-0228●	6.06	5.70	5.45	5.21
Blue	DX0505/BL/12	963-0236●	6.06	5.70	5.45	5.21
24V operating						
Red	DX0505/RD/24	963-0244●	6.06	5.44	5.17	4.96
Yellow	DX0505/YL/24	963-0252●	6.06	5.70	5.45	5.21
Green	DX0505/GN/24	963-0260●	6.06	5.70	5.45	5.21
Blue	DX0505/BL/24	963-0279●	6.06	5.70	5.45	5.21

LED Indicators, 20mm Lens Diameter

M22 LED Indicators

IP67 Rated



Style A



Style B

- 22mm LED
- 2.8x0.8 tab terminals
- 58mm depth behind panel
- 25mm Bezel

476140

Colour	Voltage	Luminous Int (mcd)	Mftrs. List No.	Order Code	Price Each 1+	25+	100+
Style A - VDC							
R, G, Y	12	120	19540354	136-9038●	13.87	12.90	12.35
R, G, Y	12	120	19541354*	136-9041●	10.03	9.33	8.94
Red	24	160	19531350*	136-9033●	9.88	9.20	8.81
Yellow	24	350	19531352*	136-9034●	7.05	6.57	6.28
Blue	24	—	19531357*	136-9035●	8.77	8.16	7.81
Red	24 to 36	135	19531A50*	136-9329●	8.94	8.31	7.96
Green	24 to 36	100	19531A51*	136-9330●	8.94	8.31	7.96

RL Re-reeling available

LED Indicators, 20mm Lens Diameter - continued

M22 LED Indicators - continued

IP67 Rated - continued

Colour	Voltage	Luminous Int (mcd)	Mftrs. List No.	Order Code	Price Each 1+	25+	100+
Style B - VAC							
Green	110	20	19571131*	**136-9043**●	11.12	10.35	9.91
Blue	230	—	19570237	**136-9042**●	11.80	10.97	10.51

List numbers marked with a " * ", indicate a black chrome bezel (unmarked are satin chrome)

M22, LED Indicators

24 V AC/DC



- Operating Temp: -20°C to +60°C
- Voltage tolerance: +10%
- IP67 Protected
- 16mA Current Consumption

L=61(including 18mm tab), Dia(thread)=22, Dia(Bezel)=25

496617

Mftrs. List No.	Colour	Order Code	Price Each 1+	10+	25+
195B1350UC	Red	**136-9340**●	5.15	4.79	4.59
195B1351UC	Green	**136-9341**●	6.83	6.38	6.10
195B1357UC	Blue	**136-9342**●	6.83	6.38	6.10

M22, AC/DC LED Indicators

With Lamp Test Facility



- Operating temp: -20°C to +60°C
- Voltage tolerance: +10%
- IP67 protected
- 8mA(AC) / 16mA(DC) current consumption

L=61(including 18mm tab), Dia(thread)=22, Dia(Bezel)=25

496618

Mftrs. List No.	Colour	Order Code	Price Each 1+	10+	25+
Satin Chrome Bezel, 12 V AC/DC					
195C0250M	Red	**136-9343**●	8.48	7.88	7.55
195C0251M	Green	**136-9344**●	8.65	8.04	7.70
Satin Chrome Bezel, 24 V AC/DC					
195C0350M	Red	**136-9346**●	6.17	5.73	5.49
195C0351M	Green	**136-9347**●	6.17	5.73	5.49
195C035WM	White	**136-9352**●	9.59	8.92	8.55

LED Panel Mount Indicator

17.5mm (11/16") Mounting Hole - Watertight



- Front panel mounting
- Multi-LED construction
- Uniform illumination
- Wide viewing angle
- High reliability - 100K hours
- Watertight - MIL-L 3661 B
- Tamper proof

Length 35.6mm
Depth (behind panel) 26.7mm
Lead length 140mm

Colour	Voltage (Vdc)	Current (mA)	Luminous intensity (mcd)	Intensity (mcd)	Mftrs. List No.
Red	12	20	3400	3400cd/m^2	557-1503-203F
Red	24	20	3400	3400cd/m^2	557-1505-203F
Green	24	16	3400	3400cd/m^2	557-1605-203F
Yellow	12	20	3400	3400cd/m^2	557-1703-203F
Yellow	24	20	3400	3400cd/m^2	557-1705-203F

361082/405985

Mftrs List No.	Order Code	Price Each 1+	10+	50+	100+	250+
557-1503-203F	**113-8307**●	10.72	7.70	6.49	5.96	5.73
557-1505-203F	**113-8308**●	10.72	7.70	6.49	5.96	5.73
557-1603-203F	**113-8309**●	10.37	7.46	6.29	5.78	5.56
557-1605-203F	**113-8310**●	11.85	8.52	7.19	6.60	6.35
557-1703-203F	**113-8311**●	10.72	7.70	6.49	5.96	5.73
557-1705-203F	**113-8312**●	10.72	7.70	6.49	5.96	5.73

20mm - IP67 Rated

24V dc



This range of large diameter LED indicators have 20mm tinted diffused LEDs in a black anodised aluminium housing and sealed to **IP67** rating. They are supplied with sealing rings, fixing nut, washer and screw terminations.

Overall L=67, Total L behind bezel=49,
Bezel dia.=34.5, Mounting hole dia.=25.4

Operating current: 20mA

Maximum reverse voltage: 1000V

Typical Lum.Intensity I_V@ I_{OPR} (cdm^2)	Red	Yellow
24V dc	180	160
Wave Length (nm)	635	585

206519

Colour	Mftrs. List No.	Order Code	Price Each 1+	3+	5+	10+	25+
24V dc							
Red	671-290-22	**973-7227**●	39.58	36.24	33.43	31.02	29.04
Yellow	671-291-22	**973-7243**●	39.58	36.24	33.43	31.02	29.04

Through Hole LED Accessories

3mm, 5mm LED Spacers and Holders

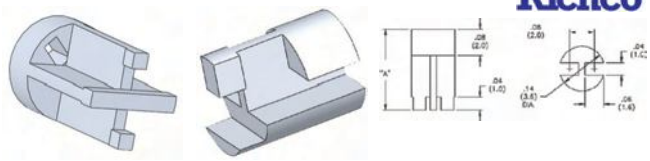


Square 2 Pin, 5mm x 5mm | Round 2 Pin, 5mm | Round 2 Pin, 3mm | Round 3 Pin, 5mm | Right Angle 2 Pin, 3mm

206584

Mftrs. List No.	Height (mm)	O/A Dia	Order Code	Price Each 25+	100+	500+	1K+
Square 2 Pin LED Holder - 5mm × 5mm							
LEDX-3	3	—	**955-5013**●	0.039	0.034	0.029	0.024
LEDX-4	4	—	**955-5021**●	0.077	0.067	0.057	0.047
LEDX-5	5	—	**955-5030**●	0.077	0.058	0.056	0.048
LEDX-6	6	—	**955-5048**●	0.077	0.075	0.056	0.037
LEDX-7	7	—	**955-5056**●	0.077	0.058	0.056	0.037
LEDX-8	8	—	**955-5064**●	0.077	0.075	0.056	0.048
LEDX-9	9	—	**955-5072**●	0.081	0.079	0.057	0.050
LEDX-10	10	—	**955-5080**●	0.039	0.038	0.029	0.024
LEDX-11	11	—	**955-5099**●	0.079	0.068	0.056	0.043
LEDX-12	12	—	**955-5102**●	0.066	0.054	0.047	0.034
Round 2 Pin LED Holder - 5mm							
LED-2A	2	5	**955-5110**●	0.062	0.053	0.043	0.031
LED-3A	3	5	**955-5137**●	0.062	0.053	0.043	0.031
LED-4.5A	4.5	5	**955-5145**●	0.062	0.053	0.043	0.031
LED-6.5A	6.5	5	**955-5153**●	0.062	0.053	0.043	0.031
LED-10	10	5	**955-5161**●	0.062	0.052	0.043	0.031
LED-13	13	5	**955-5170**●	0.077	0.058	0.056	0.048
LED-16	16	5	**955-5188**●	0.079	0.058	0.056	0.049
LED-17	17	5.6	**955-5196**●	0.079	0.058	0.056	0.049
LED-20	20.2	5	**955-5200**●	0.056	0.042	0.040	0.035
LED-23	23	5.1	**955-5226**●	0.079	0.068	0.056	0.043
Round 2 Pin LED Holder - 3mm							
LED3-3	3	4.2	**955-5234**●	0.062	0.053	0.043	0.031
LED3-4	4	4.2	**955-5242**●	0.062	0.053	0.043	0.031
LED3-5	5	4.2	**955-5250**●	0.063	0.054	0.044	0.033
LED3-6	6.1	4.2	**955-5269**●	0.062	0.053	0.043	0.031
LED3-10	10	4.2	**955-5277**●	0.062	0.052	0.043	0.031
LED3-13	13	4.2	**955-5285**●	0.077	0.058	0.056	0.048
LED3-16	16	4.2	**955-5293**●	0.079	0.058	0.056	0.049
LED3-17	17	4.2	**955-5307**●	0.079	0.058	0.056	0.049
LED3-20	20	4.2	**955-5315**●	0.079	0.058	0.056	0.049
LED3-22	22	4.2	**955-5323**●	0.077	0.058	0.055	0.048
LED3-23	23	4.2	**955-5331**●	0.079	0.058	0.056	0.049
Round 3 Pin LED Holder - 5mm							
LED-5SX3	6	7.4	**955-5340**●	0.033	0.027	0.021	0.017
LED-5X3	6.5	7.4	**955-5358**●	0.036	0.029	0.026	0.020
LED-5KX3	7.7	7.4	**955-5366**●	0.033	0.027	0.021	0.017
LED-7X3	8	7.4	**955-5374**●	0.063	0.054	0.044	0.033
LED-8X3	9	7.4	**955-5382**●	0.036	0.033	0.026	0.020
LED-8MX3	9.5	7.4	**955-5390**●	0.062	0.052	0.043	0.031
LED-10X3	11.5	7.4	**955-5404**●	0.039	0.030	0.029	0.025
LED-16X3	16.1	7.1	**955-5412**●	0.077	0.058	0.056	0.048
Right Angle LED Holder	H x W x D						
LED 2F	6 x 6.1 x 7.8		**955-5420**●	0.039	0.035	0.029	0.020

3mm, 5mm LED Spacers and Holders



- Material: Nylon flame retardant
- 5 and 3mm options

467677

Mftrs. List No.	Height above board (mm)	Order Code	Price Each 1+	4+	20+
3 mm round LED holder					
LEDS1E-3-01	6.8	**132-5970●**	1.59	1.43	1.29
LEDS1E-4-01	8.4	**132-5971●**	1.64	1.48	1.33
LEDS1E-6-01	11.5	**132-5972●**	1.69	1.52	1.38
LEDS1E-8-01	14.7	**132-5973●**	1.74	1.58	1.42
LEDS1E-10-01	17.9	**132-5968●**	2.01	1.81	1.63
LEDS1E-12-01	21.1	**132-5969●**	1.95	1.76	1.59
5 mm round LED holder					
LEDS2E-4-01	5.5	**132-5977●**	1.69	1.52	1.38
LEDS2E-6-01	8.5	**132-5979●**	1.74	1.58	1.42
LEDS2E-8-01	11.7	**132-5981●**	1.80	1.62	1.46
LEDS2E-12-01	18.1	**132-5975●**	2.01	1.81	1.63

5mm/T1¾ and 3mm/T1 LED Holders

Arcolectric



Standard 3mm/T1
L=11.0, Bezel dia.=7.6
Mounting hole dia.=6.3
Max. panel thickness=6.3

Standard 5mm/T1¾
L=14.5, Bezel dia.=9.5
Mounting hole dia=8.0
Max. panel thickness=5.5



Deep reflector 5mm/T1¾
L=17.1, Bezel dia.=10.0
Mounting hole dia.=8.0
Max. panel thickness=7.0

Panel mounting LED holders for 2 lead 5mm/T1¾ and 3mm/T1¾ LEDs. The brass bodies have a polished chrome or black anodised finish. The LED is held in place by a screw-in nylon base 5mm/T1¾ or push fit base 3mm/T1 type.

The deep reflector types are fully recessed with a parabolic shroud which focuses the light output to give a strong directional signal.

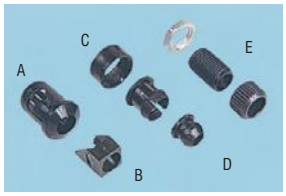
The sealed versions give protection to **IP66** featuring positive sealing of both LED/body and body/panel interfaces.

Mftrs. List No. A104800AAB =145-470 A10500A =232-336
A104800AAC =254-976 A104700CHROME =491-706
A105000 =232-312 A104700BLACK =491-718
A10480A =232-324

206185

Type	Order Code	Price Each 1+	100+	250+	500+	1K+
5mm/T1¾, Non Sealed						
Standard	**145-470●**	1.16	1.07	1.03	0.93	0.60
Standard, Black	**254-976●**	1.16	1.07	1.03	0.92	0.65
Deep Reflector	**232-312●**	1.32	1.21	1.00	0.68	0.55
5mm/T1¾, Sealed						
Standard	**232-324●**	2.88	2.51	1.95	1.13	0.82
Deep Reflector	**232-336●**	2.32	2.05	1.43	1.08	0.79
5 Per Pack				**Price Per Pack**		
3mm/T1, Non-Sealed		**1+**	**20+**	**50+**	**100+**	**200+**
Standard	**491-706●**	7.66	6.61	5.44	3.48	2.30
Standard, Black	**491-718●**	7.66	6.61	5.54	3.09	2.68

Assemblies, Clips, Rings, Housing



A: 233-523: Prominent Bezel dia=9.5,
Back of panel D=10, Dia=8
233-535: Recessed Bezel dia=9.5,
Back of panel D=12, Dia=8

B: 233-584 / 1175568:
9.0x6.35x6.35

C: C: 233-547 (for HP 5mm/T1¾ LED)
Clip O/D=8.00,
Ring H=4.19, O/D=9.30
Mounting hole dia=6.35,
Panel thickness=3.17 max
558-412
Clip O/D=7.8
Ring H=4.2, O/D=9.2,
Mounting hole dia.=6.3,
Panel thickness=2.7 max.

D: 233-572:
Clip O/D=5.9,
Mounting holde dia.=4.75,
Panel thickness=1.70 max.

E: 323-524
Barrel: L=9.53 x ¼" - 40 UNS-2A
Bezel: L=3.96, Dia=7.92
Mounting hole dia=6.35,
Panel thickness=4.75 max

Panel Mounting Hardware

323-524 consists of a black plastic barrel assembly (with two holes spaced 2.54mm for 5mm/T1¾ LED leads), brass bezel (coloured black) and nut. The black plastic clips and rings provide front panel mounting for 5mm/T1¾ LED's. The one-piece clips provide prominent and recessed bezels for 5mm/T1¾ LEDs and prominent bezels for 3mm/T1 LEDs.

Right Angle Housing

Black plastic right angle housing suitable for HP and other 5mm/T1¾ high dome LEDs.

Mftrs. List No. HLMP-5029 =/ 117-5568 HLMP-0103 =857-6378
CM4999-003 =110-5126

Colour	Order Code	Price Each 1+	25+	50+	100+	250+
5mm/T1¾ Barrel Assembly						
With black bezel	**110-5126●**	3.240	3.040	2.670	1.840	1.300
5mm/T1¾ Clip and Ring						
T-1 3/4 Black Plastic	**857-6378●**	0.151	0.138	0.123		

206710

Colour	Pk Qty	Order Code	Price Per Pack 1+	10+	100+
Clips and Rings					
5mm / T1.3/4	50	**110-5125●**	5.10	4.10	3.21
5mm / T1.3/4	50	**120-8906●**	6.28	5.11	4.31
3mm/T1 & 5mm/T1¾ One-piece Clips					
3mm / T-1	50	**120-8877●**	4.72	3.89	2.37
5mm / T1.3/4	25	**110-5123●**	4.54	3.57	2.76
5mm / T1.3/4	25	**110-5124●**	4.54	3.57	2.76
5mm/T1¾ Right Angle Housing					
	25	**117-5568●**	8.18	6.05	4.95

Combined Lens/Mounts



	H overall	H above panel	Dia.
5mm/T1¾ standard	10.92	5.59	7.11
5mm/T1¾ low profile	10.92	1.78	7.11
3mm/T1 standard	7.37	3.81	4.83

A combined lens and mount for standard 5mm/T1¾ and 3mm/T1 LEDs, provides increased apparent brightness, wider viewing angle and added protection. Snap in lens/mount from front, and whilst holding this in position insert the LED from the back. The low profile lens/mounts are supplied with a spacer, required for panels less than 4.8mm thick.

Size	Mounting Hole Dia	Max Panel Thickness	Order Code
5mm / T1.3/4	6.35 ± 00.5	1.6 – 3.2	117-5492 to 117-5497
5mm / T1.3/4	6.35 ± 00.5	0.8 – 6.35	117-5500 to 117-5504
3mm / T-1	4.34 ± 00.5	0.8 – 1.6	117-5498,117-5499

206184

Order Multiple=5 Colour	Order Code	Price Each 5+	25+	100+	500+	1K+
5mm/T1¾ Standard						
Red	**117-5492●**	0.280	0.200	0.168	0.121	0.111
Amber	**117-5494●**	0.280	0.200	0.168	0.121	0.100
	117-5495●	0.280	0.200	0.168	0.121	0.100
Yellow	**117-5496●**	0.280	0.200	0.168	0.121	0.100
Clear	**117-5497●**	0.280	0.200	0.168	0.121	0.111
5mm/T1¾ Low Profile						
Red	**117-5500●**	0.280	0.220	0.181	0.156	0.139
Amber	**117-5501●**	0.280	0.220	0.181	0.145	0.135
Green	**117-5502●**	0.280	0.220	0.181	0.156	0.139
Yellow	**117-5503●**	0.280	0.220	0.181	0.145	0.135
Clear	**117-5504●**	0.280	0.220	0.181	0.156	0.139
3mm/T1 Standard						
Red	**117-5498●**	0.280	0.220	0.168	0.121	0.089
Clear	**117-5499●**	0.270	0.200	0.156	0.111	0.089

LED Testers

Surface Mount LED Tester

LED Tester for Surface Mount LEDs

MENTOR



H=25, W=60, D=100

The Surface Mount LED Tester has been designed for the fast and easy testing of standard SMD (Surface Mount) and THT (Through Hole Technology) LEDs and observation of their properties such as colour, light intensity and their viewing angle. There are 10 current settings ranging from 1mA to 100mA. It has battery low indicator and is supplied with a 9V battery. A 9 volt power supply order code 488-707 (Euro) or 488-653 (UK) are available separately.

There is an automatic polarity check and the unit will test multi-coloured LEDs as well.A lead set is also available separately for testing SMD LEDs and non-SMD LEDs that are already fitted to a board.

A list of the types of surface mount LEDs and their corresponding socket numbers are shown below

1 Power Top LED
2 Top LED, Multi Top LED
3 Side LED
4 Side LED
5 Mini Top LED, Chipled 1206, Chipled 0805
6 Chipled 0603, Smart LED
7 3 - Colour LEDs

228633

Description	Order Code	Price Each 1+	3+
SMD LED Tester	**366-4120**	40.71	39.08
Test Leads	**366-7005**	3.98	– –

SMD LED Accessories

Light Pipes

Positioning LEDs away from the front panel helps to reduce EMC. Light Pipes are manufactured from hi-efficiency polycarbonate, and provide designers with a simple, low cost method of transferring light from SMD LEDs to the front panel with minimal loss of light intensity. This gives various options for positioning the light and offers a number of combinations of either single or multiple light pipes giving vertical, right angled or flexible light output.

333461

Over 480,000 products online GO

RL Re-reeling available

Farnell

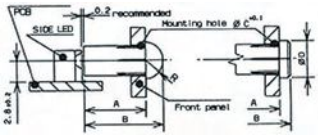
SMD LED Accessories - continued

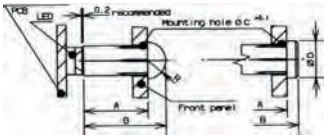
Light Guides - In-line

MENTOR









- Versatile light guides for in-line transmission of light
- For press-fit into Front Panel
- Available in two versions:-
- Spherical version - similar display effect to that of an LED
- Planar version (flat chamfered end) - provides enhanced display characteristics
- Provides ESD protection (approx 12.5 kV)
- For use with Side or Top LEDs

	A	B	C	D	Mftrs. List No.
Spherical					
	7	8,5	2,8	3,2	1282.1.
Planer					
	7	8,5	2,8	3,2	1282.2.

248985

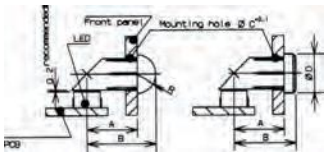
Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
1282.1.	**432-7767●**	0.63	0.56	0.55	0.53	0.49
1282.2.	**432-7779●**	0.63	0.56	0.55	0.53	0.49

Light Guides - 45°

MENTOR







- Versatile light guides for 45° transmission of light
- For press-fit into Front Panel
- Spherical version - similar display effect to that of an LED
- Planar version (flat chamfered end) - provides enhanced display characteristics
- Provides ESD protection (see table)
- For use with Side or Top LEDs

	A (mm)	B (mm)	C (mm)	D(mm)	Approx ESD Resistance	Mftrs. List No.
Spherical						
	5.7	7.2	2.8	3.2	11.2 kV	1282.3.
	6.5	8.9	4.2	5	12 kV	1293.3.
Planer						
	5.7	8.5	2.8	3.2	11.2 kV	1282.4.
	6.5	8	4.2	5	12 kV	1293.4.

248990

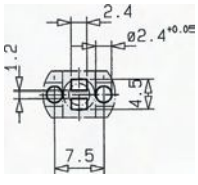
Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
1282.3.	**432-7780●**	0.45	0.39	0.38	0.37	0.36
1293.3.	**432-7792●**	0.45	0.39	0.38	0.37	0.36
1282.4.	**432-7809●**	0.45	0.39	0.38	0.37	0.36
1293.4.	**432-7810●**	0.45	0.39	0.38	0.37	0.36

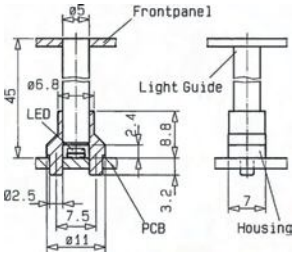
Upright Light Guides - 3mm

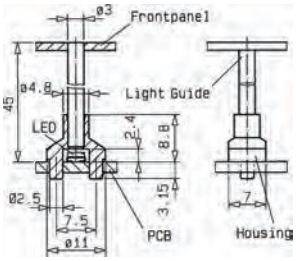
MENTOR











- Upright light guides for SMD LEDs
- Light guide is removable from the PCB support for ease of production
- Supports are positioned on PCB by two insert pins

248996

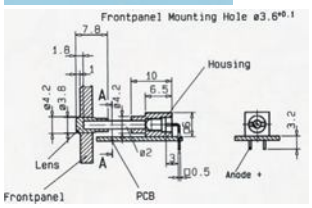
Dia.	Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
3mm	1216.1003.	**432-7822●**	0.91	0.82	0.79	0.75	0.73
5mm	1216.1005.	**324-5172●**	1.09	1.04	0.98	0.80	0.77

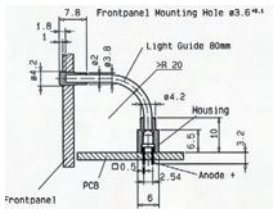
LED with flexible light guide

MENTOR



- Housing incorporates THT LED in either red, green, or yellow
- Light guide is flexible, Ø 2mm, 80mm length
- Push-fit lens for front panel





Mftrs. List No.	Fwd Voltage typ	max	Fwd Current Max mA	Luminous Intensity Lv(mcd) @10mA min	max	Peak Fwd Current A	Rev. Voltage V
1316.2001	2.0	2.6	40	10	32	0.5	5
1316.8001	2.0	2.6	40	10	32	0.5	5

Mftrs. List No.	LED Type	Colour	Wavelength (nm)	Lens Colour	Dispersion Angle
1316.2001	A63	red	635	red/clear	40°
1316.8001	A65	green	565	green/clear	40°

249006

Colour	Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
Red	1316.2001	**121-5755●**	2.44	2.19	2.08	1.98	1.92
Green	1316.8001	**121-5756●**	2.44	2.19	2.08	1.98	1.92

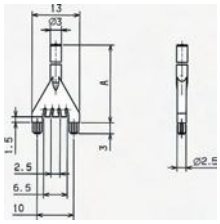
Tri-chromatic upright light guides for SMD LEDs

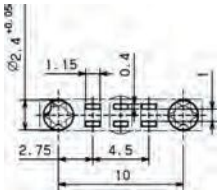
MENTOR











- Designed for use with three **Type 0805 CHIPLEDS** or smaller
- Provide mono, bi, or tri-chromatic displays, or blends of all three colours
- Positioned on PCB by two insert pins

249010

Length (A)	Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
30mm	1294.1002.	**432-7937●**	0.93	0.83	0.80	0.76	0.74

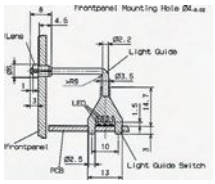
£ € 40,000 PRICES REDUCED

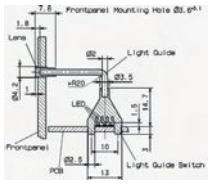
Tri-chromatic flexible upright light guides for SMD LEDs

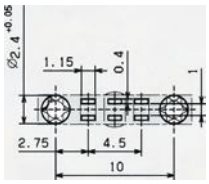
MENTOR











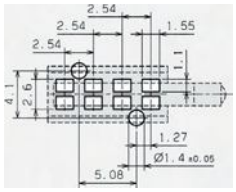
- Designed for use with three **Type 0805 CHIPLEDS** or smaller
- Provide mono, bi, or tri-chromatic displays, or blends of all three colours
- Light guide 150mm long, 2mm diameter, available as either 2000µm fibres or black coated 1000µm fibres
- Positioned on PCB by two insert pins

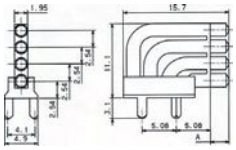
249013

Length	Fibre	Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
150mm	1000µm	1294.1.	**432-7950●**	1.44	1.28	1.23	1.17	1.14
150mm	2000µm	1294.2.	**432-7962●**	1.57	1.41	1.36	1.29	1.25

Miniature Quadruple Light Guide for SMD LEDs

MENTOR



- Designed for use with **Type 0805 CHIPLEDS** or smaller
- Can be strip-mounted in a grid of 5.8mm
- Fitted with a diaphragm to avoid blooming and to allow colour blending
- Positioned on PCB by two insert pins

249027

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
1296.1004.	**432-7974●**	1.48	1.32	1.27	1.21	1.17

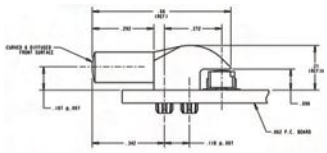
Optical Light Pipes - Single Element

Right angle - Clear

Dialight



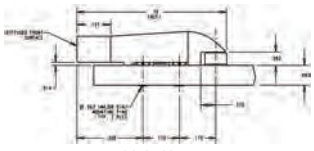
788-1533 H=5.5, W=3.5, D=16.5mm
Face Dia=3.57mm



788-1533



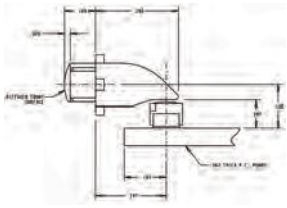
788-1541 H=3.8, W=3.3, D=17.5mm
Face = 3.6mm²



788-1541



788-1550 H=5.8, W=5.4, D=10.2mm
Face Dia=3mm



788-1550

- High transmissive polycarbonate material
- ESD protection (Circuit isolated from front panel)
- Wide viewing angle
- Press fit to PCB (788-1533 & 788-1541)
- Press fit to front panel (788-1550)
- 35% oxygen index
- Operating/storage temperature range -30°C to +100°C

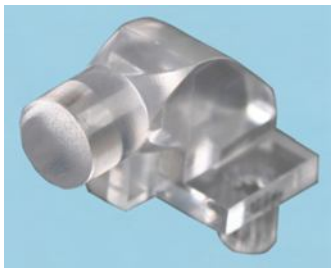
361041

Mftrs List No.	Order Code	Price Each 1+	10+	50+	100+	250+
515-1049F	**113-8255●**	0.220	0.185	0.152	0.144	0.124
515-1105F	**113-8256●**	0.220	0.185	0.152	0.144	0.124
515-1096F	**113-8257●**	1.260	1.050	0.860	0.810	0.700

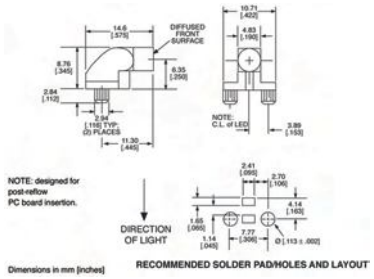
Optical Light Pipe

5mm round

Dialight



This device has a large and bright 5mm diameter light emitting surface. It is designed to replace 5mm right angle through-hole devices. The light pipe is secured to the PCB by 2 press-fit pins located on either side of the light pipe element.



- High transmissive polycarbonate material
- UL94V-0 compliant
- ESD protection (Circuit isolated from front panel)
- Wide viewing angle
- Press fit to PCB
- 35% oxygen index
- Operating/storage temperature range -30°C to +100°C

361038

Mftrs List No.	Order Code	Price Each 1+	10+	50+	100+	250+
515-1011F	**113-8252●**	0.220	0.185	0.152	0.144	0.124

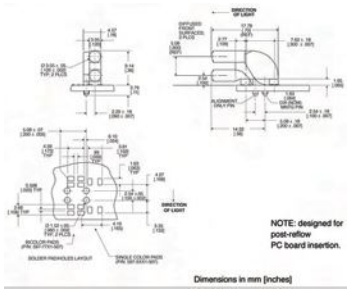
Optical Light Pipe - Bi-Level

3mm round

Dialight



This device has 2 x 3mm diameter elements placed 2.54mm (0.1") from the surface of the PCB and 5.08mm (0.2") apart. The recommended minium mounting pitch between elements is 5.08mm (0.2")



- High transmissive polycarbonate material
- UL94V-0 compliant
- ESD protection (Circuit isolated from front panel)
- Wide viewing angle
- Press fit to PCB
- 35% oxygen index
- Operating/storage temperature range -30°C to +100°C

RL Re-reeling available

Farnell

SMD LED Accessories - continued

Optical Light Pipe - Bi-Level - continued

3mm round - continued

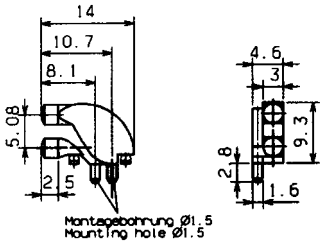
361037

Mftrs List No.	Order Code	Price Each 1+	10+	50+	100+	250+
515-1094F	113-8251●	0.220	0.185	0.152	0.144	0.124

Light Pipes - Dual, Curved 90°

MENTOR





Dual vertical-stacked, 90° ∅ 3mm,
PCB mounted by 2 fluted pins.
Temperature range = -40°C to +85°C

333465

Mftrs List No.	Order Code	Price Each 1+	25+	100+	250+	500+
1280.1010.	324-5111●	0.55	0.52	0.51	0.48	0.47

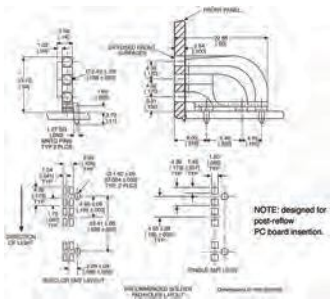
Optical Light Pipe - Tri-High

Dialight

3mm square



This device has 3 x 2.5mm diameter elements placed 4.32mm (0.17") apart. They can be placed in arrays with a 5mm (0.2") pitch and can utilize either single or multi-colour LED's



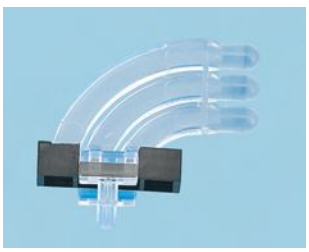
- High transmissive polycarbonate material
- UL94V-0 compliant
- ESD protection (Circuit isolated from front panel)
- Wide viewing angle
- Press fit to PCB
- 35% oxygen index
- Operating/storage temperature range -30°C to +100°C

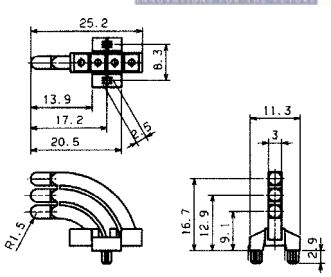
361036

Mftrs List No.	Order Code	Price Each 1+	10+	50+	100+	250+
515-1064F	113-8249●	0.39	0.32	0.26	0.25	0.22

Light Pipes - Triple, Curved 90°

MENTOR





Triple vertical-stacked, 90° ∅ 3mm,
PCB mounted by 2 fluted pins.
Temperature range = -40°C to +85°C

333467

Mftrs List No.	Order Code	Price Each 1+	25+	100+	250+	500+
1276.1003.	324-5123●	0.79	0.73	0.66	0.54	0.53

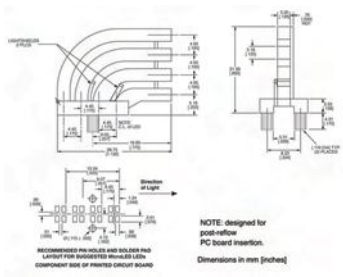
Optical Light Pipe - Quad High

Dialight

3mm square



The 4 vertical elements are spaced 5.16mm (0.203") from the PCB surface and then 4.95mm (0.195") between each other. The device is held in place on the PCB by two 2.95mm (0.116") press fit pins, 8.2mm (0.324") apart on the bottom of the Light Pipe.



- High transmissive polycarbonate material
- UL94V-0 compliant
- ESD protection (Circuit isolated from front panel)
- Wide viewing angle
- Press fit to PCB
- 35% oxygen index
- Operating/storage temperature range -30°C to +100°C

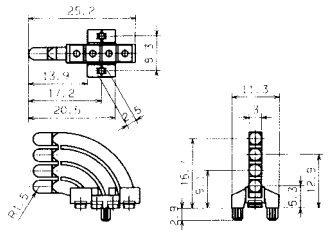
361035

Mftrs List No.	Order Code	Price Each 1+	10+	50+	100+	250+
515-1023F	113-8247●	0.56	0.47	0.38	0.35	0.31

Light Pipes - Quad, Curved 90°

MENTOR





Quad vertical-stacked, 90° ∅ 3mm,
PCB mounted by 2 fluted pins.
Temperature range = -40°C to +85°C

333468

Mftrs List No.	Order Code	Price Each 1+	25+	100+	250+	500+
1276.1004.	324-5135●	0.77	0.71	0.65	0.53	0.52

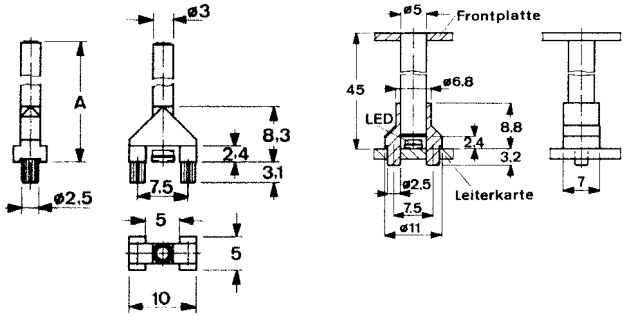
Light Pipes - Single, Vertical

MENTOR



A = 15mm 1275.1001, 30mm 1275.1002,
45mm 1275.1003

RL Re-reeling available



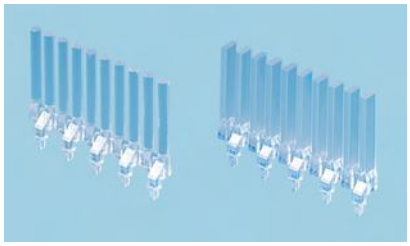
Single straight vertical-stacked, ∅ 3 & 5mm, PCB mounted by 2 fluted pins.
Available in 15mm, 30mm and 45 mm lengths.
Temperature range = -40°C to +85°C

333471

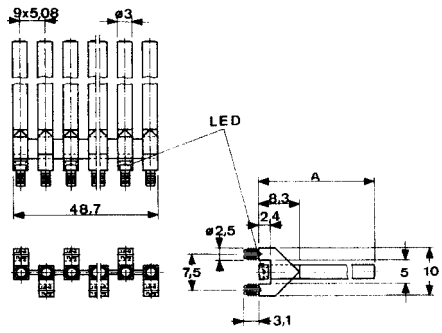
Length	Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
3mm Diameter							
15mm	1275.1001.	**324-5147●**	0.165	0.159	0.149	0.139	0.131
30mm	1275.1002.	**324-5159●**	0.165	0.159	0.149	0.139	0.131
45mm	1275.1003.	**324-5160●**	0.165	0.159	0.149	0.139	0.131
5mm Diameter							
45mm	1216.1005.	**324-5172●**	1.090	1.040	0.980	0.800	0.770

Light Pipe - 10 Way Module, Vertical

MENTOR



10 way light pipe module straight vertical-stacked, available in ∅ 3mm & 2.0 x 5.0mm rectangular format with lengths of 15mm, 30mm and 45mm. PCB mounted by 10 fluted pins.
Temperature range = -40°C to +85°C



A = 15mm 127.1210/ 1274.1210,

30 mm 1272.1220/ 1274.1220,

45mm 1272.1230/ 1274.1230

333472

Length	Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
3mm Diameter							
15mm	1272.1010.	**324-5184●**	0.44	0.42	0.39	0.28	0.27
30mm	1272.1020.	**324-5196●**	0.58	0.55	0.53	0.42	0.39
45mm	1272.1030.	**324-5202●**	0.58	0.55	0.53	0.42	0.39
2mm x 5mm Rectangular							
15mm	1274.1010.	**324-5214●**	0.48	0.46	0.44	0.34	0.31

FREE technical support
Our trained engineers are here to help!

08447 11 11 22

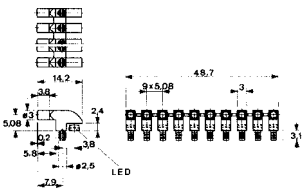
techsales@farnell.co.uk

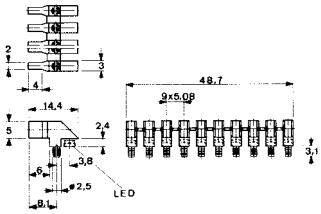
Live technical chat at www.farnell.co.uk

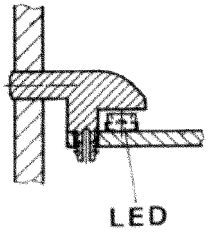
Light Pipes - 10 Way & 20 Way Module, Right Angle

MENTOR









90° light pipe arrays for use with SMD LEDs. The 20 way units are a dual tier format and the 10 way units are single tier. The 20 way dual tier is available in 3mm ∅ round section while the 10 way single tier modules are available in 3mm ∅ and 2mm x 5mm rectangular. PCB mounted by 10 fluted pins.
Temperature range = -40°C to +85°C

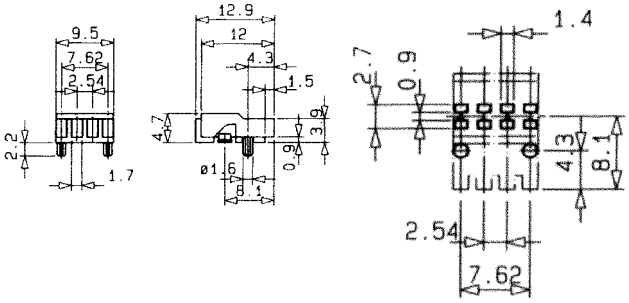
333473

Mftrs List No.	Order Code	Price Each 1+	25+	100+	250+	500+
10 Way Single Tier 2mm x 5mm Rectangular						
1273.1010.	**324-5240●**	0.53	0.48	0.46	0.37	0.36
10 way Single Tier 3mm Diameter						
1271.1010.	**324-5251●**	0.56	0.53	0.51	0.42	0.38
20 way Single Tier 3mm Diameter						
1270.1010.	**324-5263●**	1.43	1.35	1.28	1.01	0.98

Light Pipes - 4 Way and 10 Way Bargraph Modules, Right Angle

MENTOR





Low profile right angle light pipe bargraph for use with SMD LEDs. They are available in 4 and 10 ways with 1.7 x 3.9 rectangular viewing areas. The arrays are PCB mounted by fluted pins.
Temperature range: -40°C to +85°C

333474

Mftrs List No.	Order Code	Price Each 1+	25+	100+	250+	500+
4 Way						
1278.1004.	**324-5275●**	0.66	0.60	0.59	0.56	0.54

REACH - SVHCs

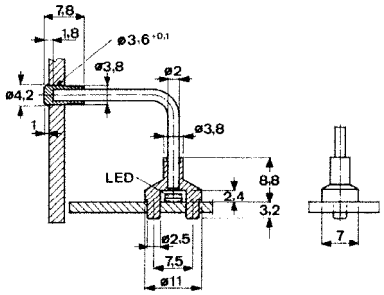
Products containing **Substances** of **Very High Concern** under REACH can now be easily identified online. Look for this logo to access supporting safety datasheets at **www.farnell.co.uk**

SMD LED Accessories - continued

Light Pipes - Flexible

MENTOR





Flexible 2mm ∅ light pipe kit for use with SMD LEDs. 2mm ∅ flexible section may be cold formed to min 9mm radius. PCB mounted by fluted pins. Available in 80mm and 150mm lengths with 3mm ∅ viewing area. (Note - 150mm version has an internal 1mm core with a black sheath).

333475

Mftrs List No.	Order Code	Price Each 1+	25+	100+	250+	500+
80mm Light Pipe 1216.1002.	**324-5305●**	0.97	0.92	0.89	0.72	0.70
150mm Light Pipe 1216.1001.	**324-5317●**	1.39	1.28	1.21	0.99	0.95

Optical Light Pipe Arrays

3 x 5mm rectangular - RJ45 jack

Dialight



The design of these devices enables indicators to be positioned above corresponding RJ45 jack or other components. They are secured to the PCB by two press fit pins located under the base of the light pipes.

- High transmissive polycarbonate material
- UL94V-0 compliant
- ESD protection (Circuit isolated from front panel)
- Wide viewing angle
- Press fit to PCB
- 35% oxygen index
- Operating/storage temperature range -30°C to +100°C

361039

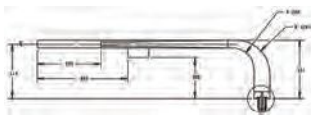
Mftrs List No.	Order Code	Price Each 1+	10+	50+	100+	250+
515-1022F	**113-8253●**	1.18	0.97	0.80	0.75	0.66

Optical Light Pipe - Twin Vertical

2 x 1.3mm round

Dialight





Designed to carry SMD light source information over a Small Form-factor Pluggable (SFP) cage assembly to the front panel. The device is secured to the PCB by means of two press fit pins located under the base of the light pipe assembly.

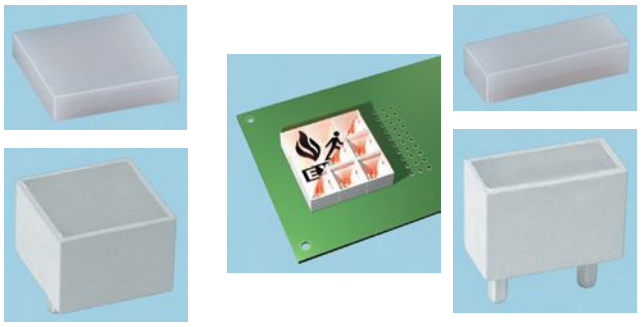
- High transmissive polycarbonate material
- ESD protection (Circuit isolated from front panel)
- Wide viewing angle
- Press fit to PCB
- 35% oxygen index
- Operating/storage temperature range -30°C to +100°C

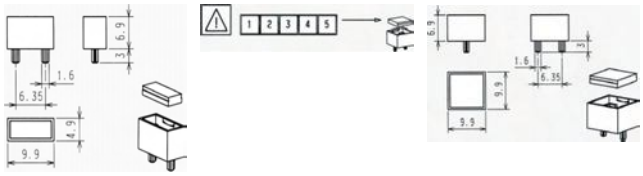
361040

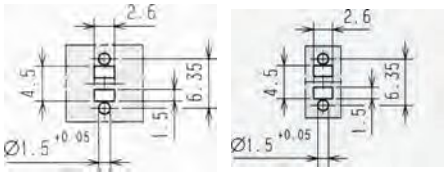
Mftrs List No.	Order Code	Price Each 1+	10+	50+	100+	250+
515-1118F	**113-8258●**	0.67	0.56	0.46	0.44	0.37

Surface Symbol Illumination System

MENTOR







- Square and rectangular versions
- 2 x Rectangular units = 1 square unit
- Available complete, or as separate housings / diffuser covers
- Can be grouped together and covered with one large printed diffuser panel - see example photo
- Provide surface and background illumination
- Provide excellent surface radiation with low height
- Positioned via fixing pins

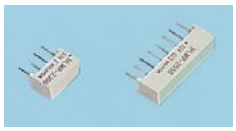
249051

Description	Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
Square Complete	2366.1	**121-5771●**	0.93	0.83	0.80	0.76	0.74

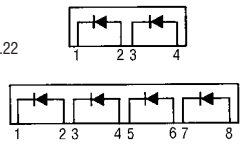
LED Bar Modules

5mm Height

AVAGO TECHNOLOGIES



4 LED module
H=4.95, W=20.32, D=6.22
Light area=3.81 x 19.05



2 LED module
H=4.95, W=10.16, D=6.22
Light area=3.81 x 8.89

Single-in-line leads, pitch=2.54.
Leads=0.51 x 0.58

Black plastic mounting clips:

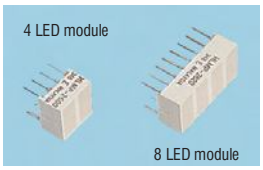
Outline	Colour	Typ Intensity (all LEDs on) mcd	I_F (mA) (max) each LED	PIV (max)	Mftrs. List No.	Order Code
	Red	7.5 @ 3mA	15	5	HLCP-A100	100-3245
	Red	15 @ 20mA	15	5	HLCP-B100	100-3246
	HE Red	23 @ 20mA	30	6	HLMP-2300	100-3247
	HE Red	45 @ 20mA	30	6	HLMP-2350	100-3248
	Yellow	20 @ 20mA	25	6	HLMP-2400	100-3249
	Yellow	38 @ 20mA	25	6	HLMP-2450	100-3250
	Green	25 @ 20mA	30	6	HLMP-2500	100-3251
	Green	50 @ 20mA	30	6	HLMP-2550	100-3253

206190

Order Multiple=1 Colour	Order Code	Price Each 1+	25+	100+	250+	500+
Red	**100-3245●**	1.210	1.070	0.950	0.780	0.700
Red	**100-3246●**	1.940	1.860	1.440	1.260	1.120
HE Red	**100-3247●**	0.900	0.870	0.820	0.660	0.590
HE Red	**100-3248●**	1.610	1.520	1.340	1.090	0.970
Yellow	**100-3249●**	0.840	0.830	0.800	0.570	0.500
Yellow	**100-3250●**	1.580	1.450	1.330	1.200	1.090
Green	**100-3251●**	0.870	0.850	0.820	0.680	0.500
Green	**100-3253●**	1.410	1.320	1.280	1.140	1.040
Order Multiple=5		**5+**	**100+**	**1K+**		
2 LED Clip	**117-5574●**	0.182	0.137	0.126		
4 LED Clip	**117-5575●**	0.182	0.137	0.126		

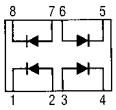
£ € 40,000 PRICES REDUCED

10mm Height

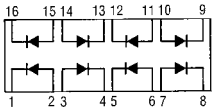


4 LED module
H=10.16, W=10.16, D=6.22
Light area (single area type)=8.89 x 8.89

8 LED module
H=10.16, W=20.32, D=6.22
Light area (single area type)=8.89 x 19.05



Lead spacing=2.54
Row spacing=7.62
Leads=0.51x0.58



Bicolour light bars have 4 HE Red LEDs connected as shown, and Green LEDs across each in inverse parallel. Reverse voltage=6V max.

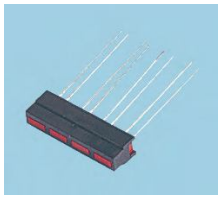
Outline	Colour	Typ Luminous Intensity/seg.(mcd) mcd	I_F (mA) (max) each LED	Mftrs. List No.	Order Code
	Red	7.5 @ 3mA	15	HLCP-D100	100-3254
	Red	7.5 @ 3mA	15	HLCP-E100	100-3255
	Red	15 @ 3mA	15	HLCP-C100	100-3256
	Red	30 @ 3mA	15	HLCP-H100	100-3257
	HE Red	45 @ 20mA	30	HLMP-2655	100-3258
	HE Red	80 @ 20mA	30	HLMP-2685	100-3259
	Yellow	38 @ 20mA	25	HLMP-2755	100-3260
	Yellow	70 @ 20mA	25	HLMP-2785	100-3261
	Green	25 @ 20mA	30	HLMP-2820	100-3262
	Green	50 @ 20mA	30	HLMP-2855	100-3263
	Green	100 @ 20mA	30	HLMP-2885	100-3265
	Bi Colour HE Red/Green	45/45 @ 20mA	30	HLMP-2965	100-3266

206191

Order Multiple=1		Price Each				
Colour	Order Code	1+	25+	100+	250+	500+
Red	**100-3254●**	2.30	2.21	1.98	1.69	1.52
Red	**100-3255●**	3.45	3.22	2.99	2.29	2.04
Red	**100-3256●**	2.34	2.22	1.75	1.19	1.05
Red	**100-3257●**	3.38	3.15	2.63	1.94	1.82
HE Red	**100-3258●**	1.83	1.46	1.28	1.11	1.01
HE Red	**100-3259●**	2.78	2.30	1.99	1.68	1.60
Yellow	**100-3260●**	2.03	1.65	1.37	1.19	1.04
Yellow	**100-3261●**	3.04	2.75	2.43	1.83	1.65
Green	**100-3262●**	3.39	3.12	2.95	2.09	1.93
Green	**100-3263●**	1.83	1.63	1.55	1.10	0.98
Green	**100-3265●**	3.06	2.66	2.24	1.76	1.66
Bi-colour	**100-3266●**	4.07	3.56	3.02	2.67	2.40

LED Arrays

Multi-LED Bar



Range of end stackable red multi-LED arrays which provide a choice of 3, 4 and 5 segment lamp units in moulded housing. The housings are designed to push fit into the appropriate panel cut out.

W=7.0 x number of elements, H=6.1, D=6.13
Segments=5.4 x 1.95, LED spacing=7.0
Single in line leads, pitch for each LED=2.5
Short leads cathode

Segment	I_F max.	V_F typ.	V_F max.	V_R max.	Typ. Lum. Intensity (mcd)
Red	25mA	2.1V	3V	5V	1.2 @ 20mA

206192

No of Elements	Colour	Order Code	Price Each 1+	25+	100+	500+
3	Red	**120-8839●**	0.56	0.44	0.40	0.36
4	Red	**120-8840●**	1.17	0.90	0.79	0.61
5	Red	**120-8841●**	1.47	1.14	1.00	0.60

10 Segment Bar Graph



Lead pitch=2.54 Row spacing=7.62

End stackable 10 segment bar graph displays with separate anodes and cathodes for each light segment. The HDSP series features interlock mechanism to aid end-to-end alignment.

	H	W	D	Segments
HDSP series	10.16	25.4	6.1	1.52 x 5.08
HLCP-J100	10.16	25.4	6.1	1.52 x 5.08
MV series	10.2	25.3	8	1.78 x 5.08

Colour	Typ. inten./Seg.	V_F max.	I_F (mA) (max)	Mftrs.	Mftrs. List No.	Order Code
Red	1mcd @ 10mA	2.2	15	AGI	HLCP-J100	100-3267
HE Red	3.5mcd @ 10mA	2.5	30	AGI	HDSP-4830	100-3268
HE Red	2mcd @ 10mA	3	25	AGI	LL10000HR	120-8882
Yellow	1.9mcd @ 10mA	2.5	20	AGI	HDSP-4840	100-3269
Green	1.9mcd @ 10mA	3	25	AGI	LL10000G	120-8884
Multicolour	◆	◆	◆	AGI	HDSP-4850	100-3270
Multicolour	◆	◆	◆	AGI	HDSP-4832	100-3271
Red / Yellow / Green	1.9mcd @ 1mA	2.5	30	AGI	HDSP-4836	100-3272

◆ Multi colour displays have HE Red. Yellow and Green elements identcal to those of HDSP4830/40/50 in the following arrangements

Segments	a	b	c	d	e	f	g	h	i	j
HDSP4832	R	R	R	Y	Y	Y	Y	G	G	G
HDSP4836	R	R	Y	Y	G	G	Y	Y	R	R

pin 1 = Anode a. pin 2 = Anode b, etc pin 11 = Cathode j. pin 12 = Cathode i, etc

206193

Order Multiple=1		Price Each		
Colour	Order Code	1+	100+	1K+
Red	**100-3267●**	4.62	3.61	3.27
HE Red	**100-3268●**	3.82	3.30	2.34
HE Red	**120-8882●**	2.64	2.47	2.42
Yellow	**100-3269●**	3.90	3.38	2.17
Green	**120-8884●**	2.68	2.47	2.42
Multicolour	**100-3270●**	3.41	2.95	2.09
Multicolour	**100-3271●**	4.07	3.26	2.95
Red / Yellow / Green	**100-3272●**	3.89	2.97	2.67

Avago Technologies LED Displays

Single Digit Display - 7mm

New

SMD



Character Size 7mm
No. of Characters 1
Operating Temperature -40°C to +105°C

Colour	CA / CC	Luminous Intensity (mcd) (typ)	Forward Voltage (V) (max)	Forward Current (mA) (max)	Mftrs. List No.	Order Code
Red	Anode	7.5	2.6	25	HDSM-281C	165-1406
Red	Cathode	7.5	2.6	25	HDSM-283C	165-1411
Orange	Anode	8.5	2.6	25	HDSM-281L	165-1410
Orange	Cathode	8.5	2.6	25	HDSM-283L	165-1414
Yellow	Anode	8	2.6	25	HDSM-281F	165-1408
Yellow	Cathode	8	2.6	25	HDSM-283F	165-1412
Green	Anode	6	2.6	25	HDSM-281H	165-1409
Green	Cathode	6	2.6	25	HDSM-283H	165-1413
Blue	Anode	6	4	25	HDSM-281B	165-9311
Blue	Cathode	6	4	25	HDSM-283B	165-9312

523992

CA / CC	Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
Red							
Anode	HDSM-281C	**165-1406●**	1.17	0.80	0.64	0.58	0.55
Cathode	HDSM-283C	**165-1411●**	1.17	0.80	0.64	0.58	0.55
Orange							
Anode	HDSM-281L	**165-1410●**	1.17	0.80	0.64	0.58	0.55
Cathode	HDSM-283L	**165-1414●**	1.17	0.80	0.64	0.58	0.55
Yellow							
Anode	HDSM-281F	**165-1408●**	1.17	0.80	0.64	0.58	0.55
Cathode	HDSM-283F	**165-1412●**	1.17	0.80	0.64	0.58	0.55
Green							
Anode	HDSM-281H	**165-1409●**	1.43	0.98	0.79	0.71	0.68
Cathode	HDSM-283H	**165-1413●**	1.43	0.98	0.79	0.71	0.68
Blue							
Anode	HDSM-281B	**165-9311●**	1.92	1.40	1.16	1.03	0.99
Cathode	HDSM-283B	**165-9312●**	1.92	1.40	1.16	1.03	0.99

Single Digit Display - 10mm

New

SMD



Character Size 10mm
No. of Characters 1
Operating Temperature -40°C to +105°C

Colour	CA / CC	Luminous Intensity (mcd) (typ)	Forward Voltage (V) (max)	Forward Current (mA) (max)	Mftrs. List No.	Order Code
Red	Anode	14.3	2.6	25	HDSM-431C	165-1425
Red	Cathode	14.3	2.6	25	HDSM-433C	165-1429
Orange	Anode	16	2.6	25	HDSM-431L	165-1428
Orange	Cathode	16	2.6	25	HDSM-433L	165-1433
Yellow	Anode	15	2.6	25	HDSM-431F	165-1426

Avago Technologies LED Displays - continued

Single Digit Display - 10mm - continued

Colour	CA / CC	Luminous Intensity (mcd) (typ)	Forward Voltage (V) (max)	Forward Current (mA) (max)	Mftrs. List No.	Order Code
Yellow	Cathode	15	2.6	25	HDSM-433F	165-1430
Green	Anode	9	2.6	25	HDSM-431H	165-1427
Green	Cathode	9	2.6	25	HDSM-433H	165-1431
Blue	Anode	11.2	4	25	HDSM-431B	165-9316
Blue	Cathode	11.2	4	25	HDSM-433B	165-9317

524007

CA / CC	Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
Red							
Anode	HDSM-431C	**165-1425●**	1.17	0.80	0.64	0.57	0.56
Cathode	HDSM-433C	**165-1429●**	1.17	0.80	0.64	0.57	0.56
Orange							
Anode	HDSM-431L	**165-1428●**	1.17	0.80	0.64	0.57	0.56
Cathode	HDSM-433L	**165-1433●**	1.17	0.80	0.64	0.57	0.56
Yellow							
Anode	HDSM-431F	**165-1426●**	1.17	0.80	0.64	0.57	0.56
Cathode	HDSM-433F	**165-1430●**	1.17	0.80	0.64	0.57	0.56
Green							
Anode	HDSM-431H	**165-1427●**	1.46	1.00	0.80	0.71	0.70
Cathode	HDSM-433H	**165-1431●**	1.46	1.00	0.80	0.71	0.70
Blue							
Anode	HDSM-431B	**165-9316●**	2.24	1.63	1.36	1.20	1.15
Cathode	HDSM-433B	**165-9317●**	2.24	1.63	1.36	1.20	1.15

Single Digit Display - 14.2mm

New

AVAGO TECHNOLOGIES

SMD



Character Size 14.22mm
No. of Characters 1
Operating Temperature -40°C to +105°C

Colour	CA / CC	Luminous Intensity (mcd) (typ)	Forward Voltage (V) (max)	Forward Current (mA) (max)	Mftrs. List No.	Order Code
Red	Anode	16	2.6	25	HDSM-531C	165-1442
Red	Cathode	16	2.6	25	HDSM-533C	165-1447
Orange	Anode	19.5	2.6	25	HDSM-531L	165-1446
Orange	Cathode	19.5	2.6	25	HDSM-533L	165-1450
Yellow	Anode	20	2.6	25	HDSM-531F	165-1443
Yellow	Cathode	20	2.6	25	HDSM-533F	165-1448
Green	Anode	10.5	2.6	25	HDSM-531H	165-1445
Green	Cathode	10.5	2.6	25	HDSM-533H	165-1449
Blue	Anode	13.5	4	25	HDSM-531B	165-9320
Blue	Cathode	13.5	4	25	HDSM-533B	165-9321

524008

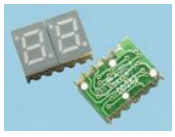
CA / CC	Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
Red							
Anode	HDSM-531C	**165-1442●**	1.25	0.85	0.69	0.62	0.59
Cathode	HDSM-533C	**165-1447●**	1.25	0.85	0.69	0.62	0.59
Orange							
Anode	HDSM-531L	**165-1446●**	1.41	0.96	0.78	0.70	0.67
Cathode	HDSM-533L	**165-1450●**	1.41	0.96	0.78	0.70	0.67
Yellow							
Anode	HDSM-531F	**165-1443●**	1.41	0.96	0.78	0.70	0.67
Cathode	HDSM-533F	**165-1448●**	1.41	0.96	0.78	0.70	0.67
Green							
Anode	HDSM-531H	**165-1445●**	1.54	1.05	0.86	0.76	0.73
Cathode	HDSM-533H	**165-1449●**	1.54	1.05	0.86	0.76	0.73
Blue							
Anode	HDSM-531B	**165-9320●**	2.56	1.87	1.54	1.38	1.32
Cathode	HDSM-533B	**165-9321●**	2.56	1.87	1.54	1.38	1.32

Dual Digit Display - 7mm

New

AVAGO TECHNOLOGIES

SMD



Character Size 7mm
No. of Characters 2
Operating Temperature -40°C to +105°C

Colour	CA / CC	Luminous Intensity (mcd) (typ)	Forward Voltage (V) (max)	Forward Current (mA) (max)	Mftrs. List No.	Order Code
Red	Anode	7.5	2.6	25	HDSM-291C	165-1415
Red	Cathode	7.5	2.6	25	HDSM-293C	165-1421
Orange	Anode	8.5	2.6	25	HDSM-291L	165-1418
Orange	Cathode	8.5	2.6	25	HDSM-293L	165-1424
Yellow	Anode	8	2.6	25	HDSM-291F	165-1416
Yellow	Cathode	8	2.6	25	HDSM-293F	165-1422
Green	Anode	6	2.6	25	HDSM-291H	165-1417
Green	Cathode	6	2.6	25	HDSM-293H	165-1423
Blue	Anode	6	4	25	HDSM-291B	165-9313
Blue	Cathode	6	4	25	HDSM-293B	165-9314

524010

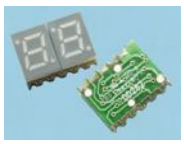
CA / CC	Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
Red							
Anode	HDSM-291C	**165-1415●**	2.35	1.60	1.29	1.15	1.11
Cathode	HDSM-293C	**165-1421●**	2.35	1.60	1.29	1.15	1.11
Orange							
Anode	HDSM-291L	**165-1418●**	2.35	1.60	1.29	1.15	1.11
Cathode	HDSM-293L	**165-1424●**	2.35	1.60	1.29	1.15	1.11
Yellow							
Anode	HDSM-291F	**165-1416●**	2.35	1.60	1.29	1.15	1.11
Cathode	HDSM-293F	**165-1422●**	2.35	1.60	1.29	1.15	1.11
Green							
Anode	HDSM-291H	**165-1417●**	2.90	1.98	1.60	1.42	1.38
Cathode	HDSM-293H	**165-1423●**	2.90	1.98	1.60	1.42	1.38
Blue							
Anode	HDSM-291B	**165-9313●**	3.52	2.57	2.12	1.90	1.82
Cathode	HDSM-293B	**165-9314●**	3.52	2.57	2.12	1.90	1.82

Dual Digit Display - 10mm

New

AVAGO TECHNOLOGIES

SMD



Character Size 10mm
No. of Characters 2
Operating Temperature -40°C to +105°C

Colour	CA / CC	Luminous Intensity (mcd) (typ)	Forward Voltage (V) (max)	Forward Current (mA) (max)	Mftrs. List No.	Order Code
Red	Anode	14.3	2.6	25	HDSM-441C	165-1434
Red	Cathode	14.3	2.6	25	HDSM-443C	165-1438
Orange	Anode	16	2.6	25	HDSM-441L	165-1437
Orange	Cathode	16	2.6	25	HDSM-443L	165-1441
Yellow	Anode	15	2.6	25	HDSM-441F	165-1435
Yellow	Cathode	15	2.6	25	HDSM-443F	165-1439
Green	Anode	9	2.6	25	HDSM-441H	165-1436
Green	Cathode	9	2.6	25	HDSM-443H	165-1440
Blue	Anode	11.2	4	25	HDSM-441B	165-9318
Blue	Cathode	11.2	4	25	HDSM-443B	165-9319

524011

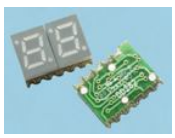
CA / CC	Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
Red							
Anode	HDSM-441C	**165-1434●**	2.35	1.60	1.29	1.16	1.11
Cathode	HDSM-443C	**165-1438●**	2.35	1.60	1.29	1.16	1.11
Orange							
Anode	HDSM-441L	**165-1437●**	2.35	1.60	1.29	1.16	1.11
Cathode	HDSM-443L	**165-1441●**	2.35	1.60	1.29	1.16	1.11
Yellow							
Anode	HDSM-441F	**165-1435●**	2.35	1.60	1.29	1.16	1.11
Cathode	HDSM-443F	**165-1439●**	2.35	1.60	1.29	1.16	1.11
Green							
Anode	HDSM-441H	**165-1436●**	2.90	1.98	1.60	1.43	1.37
Cathode	HDSM-443H	**165-1440●**	2.90	1.98	1.60	1.43	1.37
Blue							
Anode	HDSM-441B	**165-9318●**	3.85	2.81	2.32	2.07	1.98
Cathode	HDSM-443B	**165-9319●**	3.85	2.81	2.32	2.07	1.98

Dual Digit Display - 14.2mm

New

AVAGO TECHNOLOGIES

SMD



Character Size 14.22mm
No. of Characters 2
Operating Temperature -40°C to +105°C

Colour	CA / CC	Luminous Intensity (mcd) (typ)	Forward Voltage (V) (max)	Forward Current (mA) (max)	Mftrs. List No.	Order Code
Red	Anode	16	2.6	25	HDSM-541C	165-1451
Red	Cathode	16	2.6	25	HDSM-543C	165-1455
Orange	Anode	19.5	2.6	25	HDSM-541L	165-1454
Orange	Cathode	19.5	2.6	25	HDSM-543L	165-1459
Yellow	Anode	20	2.6	25	HDSM-541F	165-1452
Yellow	Cathode	20	2.6	25	HDSM-543F	165-1457
Green	Anode	10.5	2.6	25	HDSM-541H	165-1453
Green	Cathode	10.5	2.6	25	HDSM-543H	165-1458
Blue	Anode	13.5	4	25	HDSM-541B	165-9322
Blue	Cathode	13.5	4	25	HDSM-543B	165-9323

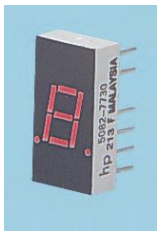
524012

RL Re-reeling available

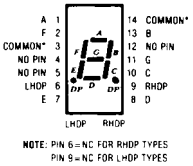
Farnell

CA / CC	Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
Red							
Anode	HDSM-541C	**165-1451●**	2.53	1.72	1.39	1.24	1.20
Cathode	HDSM-543C	**165-1455●**	2.53	1.72	1.39	1.24	1.20
Orange							
Anode	HDSM-541L	**165-1454●**	2.76	1.88	1.52	1.36	1.31
Cathode	HDSM-543L	**165-1459●**	2.76	1.88	1.52	1.36	1.31
Yellow							
Anode	HDSM-531F	**165-1443●**	1.41	0.96	0.78	0.70	0.67
Anode	HDSM-541F	**165-1452●**	2.76	1.88	1.52	1.36	1.31
Green							
Anode	HDSM-541H	**165-1453●**	3.11	2.12	1.71	1.53	1.48
Cathode	HDSM-543H	**165-1458●**	3.11	2.12	1.71	1.53	1.48
Blue							
Anode	HDSM-541B	**165-9322●**	4.16	3.04	2.51	2.24	2.14
Cathode	HDSM-543B	**165-9323●**	4.16	3.04	2.51	2.24	2.14

7.6mm (0.3")

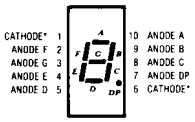


H=19.05, W=10.16, D=4.57
Pin spacing=2.54
Row spacing=7.62



NOTE: PIN 6=NC FOR RHDP TYPES
PIN 9=NC FOR LHDP TYPES

Common Anode



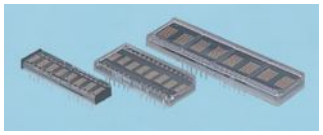
* Internally connected
Common Cathode

Colour	CA/CC	Format	Typ Luminous Intensity/segment mcd @	I_F	Typ V_F @	I_F (mA)	V_R	Mftrs. List No.	Order Code
HE Red	Cathode	8.	4.4	20	2.8	60	3	5082-7613	117-5576
Green	Anode	8.	1.1	10	2.1	10	3	HDSP-3601	100-3282

206255

Format	Format	CA/CC	Order Code	Price Each 1+	25+	100+	250+	500+
HE Red								
5082-7613	8.	Cathode	**117-5576●**	2.43	2.19	1.81	1.26	1.13
Green								
HDSP-3601	8.	Anode	**100-3282●**	2.43	2.09	1.80	1.24	1.09

4 to 8 Character LED Displays



The product series has been thoroughly characterised and stringent reliability tested to ensure that the product is of high quality. Similar to the 5.0V platform, this family product is a high performance, easy to use dot matrix display driven by on-board CMOS IC. Each display can be directly interfaced with a microprocessor, thus eliminating the need for cumbersome interface components. The serial IC interface allows higher character count information displays with a minimum of data lines. The easy to read 5x7 pixel format allows the display of uppercase, lower case, Katakana, and custom user-defined characters.

- Easy to Use
- Interfaces Directly with Microprocessors
- 0.15" Character Height in 4 Character Packages
- Rugged X- and Y-Stackable Package
- Serial Input
- Convenient Brightness Controls
- Wave Solderable
- Offered in Five Colors
- Low Power CMOS Technology
- TTL Compatible
- 3.3V Operating Voltage

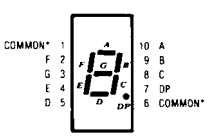
459156

Mftrs. List No.	Colour Display	Order Code	Price Each 1+	10+	50+
4 Character, 0.15" Character					
HCMS-3903	Green	**124-1263●**	26.52	17.69	14.46
4 Character, 0.2" Character					
HCMS-3963	Green	**124-1268●**	26.53	17.70	14.46
8 Character, 0.2" Character					
HCMS-3973	Green	**124-1270●**	41.52	27.68	22.65

7.6mm (0.3") - Compact Package



H=12.7,
W=7.62,
D=6.09



*Internally connected
Pin spacing=2.54
Row spacing=5.08

Colour	CA/CC	Format	Typ Luminous Intensity/segment mcd @	I_F(mA)	Typ V_F @	I_F (mA)	V_R	Mftrs. List No.	Order Code
HE Red	Anode	8.	4.4	20	2.8	60	3	HDSP-7501	100-3273
HE Red	Cathode	8.	4.4	20	2.8	60	3	HDSP-7503	100-3274
Green	Anode	8.	1.3	10	2.1	10	3	HDSP-7801	100-3275
Green	Cathode	8.	1.3	10	2.1	10	3	HDSP-7803	100-3277
Sunlight Viewable, AlGaAs									
Red	Anode	8.	14	20	1.8	20	3	HDSP-A151	100-3139
Red	Cathode	8.	14	20	1.8	20	3	HDSP-A153	100-3140

Colour	CA/CC	Format	Typ Luminous Intensity/segment mcd @	I_F	Typ V_F @	I_F (mA)	V_R	Mftrs. List No.	Order Code
High Intensity/Low Current AlGaAs Peak I_F 45mA/seg									
Red	Anode	8.	0.6	1	1.6	1	3	HDSP-A101	100-3278
Red	Cathode	8.	3.6	5	1.6	1	3	HDSP-A103	100-3279
Low Current Capable of high current drive for multipexing. Peak I_F 45mA/seg									
HE Red	Anode	8.	0.27	2	1.6	2	3	HDSP-7511	100-3280
HE Red	Cathode	8.	0.27	2	1.6	2	3	HDSP-7513	100-3281

206248

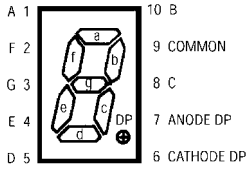
Format	CA/CC	Order Code	Price Each 1+	100+	1K+
HE Red					
8.	Anode	**100-3273●**	0.96	0.77	0.57
8.	Cathode	**100-3274●**	1.01	0.82	0.60
Green					
8.	Anode	**100-3275●**	0.96	0.77	0.57
8.	Cathode	**100-3277●**	0.90	0.77	0.54
AlGaAs Red					
8.	Anode	**100-3139●**	2.05	1.62	1.15
8.	Cathode	**100-3140●**	2.00	1.58	1.12

AlGaAs Red - High Intensity/Low Current	CA/CC	Order Code	Price Each 1+	100+	250+	500+	1K+
8.	Anode	**100-3278●**	1.36	1.26	1.04	0.75	0.66
8.	Cathode	**100-3279●**	1.36	1.26	1.04	0.75	0.68
HE Red - Low Current							
8.	Anode	**100-3280●**	0.97	0.79	0.68	0.58	0.54
8.	Cathode	**100-3281●**	1.05	0.87	0.72	0.63	0.56

8.0mm (0.31") - ULTRA-MINI



H=11.0, W=7.1, D=5.0,
Pin spacing=2.0 Row spacing=5.3



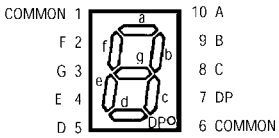
Colour	CA/CC	Format	Typ Luminous Intensity/segment mcd @	I_F(mA)	Typ V_F @	I_F (mA)	V_R	Mftrs. List No.	Order Code
HE Red	Anode	8.	5.39	20	2	20	3	HDSP-U201	100-3395
HE Red	Cathode	8.	5.39	20	2	20	3	HDSP-U203	100-3396
High Intensity/Low current AlGaAs									
Red	Anode	8.	0.6	1	1.6	1	3	HDSP-U101	100-3394

227350

Format	CA/CC	Order Code	Price Each 1+	25+	100+	250+	500+
HE Red							
8.	Anode	**100-3395●**	2.11	1.62	1.33	1.08	0.71
8.	Cathode	**100-3396●**	1.80	1.57	1.33	1.02	0.71
AlGaAs Red - High Intensity/Low Current							
8.	Anode	**100-3394●**	2.45	1.89	1.43	1.00	0.69

10.0mm





H=12.9, W=9.79, D=6.36

Colour	CA/CC	Format	Typ Luminous Intensity/segment mcd @	I_F	Typ V_F @	I_F (mA)	V_R	Mftrs. List No.	Order Code
HE Red	Anode	8.	1.2	5	2	20	3	HDSP-F201	100-3397
HE Red	Cathode	8.	1.2	5	2	20	3	HDSP-F203	100-3398
Green	Cathode	8.	3.5	10	2.1	10	3	HDSP-F503	100-3399
High Intensity AlGaAs Red									
Red	Anode	8.	15	20	1.8	20	3	HDSP-F151	100-3400
Red	Cathode	8.	15	20	1.8	20	3	HDSP-F153	100-3401

206475

Format	CA/CC	Order Code	Price Each 1+	25+	100+	250+	500+
HE Red							
8.	Anode	**100-3397●**	1.04	0.94	0.84	0.73	0.58
8.	Cathode	**100-3398●**	0.98	0.89	0.78	0.66	0.56
Green							
8.	Cathode	**100-3399●**	1.04	0.92	0.84	0.73	0.58
High Intensity AlGaAs Red							
8.	Anode	**100-3400●**	2.48	1.88	1.66	1.34	1.14
8.	Cathode	**100-3401●**	2.20	2.09	1.66	1.34	1.14

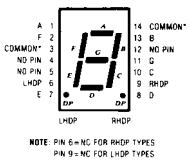
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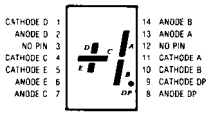
RL Re-reeling available

Farnell

Avago Technologies LED Displays - continued

10.9mm (0.43")





*Internally Connected

Colour	CA/CC	Format	Typ Luminous Intensity/segment mcd @		Typ V_F @	(mA)	V_R	Mftrs. List No.	Order Code
HE Red	Anode	.8	4.4	20	2.8	60	3	5082-7650	117-5577
HE Red	Anode	8.	4.4	20	2.8	60	3	5082-7651	117-5582
HE Red	Anode	8.	4.4	20	2.8	60	3	5082-7653	117-5583
HE Red	Universal	+1.	4.4	20	2.8	60	3	5082-7656	117-5584
Green	Cathode	8.	1.3	10	2.1	10	3	HDSP-4603	100-3283
Low Current/High Intensity AlGas. Peak I_F 45mA/seg									
Red	Anode	8.	0.65	1	1.6	1	3	HDSP-E101	100-3284
Red	Cathode	8.	3.9	1	1.6	5	3	HDSP-E103	100-3285

206269

Format	CA/CC	Order Code	Price Each 1+	100+	250+	500+	1K+
HE Red							
.8	Anode	**117-5577●**	2.46	2.13	1.85	1.54	1.37
8.	Anode	**117-5582●**	2.22	1.94	1.75	1.50	1.36
8.	Anode	**117-5583●**	2.25	1.95	1.69	1.45	1.30
+1.	Universal	**117-5584●**	2.30	1.88	1.70	1.46	1.32
Green							
8.	Cathode	**100-3283●**	1.96	1.68	1.49	1.28	1.14
AlGaAs Red - High Intensity/Low Current							
8.	Anode	**100-3284●**	3.79	3.05	2.73	2.00	1.67
8.	Cathode	**100-3285●**	3.18	2.75	2.48	1.73	1.45

14.2mm (0.56") 2-Digit



H = 18.6, W = 25.15, D = 8.0
Pin spacing=2.54mm
Row spacing=15.25mm

Common Anode Pin Function	Common Cathode Pin Function
1 E Cathode No.1	1 E Anode No.1
2 D Cathode No.1	2 D Anode No.1
3 C Cathode No.1	3 C Anode No.1
4 DP Cathode No.1	4 DP Anode No.1
5 E Cathode No.2	5 E Anode No.2
6 D Cathode No.2	6 D Anode No.2
7 G Cathode No.2	7 G Anode No.2
8 C Cathode No.2	8 C Anode No.2
9 DP Cathode No.2	9 DP Anode No.2
10 B Cathode No.2	10 B Anode No.2
11 A Cathode No.2	11 A Anode No.2
12 F Cathode No.2	12 F Anode No.2
13 Digit No.2 Anode	13 Digit No.2 Cathode
14 Digit No.1 Anode	14 Digit No.1 Cathode
15 B Cathode No.1	15 B Anode No.1
16 A Cathode No.1	16 A Anode No.1
17 G Cathode No.1	17 G Anode No.1
18 F Cathode No.1	18 F Anode No.1

Colour	CA/CC	Format	Typ. Lum. Intensity/Segment (mcd) @ 20mA Min.	Typ.	Typ V_F @ I_F= 20mA	PIV	Mftrs. List No.	Order Code
HE Red	Anode	8.	1.01	2.8	2.1V	5V	HDSP-521E	100-3314
HE Red	Cathode	8.	1.01	2.8	2.1V	5V	HDSP-523E	100-3315
Green	Anode	8.	1.01	2.5	2.1V	5V	HDSP-521G	100-3316
Green	Cathode	8.	1.01	2.5	2.1V	5V	HDSP-523G	100-3317

206675

CA/CC	Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
HE Red							
Anode	HDSP-521E	**100-3314●**	0.83	0.72	0.67	0.56	0.50
Cathode	HDSP-523E	**100-3315●**	0.83	0.72	0.67	0.56	0.50
Green							
Anode	HDSP-521G	**100-3316●**	0.75	0.64	0.60	0.50	0.45
Cathode	HDSP-523G	**100-3317●**	0.83	0.72	0.67	0.56	0.50

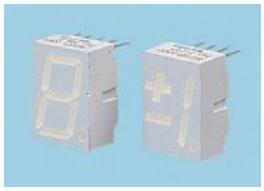
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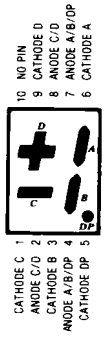
techsales@farnell.co.uk

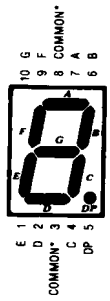
Live technical chat at www.farnell.co.uk

14.2mm (0.56")



H=17.02, W=12.57, D=8.0
Pin spacing=2.54
Row spacing=15.24





*Internally connected

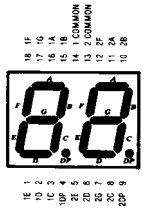
Colour	CA/CC	Format	Typ Luminous Intensity/segment mcd @	I_F (mA)	Typ V_F	mA	V_R	Mftrs. List No.	Order Code
HE Red	Anode	8.	2.8	20	2.1	20	3	HDSP-5501	100-3293
HE Red	Cathode	8.	2.8	20	2.1	20	3	HDSP-5503	100-3294
HE Red	Anode	±1	2.8	20	2.1	20	3	HDSP-5507	100-3295
Green	Anode	8.	1.5	10	2.1	10	3	HDSP-5601	100-3296
Green	Cathode	8.	1.5	10	2.1	10	3	HDSP-5603	100-3297
Sunlight Viewable, AlGaAs									
Red	Anode	8.	16	20	1.8	20	3	HDSP-H151	100-3141
High Intensity/Low Current, AlGaAs. Peak 1F 45mA/Seg									
Red	Anode	8.	0.7	1	1.6	1	3	HDSP-H101	100-3298
Red	Cathode	8.			1.6	1	3	HDSP-H103	100-3299
Low Current. Capable of high current drive for multiplexing Peak 1F45mA/seg									
HE Red	Anode	8.	0.37	2	1.6	2	3	HDSP-5551	100-3300
HE Red	Cathode	8.	0.37	2	1.6	2	3	HDSP-5553	100-3301

206289

Format	CA/CC	Order Code	Price Each 1+	100+	250+	500+	1K+
HE Red							
8.	Anode	**100-3293●**	0.93	0.83	0.75	0.62	0.51
8.	Cathode	**100-3294●**	0.87	0.76	0.75	0.55	0.45
±1	Anode	**100-3295●**	1.13	0.98	0.85	0.63	0.59
Green							
8.	Anode	**100-3296●**	0.92	0.81	0.80	0.64	0.50
8.	Cathode	**100-3297●**	0.87	0.76	0.75	0.55	0.44
Sunlight Viewable AlGaAs							
8.	Anode	**100-3141●**	2.13	1.62	1.44	1.21	1.08
High Intensity/ Low Current, AlGaAs							
8.	Anode	**100-3298●**	1.30	1.12	1.00	0.70	0.60
8.	Cathode	**100-3299●**	1.03	0.90	0.80	0.56	0.48
Low Current Red							
8.	Anode	**100-3300●**	0.78	0.69	0.60	0.46	0.42
8.	Cathode	**100-3301●**	0.78	0.69	0.60	0.46	0.45

14.2mm (0.56") 2-Digit





Two digit displays with right hand decimal points for direct operation.

H=17.02, W=25.15, D=8.0
Pin spacing=2.54
Row spacing=15.24

Colour	CA/CC	Typ Luminous Intensity/segment	Typ. V_F	Mftrs. List No.	Order Code
HE Red	Anode	2.8mcd10mA	2.1VmA	HDSP-5521	100-3286
HE Red	Cathode	2.8 @ mcd10mA	2.1V @ 20mA	HDSP-5523	100-3287
Green	Cathode	1.5 @ mcd10mA	2.1V @ 20mA	HDSP-5623	100-3289
High Intensity/Low Current					
Red	Anode	4.2 @ mcd5mA	1.6V @ 1mA	HDSP-K121	100-3291
Red	Cathode	4.2 @ mcd5mA	1.6V @ 1mA	HDSP-K123	100-3292

221678

Colour	CA/CC	Order Code	Price Each 1+	100+	250+	500+	1K+
HE Red	Anode	**100-3286●**	1.39	1.19	1.06	0.87	0.78
HE Red	Cathode	**100-3287●**	1.55	1.32	1.15	0.99	0.84
Green	Cathode	**100-3289●**	1.22	1.06	0.94	0.85	0.77
High Intensity/Low Current							
Red	Anode	**100-3291●**	1.86	1.60	1.37	1.16	1.05
Red	Cathode	**100-3292●**	1.86	1.60	1.37	1.16	1.05

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20mm (0.8")

AVAGO TECHNOLOGIES



H = 27.69, W = 19.96, D = 8.38
Pin spacing=2.54mm
Row spacing=15.24mm

Common Anode		Common Cathode	
Pin	Function	Pin	Function
1	Cathode A	1	Anode A
2	Cathode F	2	Anode F
3	Common Anode	3	Common Cathode
4	Cathode E	4	Anode E
5	Common Anode	5	Common Cathode
6	No Connection	6	No Connection
7	No Pin	7	No Pin
8	No Pin	8	No Pin
9	Cathode RHDP	9	Anode RHDP
10	Cathode D	10	Anode D
11	Common Anode	11	Common Cathode
12	Cathode C	12	Anode C
13	Cathode G	13	Anode G
14	Cathode B	14	Anode B
15	No Pin	15	No Pin
16	Common Anode	16	Common Cathode

Colour	CA/CC	Format	Typ. Lum. Intensity/Segment (mcd) @ 20mA Min.	Typ.	Typ V_F @ I_F= 20mA	PIV	Mftrs. List No.	Order Code
HE Red	Anode	8.	2.3	4.8	2.1	3	HDSP-815E	100-3310
HE Red	Cathode	8.	2.3	4.8	2.1	3	HDSP-816E	100-3311
Green	Anode	8.	1.5	3.3	2.1	3	HDSP-815G	100-3312
Green	Cathode	8.	1.5	3.3	2.1	3	HDSP-816G	100-3313

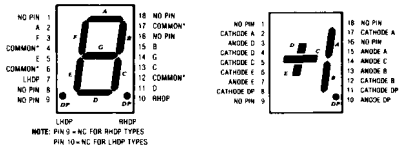
206674

Format	CA/CC	Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
HE Red								
8.	Anode	HDSP-815E	**100-3310●**	0.90	0.81	0.72	0.62	0.55
8.	Cathode	HDSP-816E	**100-3311●**	0.88	0.79	0.70	0.60	0.54
Green								
8.	Anode	HDSP-815G	**100-3312●**	0.88	0.79	0.70	0.60	0.54
8.	Cathode	HDSP-816G	**100-3313●**	0.70	0.63	0.56	0.48	0.43

20.3mm (0.8")

AVAGO TECHNOLOGIES





*Internally connected

H=27.69, W=19.96, D=8.38 Pin spacing=2.54
Row spacing=15.24

Colour	CA/CC	Format	Typ Luminous Intensity/segment mcd @	I_F (mA)	Typ V_F	@ I_F mA	V_R	Mftrs. List No.	Order Code
HE Red	Anode	.8	4.8	20	2.6	100	3	HDSP-3900	100-3302
HE Red	Anode	.8.	4.8	20	2.6	100	3	HDSP-3901	100-3303
HE Red	Cathode	.8.	4.8	20	2.6	100	3	HDSP-3903	100-3304
High Intensity/Low Current, AlGaAs. Peak 1F45mA/seg.									
Red	Anode	.8.	0.59	1	1.6	1	3	HDSP-N101	100-3305
Red	Cathode	.8.	3.5	5	1.6	1	3	HDSP-N103	100-3307

206304

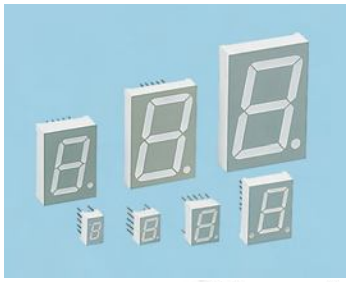
Format	CA/CC	Order Code	Price Each 1+	100+	250+	500+	1K+
HE Red							
.8	Anode	**100-3302●**	2.20	1.96	1.70	1.43	1.24
.8.	Anode	**100-3303●**	2.13	1.84	1.57	1.35	1.15
.8.	Cathode	**100-3304●**	2.10	1.81	1.55	1.32	1.12
AlGaAs Red-High Intensity/Low Current							
.8.	Anode	**100-3305●**	3.68	3.21	2.89	2.07	1.73
.8.	Cathode	**100-3307●**	3.57	3.13	2.81	2.02	1.68

Blue LED Displays 7 Segment & Dot Matrix

Blue LED Displays

7.6mm, 10mm, 14.2mm & 20.3mm

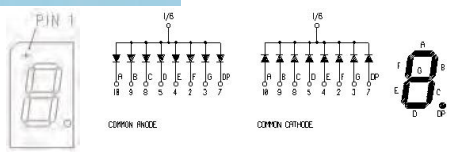
forge EUROPA



- Two optically matched ranges of seven segment and dot matrix LED displays together with a complimentary range of LED lamps **see below**
- Two performance options, HE Blue and Blue
- Choice of two wavelengths, HE Blue 465nm and Blue 428nm
- Distinctive blue colour ideal for a host of applications including audio, instrumentation and corporate signage

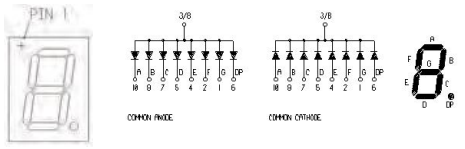
7.6mm (0.3")

H = 12.7, W = 7.6, Pin spacing = 2.54, Column spacing = 5.08



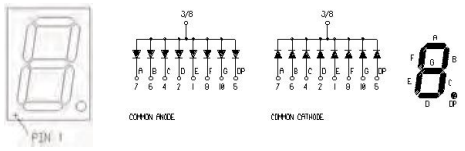
10mm (0.39")

H = 12.9, W = 9.7, Pin spacing = 2.54, Column spacing = 7.62



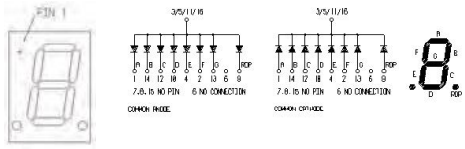
14.2mm (0.56")

H = 17.1, W = 12.4, Pin spacing = 2.54, Row spacing = 15.24



20.3mm (0.8")

H = 27.7, W = 20.0, Pin spacing = 2.54, Column spacing = 15.24



Colour	CA/CC	Typ. Luminous Intesity/Segment (mcd) HE Blue @ 10mA Blue @ 20mA	V_F typ.	Mftrs. List No.	Order Code
7.6mm					
HE Blue	Cathode	8	3.3	FN1-0311B0500GW	120-0600
HE Blue	Anode	8	3.3	FN1-0312B0500GW	120-0601
Blue	Cathode	3	3.7	FN1-0311B0100GW	120-0602
Blue	Anode	6	3.7	FN1-0802B0100GW	120-0617
10.0mm					
HE Blue	Anode	10	3.3	FN1-0392B050JGW	120-0606
Blue	Cathode	4	3.7	FN1-0391B010JGW	120-0607
Blue	Anode	4	3.7	FN1-0392B010JGW	120-0608
14.2mm					
HE Blue	Cathode	14	3.3	FN1-0561B050SGW	120-0609
HE Blue	Anode	14	3.3	FN1-0562B050SGW	120-0610
Blue	Cathode	5	3.7	FN1-0561B010SGW	120-0611
Blue	Anode	5	3.7	FN1-0562B010SGW	120-0612
20.3mm					
HE Blue	Cathode	18	3.3	FN1-0801B0500GW	120-0613
HE Blue	Anode	18	3.3	FN1-0802B0500GW	120-0614
Blue	Anode	6	3.7	FN1-0802B0100GW	120-0617

229071

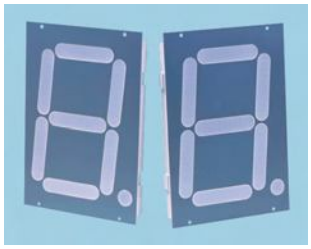
Colour	CA/CC	Order Code	Price Each 1+	10+	25+	50+	100+
7.6mm							
HE Blue	Cathode	**120-0600●**	3.74	3.43	3.19	2.47	2.37
HE Blue	Anode	**120-0601●**	3.74	3.43	3.19	2.47	2.37
Blue	Cathode	**120-0602●**	3.28	3.01	2.80	2.12	2.08
Blue	Anode	**120-0603●**	3.28	3.01	2.80	2.12	2.08
Blue	Anode	**120-0617●**	3.13	2.88	2.67	2.06	1.98
10.0mm							
HE Blue	Anode	**120-0606●**	3.74	3.43	3.19	2.47	2.37
Blue	Cathode	**120-0607●**	3.28	3.02	2.80	2.12	2.08
Blue	Anode	**120-0608●**	3.28	3.02	2.80	2.12	2.08
14.2mm							
HE Blue	Cathode	**120-0609●**	3.75	3.43	3.20	2.47	2.38
HE Blue	Anode	**120-0610●**	3.75	3.43	3.20	2.47	2.38
Blue	Cathode	**120-0611●**	3.30	3.02	2.81	2.12	2.08
Blue	Anode	**120-0612●**	3.30	3.02	2.81	2.12	2.08
20.3mm							
HE Blue	Cathode	**120-0613●**	3.93	3.60	3.35	2.58	2.49
HE Blue	Anode	**120-0614●**	3.93	3.60	3.35	2.58	2.49
Blue	Anode	**120-0617●**	3.13	2.88	2.67	2.06	1.98

Interlocking LED Displays

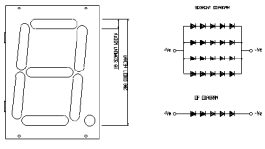
Large Character Interlocking LED Displays

200mm Character Height

forge EUROPA



H = 250, W = 175, D = 15



200mm (7.9")

- Lightweight - less than 0.5Kg
- Very thin in cross section - 15mm depth
- High intensity output from a range of colours
- The interlcok dovetails have a light friction fit between units for ease of assembly
- Extra wide viewing angle - almost 180° 'actual' viewing
- Low power consumption
- Characters can be viewed from distances of up to 150 metres

Colour	CA/CC	Typ. Luminous Intesity/Segment (mcd) @ 80mA	V_F/ Segment typ.	Mftrs. List No.	Order Code
200mm					
Red	Anode	72	10.5	FEM-7902R0300GW	120-0619
Red	Cathode	48	9.25	FEM-7901R0100GW	120-0620

RL Re-reeling available

Farnell

Interlocking LED Displays - continued

Large Character Interlocking LED Displays - continued

200mm Character Height - continued

229069

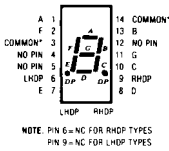
Colour	CA/CC	Mftrs. List No.	Order Code	Price Each 1+	5+	10+	25+
Red	Anode	FEM-7902R0300GW	**120-0619●**	30.66	29.16	28.59	26.62
Red	Cathode	FEM-7901R0100GW	**120-0620●**	25.27	24.02	23.55	21.94

LED Displays

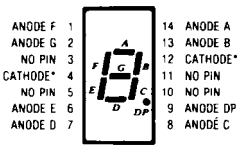
7.6mm (0.3")

Kingbright





Common anode



Common cathode

H=19.3, W=10.16, D=5.08
Pin spacing=2.54
Row spacing=7.62

Colour	CA / CC	Format	Luminous Intensity * (typ)	Forward Voltage (max)	Forward Current	Reverse Voltage (max)	Mftrs. List No.	Order Code
Red	Anode	.8	0.35	2	20	5	SA03-12HDB	131-8269
Red	Anode	8.	0.35	2	20	5	SA03-11HDB	131-8266
Red	Cathode	8.	0.35	2	20	5	SC03-12HDB	131-8272
HE Red	Anode	.8	1.9	2.5	20	5	SA03-12EWA	131-8267
HE Red	Cathode	8.	1.9	2.5	20	5	SC03-12EWA	131-8270
Green	Anode	.8	3.2	3	20	5	SA03-12GWA	131-8268
Green	Cathode	8.	3.2	3	20	5	SC03-12GWA	131-8271

* Per segment @ I_F = 10mA

454389

Format	CA / CC	Mftrs. List No.	Order Code	Price Each 1+	25+	100+
Red						
.8	Anode	SA03-12HDB	**131-8269●**	0.65	0.54	0.46
8.	Anode	SA03-11HDB	**131-8266●**	0.65	0.54	0.46
8.	Cathode	SC03-12HDB	**131-8272●**	0.65	0.54	0.46
HE Red						
.8	Anode	SA03-12EWA	**131-8267●**	0.58	0.48	0.41
8.	Cathode	SC03-12EWA	**131-8270●**	0.60	0.49	0.42
Green						
.8	Anode	SA03-12GWA	**131-8268●**	0.54	0.45	0.39
8.	Cathode	SC03-12GWA	**131-8271●**	0.54	0.45	0.39

For **Display Accessories** see page 919

10mm

Low Current

VISHAY



- Low power consumption
- Suitable for DC and multiplex operation
- Evenly lighted segments
- Grey package surface
- Untinted segments
- 10° display slant
- Luminous intensity categorized for uniform appearence

H = 7, W = 9.7, D = 12.8mm
Pin spacing = 2.54mm Row spacing = 7.62mm

Colour	CA/CC	Format	Typ Luminous Intensity/segment mcd @	I_F (mA)	Peak Wavelength nm @ 2 mA	Power Dissipation mW	Mftrs. List No.	Order Code
HE Red	Anode	8.	260	2	635	320	TDSL3150	132-8304

460629

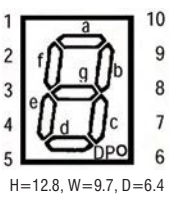
Format	CA/CC	Order Code	Price Each 1+	25+	50+	100+	250+
HE Red							
8.	Anode	**132-8304●**	1.10	1.00	0.91	0.88	0.81

10.0mm

Common Anode

AVAGO TECHNOLOGIES





H=12.8, W=9.7, D=6.4

Pin configuration

1 = g	10 = a
2 = f	9 = b
3 = Common Anode	8 = Common Anode
4 = e	7 = c
5 = d	6 = DP

- Slim font design
- Miltered corners, evenly illuminated segments
- Excellent Appearance, 50° viewing angle
- Right hand side decimal point
- Low current options

Colour	Luminous Intensity/segment, typ. mcd @		V_F @ Typ, max.	I_F (mA)	V_R	Mftrs. List No.	Order Code
Red (HE)	2.6	15	1.9V, 2.5V	30	3	HDSP-315E	124-1271
Red	0.65	1	1.8V, 2.2V	15	3	HDSP-315H	124-1273
Red	0.37	2	2.1V, 2.5V	15	3	HDSP-315L	124-1274
Green	5	10	2.1V, 2.5V	30	3	HDSP-315G	124-1272
Yellow	1.8	10	2V, 2.5V	20	3	HDSP-315Y	124-1275

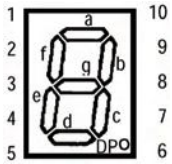
459163

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+
HDSP-315E	**124-1271●**	1.08	0.72	0.58	0.50
HDSP-315G	**124-1272●**	1.11	0.73	0.60	0.52
HDSP-315H	**124-1273●**	1.39	0.93	0.76	0.67
HDSP-315L	**124-1274●**	1.11	0.73	0.60	0.52
HDSP-315Y	**124-1275●**	1.11	0.73	0.60	0.52

10mm Low Power Consumption

AVAGO TECHNOLOGIES





H=12.9, W=9.79, D=6.36

- Low Power consumption
- Industry standard size
- Excellent Appearance, 50° viewing angle
- Right hand side decimal point
- Excellent for long digit string multiplexing

Pin configuration, *F101

1 = Common Anode	10 = a
2 = f	9 = b
3 = g	8 = c
4 = e	7 = DP
5 = d	6 = Common Anode

Pin configuration, *F103

1 = Common Cathode	10 = a
2 = f	9 = b
3 = g	8 = c
4 = e	7 = DP
5 = d	6 = Common Cathode

Colour	Luminous Intensity/segment, typ. mcd @		V_F @ Typ	I_F (mA)	V_R	Connection	Mftrs. List No.	Order Code
Red	0.65	1	1.6V	15	3	Anode	HDSP-F101	124-1276
Red	0.65	1	1.6V	15	3	Cathode	HDSP-F103	124-1277

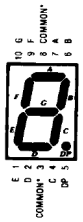
459168

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+
HDSP-F101	**124-1276●**	1.70	1.14	0.94	0.82
HDSP-F103	**124-1277●**	1.70	1.14	0.94	0.82

12.7mm (0.5")

OMC
Applying the technology of light





H=19.0, W=12.7, D=8.0
Pin spacing=2.54
Row spacing=15.24

*Internally connected

Colour	CA/CC	Format	Typ Luminous Intensity/Segment mcd @	I_F (mA)	Typ. V_F @ 20mA	V_R	Mftrs. List No.	Order Code
Red	Anode	8.	2.2	20	2.1	5	D50C05GW111	120-8886
Red	Cathode	8.	2.2	20	2.1	5	D50C05GW111	120-8886

206280

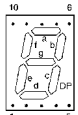
Format	CA/CC	Order Code	Price Each 1+	10+	25+	100+	500+
Red							
8.	Anode	**120-8886●**	2.21	1.81	1.29	0.84	0.73
8.	Cathode	**120-8886●**	2.21	1.81	1.29	0.84	0.73

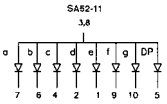
13.2mm (0.52")

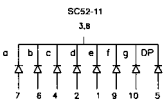
Kingbright



H=17.55, W=12.40,
D=7.00
Pin spacing=2.54
Row spacing=15.24







Colour	CA/CC	Format	Lum Intensity/Seg. @ I_F=10mA min (mcd)	max	Typ. V_F @ 20mA	V_R	Order Code
HE Red	Anode	8.	2.2	20	2	5	116-8589
HE Red	Cathode	8.	2.2	20	2	5	114-2435
Ultra Red	Anode	8.	5.6	20	1.85	5	116-8597
Ultra Red	Cathode	8.	5.6	20	1.85	5	116-8602
Yellow	Anode	8.	2.2	20	2.1	5	116-8608
Green	Anode	8.	2.2	20	2.2	5	116-8611
Green	Cathode	8.	2.2	20	2.2	5	116-8615

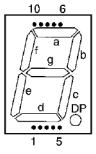
206378

Format	CA/CC	Order Code	Price Each 1+	25+	100+	500+	1K+
HE Red							
8.	Anode	**116-8589●**	0.48	0.44	0.40	0.38	0.35
8.	Cathode	**114-2435●**	0.48	0.44	0.40	0.38	0.35
Ultra Red							
8.	Anode	**116-8597●**	0.44	0.40	0.38	0.35	0.32
8.	Cathode	**116-8602●**	0.42	0.40	0.38	0.35	0.32
Yellow							
8.	Anode	**116-8608●**	0.42	0.39	0.37	0.36	0.34
Green							
8.	Anode	**116-8611●**	0.47	0.42	0.39	0.36	0.33
8.	Cathode	**116-8615●**	0.42	0.39	0.37	0.35	0.33

14.2mm (0.56") Sunlight Viewable

AVAGO TECHNOLOGIES





Pin configuration, *H151

1 = e	10 = g
2 = d	9 = f
3 = Common Cathode	8 = Common Cathode
4 = c	7 = a
5 = DP	6 = b

H=17.02, W=12.57, D=8

- Industry standard size
- Industry standard pin outs
- Excellent Appearance, 50° viewing angle
- Right hand side decimal point
- Sunlight viewable AlGaAs

Colour	Luminous Intensity/segment, typ. mcd	@	V_F @ Typ	I_F (mA)	V_R	Connection	Mftrs. List No.	Order Code
Red	16	20	1.8V	40	3	Cathode	HDSP-H153	124-1279

459171

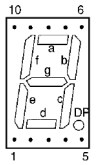
Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+
HDSP-H153	**124-1279●**	1.39	0.93	0.76	0.67

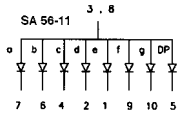
14.2mm (0.56")

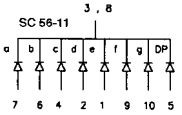
Kingbright



H=19.05, W=12.50, D=8.0
Pin spacing=2.54
Row spacing=15.24







Colour	CA/CC	Format	Lum Intensity/Seg. @ I_F=10mA min (mcd)	max	Typ. V_F @ 20mA	V_R	Order Code
HE Red	Anode	8.	2.2	5.6	2	5	114-2440
HE Red	Cathode	8.	2.2	5.6	2	5	114-2441
Ultra Red	Cathode	8.	5.6	21	1.85	5	114-2442
Yellow	Anode	8.	2.2	5.6	2.1	5	114-2443
Yellow	Cathode	8.	2.2	5.6	2.1	5	114-2444
Green	Anode	8.	2.2	5.6	2.2	5	114-2438
Green	Cathode	8.	2.2	5.6	2.2	5	114-2439

206398

Format	CA/CC	Order Code	Price Each 1+	50+	100+	500+	1K+
HE Red							
8.	Anode	**114-2440●**	0.43	0.42	0.38	0.28	0.26
8.	Cathode	**114-2441●**	0.43	0.42	0.38	0.28	0.26
Ultra Red							
8.	Cathode	**114-2442●**	0.44	0.41	0.40	0.32	0.28
Yellow							
8.	Anode	**114-2443●**	0.40	0.37	0.36	0.26	0.24
8.	Cathode	**114-2444●**	0.41	0.38	0.37	0.27	0.25
Green							
8.	Anode	**114-2438●**	0.40	0.37	0.35	0.27	0.25
8.	Cathode	**114-2439●**	0.40	0.37	0.35	0.27	0.25

Over 480,000 products online QGO

20mm High Visibility

AVAGO TECHNOLOGIES



The 20 mm (0.8 inch) LED seven segment displays are designed for viewing distances up to 10 metres (33 feet). These devicesuse an industry standard size package and pinout. All devices are available as either common anode or common cathode.

Colour	Luminous Intensity/segment, typ. mcd	@	V_F @ Typ	I_F (mA)	V_R	Connection	Mftrs. List No.	Order Code
Red	14	20	1.8V	40	3	Anode	HDSP-N151	124-1281

475804

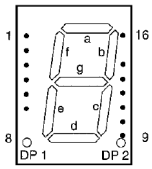
Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+
HDSP-N151	**124-1281●**	3.12	2.23	1.74	1.49

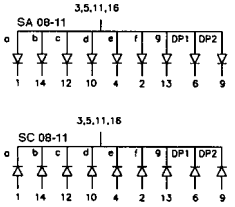
20.3mm (0.8")

Kingbright



H=27.7, W=20.0, D=8.4
Pin spacing=2.54
Row spacing=15.24





Colour	Format	Format	Luminous Intensity * mcd (min)	(max)	Typ. V_F @ 20mA	Reverse Voltage	Order
HE Red	Anode	8.	2.2	9	2	5	114-2448
HE Red	Cathode	8.	2.2	9	2	5	114-2449
Ultra Red	Anode	8.	9	21	1.85	5	114-2450
Ultra Red	Cathode	8.	9	21	1.85	5	114-2451
Yellow	Cathode	8.	1.4	3.6	2.1	5	114-2452
Green	Anode	8.	1.4	3.6	2.2	5	114-2445
Green	Cathode	8.	1.4	3.6	2.2	5	114-2447

* Per segment @ I_F=10mA

206375

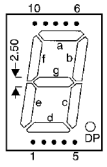
Format	CA / CC	Order Code	Price Each 1+	50+	100+	500+	1K+
HE Red							
8.	Anode	**114-2448●**	0.47	0.43	0.40	0.37	0.35
8.	Cathode	**114-2449●**	0.54	0.46	0.43	0.37	0.35
Ultra Red							
8.	Anode	**114-2450●**	0.59	0.52	0.46	0.39	0.38
8.	Cathode	**114-2451●**	0.59	0.52	0.46	0.39	0.38
Yellow							
8.	Cathode	**114-2452●**	0.53	0.45	0.42	0.36	0.34
Green							
8.	Anode	**114-2445●**	0.52	0.45	0.42	0.36	0.34
8.	Cathode	**114-2447●**	0.50	0.44	0.41	0.35	0.33

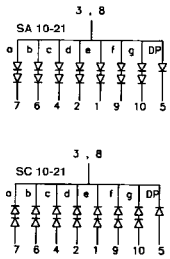
25.4mm (1.0")

Kingbright



H=34.0, W=24.0, D=10.5
Pin spacing=2.54
Row spacing=30.4





Colour	CA/CC	Format	Lum Intensity/Seg. @ I_F = 10mA (mcd) min		Typ. V_F @ 20mA	V_R	Order Code
HE Red	Anode	8.	5.6	14	2	5	116-8620
HE Red	Cathode	8.	5.6	14	2	5	116-8622
Ultra Red	Anode	8.	14	31	1.85	5	116-8623
Ultra Red	Cathode	8.	14	31	1.85	5	116-8625
Green	Anode	8.	3.6	9	2.2	5	116-8626

206382

Format	CA/CC	Order Code	Price Each 1+	25+	100+	250+	500+
HE Red							
8.	Anode	**116-8620●**	1.03	0.86	0.68	0.60	0.52
8.	Cathode	**116-8622●**	1.14	0.86	0.68	0.60	0.52
Ultra Red							
8.	Anode	**116-8623●**	1.51	1.22	0.97	0.81	0.69
8.	Cathode	**116-8625●**	1.12	1.00	0.94	0.81	0.69
Ultra Green							
8.	Anode	**116-8626●**	0.86	0.71	0.67	0.55	0.53

RL Re-reeling available

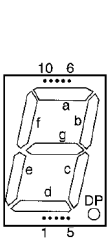
Farnell

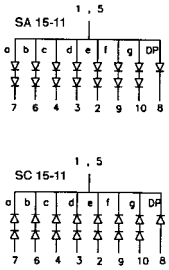
LED Displays - continued

38.1mm (1.5")

Kingbright







H=47.0, W=33.15, D=12.5
Pin spacing=2.54
Row spacing=40.64

Colour	CA/CC	Format	Lum Intensity/Seg. @ I_F = 10mA (mcd) min	max	Typ. V_F @ 20mA	V_R	Order Code
HE Red	Anode	8.	3.6	21	2	5	116-8627
HE Red	Cathode	8.	3.6	21	2	5	116-8628
Ultra Red	Anode	8.	14	31	1.85	5	116-8631
Ultra Red	Cathode	8.	14	31	1.85	5	116-8632
Green	Anode	8.	3.6	9	2.2	5	116-8633

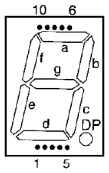
206379

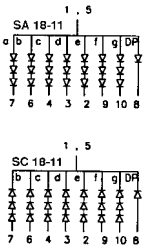
Format	CA/CC	Order Code	Price Each 1+	25+	100+	250+	500+
HE Red							
8.	Anode	**116-8627●**	1.33	1.04	0.99	0.82	0.79
8.	Cathode	**116-8628●**	1.33	1.04	0.99	0.82	0.79
Ultra Red							
8.	Anode	**116-8631●**	2.06	1.55	1.24	1.04	0.93
8.	Cathode	**116-8632●**	1.29	1.05	1.02	0.91	0.87
Ultra Green							
8.	Anode	**116-8633●**	1.30	1.04	0.97	0.81	0.80

44.5mm (1.75")

Kingbright







H=56, W=38, D=11
Pin spacing=2.54
Row spacing=48.26

Colour	CA/CC	Format	Lum Intensity/Seg. @ I_F = 10mA (mcd) min	max	Typ. V_F @ 20mA	V_R	Order Code
HE Red	Anode	8.	3.6	21	2	5	116-8634
Ultra Red	Anode	8.	14	31	1.85	5	116-8635
Ultra Red	Cathode	8.	14	31	1.85	5	116-8636

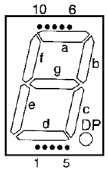
206377

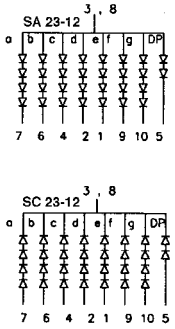
Format	CA/CC	Order Code	Price Each 1+	25+	100+	250+	500+
HE Red							
8.	Anode	**116-8634●**	1.79	1.36	1.29	1.13	1.10
Ultra Red							
8.	Anode	**116-8635●**	1.95	1.47	1.40	1.19	1.17
8.	Cathode	**116-8636●**	1.89	1.43	1.36	1.16	1.14

56.9mm (2.24")

Kingbright







H=70.0, W=48.0, D=12.0
Pin spacing=2.54
Row spacing=60.1

Colour	CA/CC	Format	Lum Intensity/Seg. @ I_F = 10mA (mcd) min	max	Typ. V_F @ 20mA	V_R	Order Code
HE Red	Anode	8.	5.6	14	2	5	116-8637
HE Red	Cathode	8.	5.6	14	2	5	116-8638
Ultra Red	Anode	8.	14	31	1.85	5	116-8639
Ultra Red	Cathode	8.	14	31	1.85	5	116-8641
Green	Anode	8.	9	21	2.2	5	116-8643

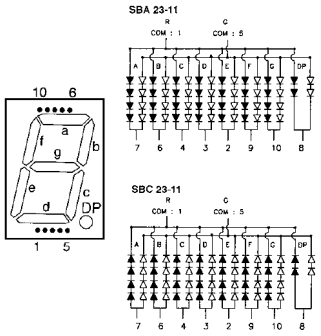
206381

Format	CA/CC	Order Code	Price Each 1+	10+	25+	50+	100+
HE Red							
8.	Anode	**116-8637●**	3.23	2.42	2.00	1.70	1.46
8.	Cathode	**116-8638●**	2.35	1.79	1.73	1.62	1.59
Ultra Red							
8.	Anode	**116-8639●**	3.32	2.99	2.43	2.05	1.83
8.	Cathode	**116-8641●**	2.62	1.98	1.89	1.80	1.77
Ultra Green							
8.	Anode	**116-8643●**	2.79	2.51	2.22	2.00	1.82

56.9mm (2.24"), Bi-Colour

Kingbright





H=70, W=48, D=12
Pin spacing=2.54
Row spacing=60.1

Colour	CA/CC	Format	Lum Intensity/Seg. @ I_F = 10mA (mcd) min	max	Typ. V_F @ 20mA	V_R	Order Code
HE Red / Green	Anode	8.	15	30	2/2.2	5	116-8655
HE Red / Green	Cathode	8.	15	30	2/2.2	5	116-8656

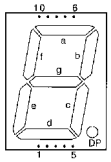
206383

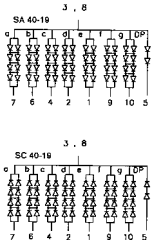
Format	CA/CC	Order Code	Price Each 1+	25+	100+	250+	500+
HE Red							
8.	Anode	**116-8655●**	3.95	3.04	2.83	2.44	2.39
8.	Cathode	**116-8656●**	3.43	2.69	2.57	2.38	2.32

100mm (4.0")

Kingbright







H=122, W=90, D=15
Pin spacing=5.08
Row spacing=107.0

Colour	CA/CC	Format	Lum Intensity/Seg @ 1_F=10mA (mcd) min	max	Typ V_F @ 20mA	V_R	Order Code
HE Red	Anode	8.	5.6	14	2	5	116-8645
HE Red	Cathode	8.	5.6	14	2	5	116-8646
Ultra Red	Anode	8.	14	31	1.85	5	116-8647
Ultra Red	Cathode	8.	14	31	1.85	5	116-8648
Ultra Green	Anode	8.	14	31	2.2	5	116-8650

206384

Format	CA/CC	Order Code	Price Each 1+	10+	25+	50+	100+
HE Red							
8.	Anode	**116-8645●**	10.17	7.63	6.10	5.35	4.59
8.	Cathode	**116-8646●**	10.17	7.63	6.10	5.23	4.59
Ultra Red							
8.	Anode	**116-8647●**	9.26	8.33	6.97	5.81	5.25
8.	Cathode	**116-8648●**	11.63	8.72	6.97	5.81	5.25
Ultra Green							
8.	Anode	**116-8650●**	10.17	7.63	6.21	5.35	5.21

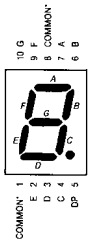
For **Display Accessories** see page 919

RL Re-reeling available

Farnell

101.6mm (4.0")





Each segment contains eight chips (dp=two chips).

H=121.8, W=90, D=14.75
Pin spacing=5.08
Row spacing=106.7

*Internally Connected

Colour	CA/CC	Format	Typ Luminous Intensity/segment mcd		Typ V_F 20mA	Mftrs. List No.	Order Code
HE Red	Anode	8.	16.5	20	8.4	D41A04GW182	120-8844

206243

Format	CA/CC	Order Code	Price Each 1+	10+	25+	100+
HE Red						
8.	Anode	**120-8844●**	26.70	20.51	17.72	11.25

Alphanumeric LED Displays

30mm (1.2")

Dot Matrix

Kingbright



H=39.2, W=22.9, D=8.0
Pin spacing=2.54, Row spacing=33.0

Colour	Column Anode/Cathode	Lum Intensity/Seg @I_F= 10mA(mcd) min	max	Typ.V_F @ If=20mA	V_R (max)	Order Code
HE Red	Anode	3.6	9	2	5	116-8665
HE Green	Anode	3.6	9	2.2	5	116-8667

206435

Colour	Column Anode/Cathode	Order Code	Price Each 1+	25+	100+	500+
HE Red	Anode	**116-8665●**	1.87	1.35	1.05	0.99
HE Green	Anode	**116-8667●**	1.33	1.06	1.02	0.92

50mm (2.0")

Dot Matrix

Kingbright



H=53.30, W=38.5, D=8.45
Pin spacing=2.54, Row spacing=38.1

Colour	Column Anode/Cathode	Lum Intensity/Seg @ I_F = 10mA(mcd) min	max	Typ.V_F @ I_f=20mA	V_R (max)	Order Code
HE Red	Anode	3.6	9	2	5	116-8664
Ultra red	Anode	9	31	1.85	5	116-8663
Bi-Colour						
HE Red / Green	Cathode	3600/22	009000/5600	2/2.2	5	114-2453

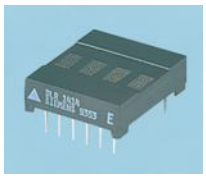
206436

Colour	Column Anode/Cathode	Order Code	Price Each 1+	25+	100+	500+
HE Red	Anode	**116-8664●**	2.60	1.93	1.56	1.30
Ultra red	Anode	**116-8663●**	2.02	1.60	1.50	1.36
Bi-Colour						
HE Red / Green	Cathode	**114-2453●**	3.43	2.91	2.53	2.47

3.66mm, 4.57mm and 5.03mm – 4 Characters, Intelligent

Dot Matrix

OSRAM



Driven by integral CMOS IC with built-in memory, character generator, multiplex and LED drive circuitry. Solid epoxy construction ensures excellent optical and aesthetic qualities.

Dimensions Height	Depth	Width	Pitch Lead	Row	Mftrs. List No.
20.3	6.1	17.8	2.54	15.24	DLR1414
20.3	6.1	17.8	2.54	15.24	DLG1414
20.3	6.6	25.4	2.54	15.24	DLR2416
10.16	5.08	19.91	2.54	7.62	SLG2016

Colour	Character Height	Character Spacing	Supply Supply (DC)	Access Time (@ 25°C)	Luminous Intensity (typ)	ICC typ (@ 25°C)	Mftrs. List No.	Order Code
Red	3.66	4.45	5	110	50	80	DLR1414	121-2733
Green	3.66	4.45	5	110	70	80	DLG1414	121-2735
Red	5.03	6.35	5	110	60	110	DLR2416	121-2736
Green	4.57	5	5	110	75	80	SLG2016	121-2750

* 4 charcter 20 dots/char

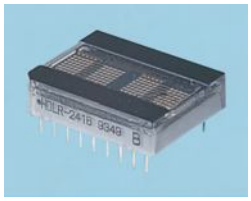
206261

Colour	Mftrs. List No.	Order Code	Price Each 1+	10+	25+	100+	250+
Red	DLR1414	**121-2733●**	33.36	26.23	22.36	17.24	13.46
Green	DLG1414	**121-2735●**	17.00	14.45	12.75	11.62	11.32
Red	DLR2416	**121-2736●**	17.55	15.00	13.00	10.60	10.04
Green	SLG2016	**121-2750●**	23.04	22.09	19.21	14.50	12.12

5.08mm – 4 Character, Intelligent

Dot Matrix

AVAGO TECHNOLOGIES



Four character 5x7 dot matrix displays driven by integral CMOS IC, and pin compatible with HPDL2416 display. Built in RAM, ASCII decoder and LED drive circuitry. Additional features over HPDL2416 include an expanded 128 ASCII character set, internal 8-level dimming control and external dimming capability, and individual digit blanking. Choice of two colours.

H=20.07, W=25.15, D=6.60
Characters: H=5.08, W=3.43, Spacing=6.35
Pin spacing=2.54, Row spacing=15.24

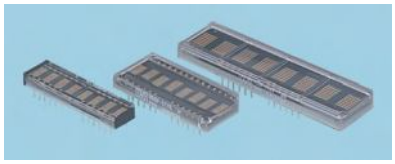
Supply voltage (typ)	5.0V
Data set up time	50ns
Data hold time	40ns
Typ. luminous intensity/character (19 dots ON)	HE Red 3.5 mcd, Green 5.6 mcd.
I_{CC} typ @ 25°C (4 characters x 20 dots/char)	125mA (red), 110mA (others)

206230

Colour	Mftrs. List No.	Order Code	Price Each 1+	10+	25+	100+	250+
HE Red	HDLO-2416	**117-5586●**	16.87	15.98	13.99	12.46	11.26
Green	HDLG-2416	**117-5587●**	17.75	15.99	14.38	12.35	11.10

4.57mm, 4.81mm and 6.96mm – 8 Character Dot Matrix

AVAGO TECHNOLOGIES



Designed for standard microprocessor interface techniques. Built-in LED drive circuitry. Programmable features include multi-level dimming and blanking.

Series	H	W	D	Package	Spacing Pin	Row
5mm	19.6	42.6	5.3	28 pin DIP	2.54	15.24
7mm	19.4	70.9	6.6	28 pin DIP	2.54	15.24
5mm Compact	11.4	42.9	5.3	30 pin DIP	2.54	7.62
5mm Compact - Serial Input	11.4	42.9	5.3	26 pin DIP	2.54	7.62

Character height (typ.)	4.81mm (5mm), 6.96mm (7mm), 4.57mm (5mm Compact)
Character spacing	5.26mm, (5mm), 8.84mm (7mm), 5.36mm (5mm Compact)
Supply voltage (typ.)	5.0V
Typ. Lum. intensity/character (all HDSP Series)	
HE Red, Green	7.5 mcd (character average)
AlGaAs Red	25.0 mcd (character average)
Typ. Lum. intensity/LED (HCMS Series)	
AlGaAs red	0.230 mcd (character average)
Green	0.114 mcd (character average)
I_{CC} typ @ 25°C (All HDSP Series)	
HE Red, Green	300mA (8 characters 20 dots/char.)
AlGaAs Red	330mA (8 characters 20 dots/char.)
Peak pixel current (typ. @ 25°C) (HCMS Series)	
HE Red, Green	14.0mA (all pixels ON)
AlGaAs Red	15.4mA (all pixels ON)

206238

Colour	Mftrs. List No.	Order Code	Price Each 1+	10+	25+	100+	250+
5mm							
HE Red	HDSP-2112	**117-5588●**	32.81	30.31	26.87	24.00	20.53
Green	HDSP-2113	**117-5589●**	27.68	24.92	22.43	19.23	18.42
7mm							
HE Red	HDSP-2502	**117-5570●**	37.19	30.37	26.72	22.91	21.78
Green	HDSP-2503	**117-5571●**	37.19	32.08	29.70	25.27	21.77
5mm Compact							
Red	HDSP-2534	**117-5572●**	38.24	34.55	31.32	27.18	23.74
Green	HDSP-2533	**117-5573●**	37.40	31.78	28.44	23.78	21.41
5mm Compact - Serial Input							
Green (574nm)	HCMS-2903	**114-5047●**	20.64	16.50	15.00	12.69	11.23
Red (637nm)	HCMS-2905	**114-5048●**	23.43	18.74	17.04	14.39	12.75
Green (574nm)	HCMS-2913	**114-5049●**	32.89	26.30	23.92	20.21	17.89
Red (637nm)	HCMS-2915	**114-5050●**	30.27	24.23	22.01	19.52	17.30
Green (574nm)	HCMS-2973	**114-5043●**	30.42	24.93	22.72	19.66	17.69
Red (637nm)	HCMS-2975	**114-5045●**	35.76	29.46	26.44	22.09	20.44

£ € 40,000 PRICES REDUCED

RL Re-reeling available

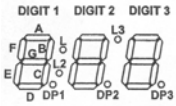
Farnell

Alphanumeric LED Displays - continued

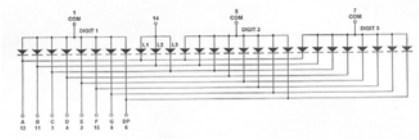
LED 'Clock' Type Modules 0.4"



H=12.8, W=30.02, D=7.0
Pin spacing=2.54
Row spacing=10.16



HDSP-43xx 8:88 Display



HDSP-43xG 8:88 Display Com Anode shown

Three digit 0.4" 'Clock' type modules with slim font and two colons, these are available with green segments and grey face for optimum contrast.
These displays are ideal for use in equipment where the requirement is to display the time of day / elapsed time etc.

Segment Colour	Surface Colour	Segment Tint	CC/CA	Format	Lum Intensity/Seg @I_F = 10mA min (mcd)	Typ. V_F @ 20mA	V_R	Mftrs List No.	Order Code
Green	Grey	Untinted	Anode	8:88	5	2.5	5	HDSP-431G	100-3352
Green	Grey	Untinted	Cathode	8:88	5	2.5	5	HDSP-433G	100-3353

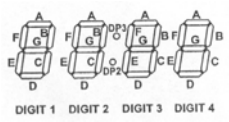
240645

Format	CA/CC	Order Code	Price Each 1+	25+	100+	250+	500+
Green							
8:88	Anode	**100-3352●**	2.02	1.78	1.53	1.07	0.99
8:88	Cathode	**100-3353●**	2.25	1.99	1.70	1.26	1.15

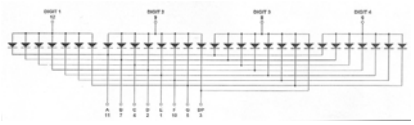
LED 'Clock' Type Modules 0.56"



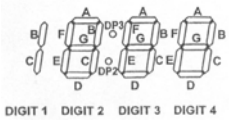
H=19.1, W=51.2, D=8.0
Pin spacing=2.54
Row spacing=15.24



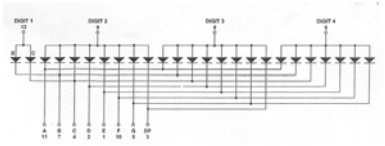
HDSP-BxxG/E 88:88 Display



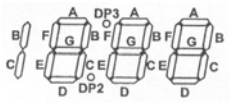
HDSP-BxxG/E 88:88 Display Com. Anode shown



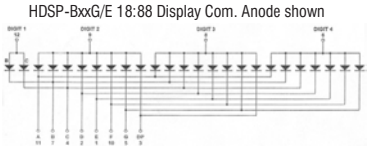
HDSP-BxxG/E 18:88 Display



HDSP-BxxG/E 18:88 Display Com. Anode shown



HDSP-B42/7G18.'88 Display



HDSP-B42/7G 18.'88 Display Com Anode shown

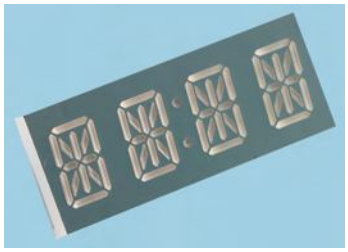
A range of 0.56" 'Clock' type modules with centre colon segments, the displays are multiplexed to reduce the number of connections and are available in red or green with grey or black face for optimum contrast.
These displays are ideal for use in equipment where the requirement is to display the time of day / elapsed time etc.
The specification table indicates the digit formats and variants.

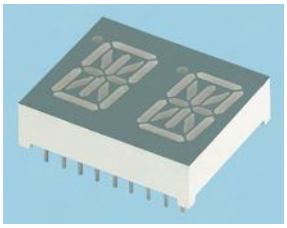
Segment Colour	Surface Colour	Segment Tint	CC/CA	Format	Lum Intensity/Seg @I_F = 10mA min (mcd)	Typ. V_F @ 20mA	V_R	Mftrs List No.	Order Code
Green	Grey	Green	Cathode	88:88	3.2	2.2	5	HDSP-B03G	100-3337
Green	Grey	Green	Anode	88:88	3.2	2.2	5	HDSP-B04G	100-3338
Green	Grey	Untinted	Anode	88:88	3.2	2.2	5	HDSP-B08G	100-3340
Green	Black	Untinted	Cathode	88:88	3.2	2.2	5	HDSP-B09G	100-3341
Green	Black	Untinted	Anode	88:88	3.2	2.2	5	HDSP-B10G	100-3342
HE Red	Grey	Untinted	Cathode	18:88	5.5	2.05	5	HDSP-B01E	100-3344
HE Red	Grey	Untinted	Cathode	88:88	5.5	2.05	5	HDSP-B03E	100-3345
HE Red	Grey	Untinted	Anode	88:88	3.2	2.2	5	HDSP-B04E	100-3346
Green	Grey	Green	Anode	18.'88	3.2	2.2	3	HDSP-B42G	100-3347

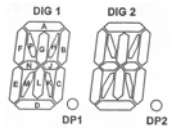
240638

Format	CA/CC	Order Code	Price Each 1+	25+	100+	250+	500+
Green							
88:88	Cathode	**100-3337●**	2.08	1.83	1.57	1.10	1.03
88:88	Anode	**100-3338●**	1.71	1.45	1.26	1.11	0.99
88:88	Anode	**100-3340●**	2.51	2.24	1.91	1.40	1.31
88:88	Cathode	**100-3341●**	1.77	1.57	1.34	0.99	0.92
88:88	Anode	**100-3342●**	1.71	1.52	1.31	0.96	0.89
HE Red							
18:88	Cathode	**100-3344●**	1.67	1.47	1.26	0.93	0.87
88:88	Cathode	**100-3345●**	2.14	1.88	1.61	1.13	1.06
88:88	Anode	**100-3346●**	2.14	1.88	1.61	1.13	1.06
Green							
88.'88	Anode	**100-3347●**	1.83	1.62	1.39	0.97	0.91

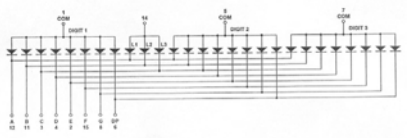
LED Starburst 'Clock' Type Modules 0.54"



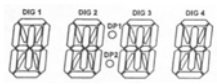




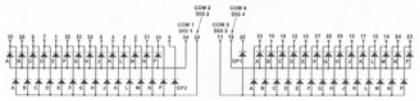
HDSP-A2xC2 digit Starburst



HDSP-A2xC2 digit Starburst Com. Anode shown



HDSP-A4xC 4 digit Starburst



HDSP-A4xC4 digit Starburst Com. Anode shown

A range of 0.54" Starburst 'Clock' type modules with red segments, the displays feature 14 segments per digit plus decimal points. Available in two or four digit formats with grey face for optimum contrast.
These displays are ideal for use where there is a requirement to display alphanumeric information etc.

Segment Colour	Surface Colour	Segment Tint	CC/CA	Format	Lum Intensity/Seg @I_F = 10mA min (mcd)	Typ. V_F @ 20mA	V_R	Mftrs List No.	Order Code
Red	Grey	Untinted	Anode	Starburst -2 Digit	25	2.2	5	HDSP-A22C	100-3348
Red	Grey	Untinted	Cathode	Starburst -2 Digit	25	2.2	5	HDSP-A27C	100-3349
Red	Grey	Untinted	Anode	Starburst -4 Digit	25	2.2	5	HDSP-A42C	100-3350
Red	Grey	Untinted	Cathode	Starburst -4 Digit	25	2.2	5	HDSP-A47C	100-3351

240646

Format	CA/CC	Order Code	Price Each 1+	25+	100+	250+	500+
Red							
Starburst -2 Digit	Anode	**100-3348●**	2.30	2.04	1.74	1.21	1.13
Starburst -2 Digit	Cathode	**100-3349●**	2.30	2.04	1.74	1.21	1.13
Starburst -4 Digit	Anode	**100-3350●**	3.72	3.27	2.80	2.06	1.91
Starburst -4 Digit	Cathode	**100-3351●**	3.72	3.27	2.80	2.06	1.91

Liquid Crystal Displays

439718

Transflective: A type of LCD screen in which the pixels are illuminated from both the front of the monitor's screen and from behind the screen, combining the illumination characteristics of both transmissive and reflective technologies. Transflective LCDs work under any lighting condition, from complete darkness to bright sunlight.

Transmissive:A type of LCD screen in which the pixels are illuminated from behind the monitor's screen (opposite of the user). Transmissive LCDs are commonly used in laptop computers because they offer high contrast and deep colours and are well-suited for indoor environments and low-light circumstances. Transmissive LCDs are at a disadvantage in very bright light, such as outdoors in full sunlight, as the screen can be hard to read.

TN (Twisted Nematic): A type of display where the liquid crystal fluid rotates the plane of polarization 90 °

STN (Super Twisted Nematic): A type of display which uses fluids which "twist" greater than 90 °, hence STN displays have improved viewing angles and contrast at high multiplex rates

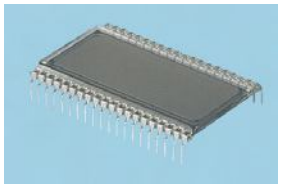
FSTN (Film compensated STN): STN Technology with the addition of a retardation film to the display that compensates for the colour added by the birefringence effect. This allows a black and white display to be produced and provides for a higher contrast and wider viewing angle.

RL Re-reeling available

See our range of **LCD Drivers** page 439

Reflective & Transflective

VARITRONIX



7-segment field effective liquid crystal displays available as Reflective or Transflective. Visible in direct sunlight as well as in low light applications. They are supplied with fixed pin DIL connections with 0.1" centres, they insert directly into a PCB or socket strips. Black segments on grey background. The Transflective LCDs have similar characteristics to the Reflective LCDs except they may be backlit.

Digits	Character Height	Overall Dim.	Row Space	Mftrs. List No.	Order Code
Reflective					
3.5	8.9	51.5 x 22	24.5	VI301-DPRC	118-3158
3.5	12.7	50.8 x 30.5	33	VI302-DPRC	118-3159
3.5	12.7	50.8 x 30.5	33	VI303-DPRC	118-3160
3.5	17.8	70 x 38.1	40.6	VI315-DPRC	118-3161
3.5	25.4	93.85 x 45.72	48.2	VI320-DPRC	118-3162
4	8.9	51.5 x 22	24.5	VI401-DPRC	118-3164
4	12.7	50.8 x 30.5	33	VI402-DPRC	118-3165
4	17.8	70 x 38.1	40.6	VI415-DPRC	118-3166
4	25.4	93.85 x 45.72	48.2	VI421-DPRC	118-3167
4.5	8.9	51.5 x 22	24.5	VI514-DPRC	118-3168
4.5	10.2	50.5 x 30.5	33	VI502-DPRC	118-3169
4.5	20.32	45.72 x 93.85		VI510-DPRC	118-3170
6	12.7	70 x 30	32.5	VI602-DPRC	118-3171
6	17.8	93.85 x 38.1	40.6	VI607-DPRC	118-3172
6	12.7	69.8 x 30.48	33	VI602-DP-FC-S	118-3185
Transflective					
3.5	12.7	50.8 x 30.5	33	VI303-DP-FC-S-LV	118-3144
3.5	12.7	50.8 x 30.5	33	VI302-DP-FC-S-LV	118-3145
4	12.7	50.8 x 30.5	33	VI402-DP-FC-S-LV	118-3146
4	17.8	69.85 x 38.1	40.6	VI415-DP-FC-S-LV	118-3147

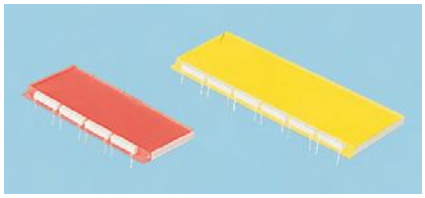
Operating voltage: Min. 3V, typ. 5V, max.6Vrms
Supply current: Typ. 5µA/digit
Operating frequency: 32Hz
Operating temperature: -10°C to +60°C

206208

No. of digits	Character Height	Order Code	Price Each 1+	10+	25+	100+	250+
Reflective							
3.5	8.9	**118-3158●**	8.09	7.03	5.47	3.94	2.63
3.5	12.7	**118-3159●**	5.39	4.68	4.37	3.87	3.53
3.5	12.7	**118-3160●**	5.21	4.56	4.47	3.53	2.79
3.5	17.8	**118-3161●**	17.09	11.85	9.32	6.83	5.57
3.5	25.4	**118-3162●**	25.32	20.85	13.68	10.99	9.88
4	8.9	**118-3164●**	8.09	6.05	4.85	3.35	2.63
4	12.7	**118-3165●**	5.00	4.58	4.14	3.54	2.79
4	17.8	**118-3166●**	8.73	7.66	7.39	5.96	5.57
4	25.4	**118-3167●**	17.12	13.30	10.87	10.30	9.88
4.5	8.9	**118-3168●**	7.54	5.63	4.51	3.12	2.90
4.5	10.2	**118-3169●**	6.01	5.26	4.78	3.54	2.79
4.5	20.32	**118-3170●**	29.55	15.93	14.80	12.02	11.53
6	12.7	**118-3171●**	7.46	6.22	5.74	5.26	4.88
6	17.8	**118-3172●**	21.86	16.65	13.72	8.36	8.03
6	12.7	**118-3185●**	8.57	7.44	6.58	5.36	5.12
Transflective							
3.5	12.7	**118-3144●**	3.96	3.55	3.23	2.41	2.06
3.5	12.7	**118-3145●**	5.39	4.68	4.48	4.12	2.88
4	12.7	**118-3146●**	5.03	4.42	4.06	3.87	3.14
4	17.8	**118-3147●**	10.98	9.60	8.69	7.49	7.18

LED Backlight Panels

LED Backlight Panels



Order Codes	Overall Area	Active Area
120-8878	47.5 x 17.0	47.5 x 14.5
120-8879	48.7 x 23.3	48.7 x 20.8
120-8880	48.7 x 23.3	48.7 x 20.8
120-8881	67.0 x 28.5	67.0 x 26.0

Thickness=3.0, all tolerances=±0.3

A range of LED backlight panels designed for use with 3½ and 4 digit standard transflective numeric LCDs. The coloured acrylic panels are edge-lit. The LED pins are on a 2.54mm pitch for connection to a simple drive circuit on the user's PCB. The system will operate from a dc supply of 5V or higher with low current consumption. Supplied with full instructions.

Overall Dim.	No. of LEDs	Suitable Transflective LCD: Character No. of Digits	Height	Order Codes	Order Codes: Green	Superbright Red
x .0		4	8.9	120-8878	120-8878	—
48.7 x 23.3	4	3.5	8.9	120-8878	120-8879	120-8880
		3.5LOBAT	12.7	120-8879		
		3.5	12.7	120-8880		
67.0 x 28.5	6	4	17.8	120-8881	120-8881	—

206270

Character Height	Colour	Order Code	Price Each 1+	10+	25+	100+
8.9	Green	**120-8878●**	6.56	4.92	3.93	3.36
12.7	Green	**120-8879●**	7.10	5.32	4.48	3.74
12.7	Red	**120-8880●**	8.43	6.32	5.05	4.39
17.8	Green	**120-8881●**	10.33	7.74	6.19	5.43

LED Backlight Panels



White



RGB

New

Highly versatile white and RGB full colour backlights offer design engineers the ability to illuminate liquid crystal displays as well other applications such as transparency illumination and photographic equipment.

Number of Emitters	Active Area (W)	(D)	Forward Current	Mftrs. List No.	Order Code
RGB					
4	48.7mm	14.5mm	30mA	BSRGBS364TE	168-4453
6	67mm	26mm	30mA	BSRGBS376TE	168-4454
4	48.7mm	20.8mm	30mA	BSRGBS384TE	168-4455
White					
4	48.7mm	14.5mm	30mA	BSWS364TE	168-4456
6	67mm	26mm	30mA	BSWS376TE	168-4457
4	48.7mm	20.8mm	30mA	BSWS384TE	168-4459

528699

Mftrs. List No.	Order Code	Price Each 1+	10+	25+	100+
RGB					
BSRGBS364TE	**168-4453●**	11.40	8.29	7.60	7.02
BSRGBS376TE	**168-4454●**	15.80	11.49	10.53	9.72
BSRGBS384TE	**168-4455●**	11.40	8.29	7.60	7.02
White					
BSWS364TE	**168-4456●**	9.93	7.22	6.62	6.11
BSWS376TE	**168-4457●**	13.70	9.96	9.13	8.43
BSWS384TE	**168-4459●**	9.93	7.22	6.62	6.11

LED Backlight Panel

Coloured



Red Backlight



Yellow / Green Back-light



Red / Green Backlight



Yellow / Orange Back-light

Bi - Colour Backlights offer the ability to change colour from Green to Bright Red. This is achieved by using a neutral colour reflector and having 2 rows of LED's, one edge having all green emitters the opposite edge having all red.
These backlights can be used to indicate an alarm state on an LCD and draw the users attention to reading a particular display.
This ability to change colour enables panels to be used without the need for additional LED's on the equipment front panel.

- **Yellow/Green** The industry standard backlight colour at 567nm
- High Brightness **Yellow/Orange** A bright, rich and warm 595nm colour which is pleasing to the eye
- High Brightness **Blue** A very bright blue at 470nm creating a striking and distinctive display
- High Brightness **Red** A bright red 660nm makes the display stand out from the others

Maximum Ratings @ 25°C

Reverse Voltage	10V	Operating Temperature	-25 to 85°C
DC Forward Current	30mA	Storage Temperature	-25 to 100°C

Electrical/Optical Characteristics @ 25°C	**BR02 xxx**	**BRIY xxx**	**BRUB xxx**	**BRUR xxx**
Backlight Panel Colour	Yellow / Green	Yellow	White	Red
Wavelength Typ. @ 20mA	572nm	595nm	470nm	660nm
Forward Voltage Typ/Max @ 20mA	4.2/4.8 V	4.2/4.8 V	7.6/9.4 V	3.4/4.4 V
Luminous Intensity @ 20mA Min/Typ	20/30 mcd	90/150 mcd	80/170 mcd	100/150 mcd
Viewing Angle	50°	50°	50°	50°

337943

Size H x W x D(mm)	Mftrs. List No.	Order Code	Price Each 1+	10+	25+	100+
Yellow/Green						
3 x 48.7 x 23.3	BR02S3804TE	**120-8891●**	5.75	4.59	3.90	3.41
Yellow/Orange						
3 x 48.7 x 23.3	BRIYS3804TE	**120-8892●**	7.04	5.64	4.80	4.19
Blue						
3 x 48.7 x 23.3	BRUBS3804TE	**120-8893●**	9.41	7.53	6.40	5.58
3 x 47.5 x 17	BRUBS1906TE	**120-8897●**	11.45	9.17	7.81	6.82
Red						
3 x 48.7 x 23.3	BRURS3804TE	**120-8894●**	6.40	5.12	4.34	3.81
Bi - Colour, Red/Green						
3 x 48.7 x 25.8	BSRGS15308TE	**120-8899●**	6.95	5.55	4.73	4.14

RL Re-reeling available

LED Backlight Panels - continued

LED Backlight Panel

White



- No EMC issues
- High light output
- Low voltage operation
- Low current requirements
- IC compatible
- Two pin connection

White LED Edge Lit backlight panels use the latest multilayer diffusion technology to create a bright even panel of white light. Using only 8 LED die mounted along one edge these panels offer greatly extended life over CCFL white backlights.
Typical applications include Video and Audio equipment, PDA's, Signing and Photographic applications such as Slide Viewers.

Maximum Ratings @ 25°C

Reverse Voltage	5V
Power Dissipation	80mW
DC Forward Current	20mA
Operating Temperature	-25 to 85°C
Storage Temperature	-40 to 100°C

Electrical/Optical Characteristics @ 25°C

LED Chip Material	InGaN
Forward Voltage - Typ/Max	3.6/4 V
Luminous Intensity - Min/Typ	330/580 mcd @ 20mA
Viewing Angle	120°

337938.343586

Size (mm) H x W x D	Mftrs. List No.	Order Code	Price Each 1+	10+	25+	100+
3.5 x 111 x 86	BSUWSP1008TE	**120-8903●**	15.44	12.35	10.51	9.19
3.5 x 75 x 95	BSUWSP1011TE	**120-8904●**	19.74	12.43	10.58	9.25

Alphanumeric LCD Modules

Reflective Modules

Standard and Large Character



A range of easily readable intelligent alphanumeric dot matrix LCD modules.

The modules have all control refresh and display functions executed by a dedicated controller/character generator chip on board. All the displays can be interfaced to a 4 or 8 bit bus.

'Supertwist (STN)' These displays have blue/black active pixels on yellow background.

- Standard: +5V dc power supply only 'Supertwist': +5V dc and -5V dc power supply or single +5V dc power supply
- Operating temperature: Standard TN 0°C to 50°C 'Supertwist' 0°C to 50°C 'X-Technology' (Hitachi) 0°C to 40°C

Format Char.x Lines	Module Size W x H x D	Display Area W x H	Character Size W x H	Mftr.	Mftrs. List No.	Order Code
TN (+5V dc only)						
8 x 1	84 x 44 x 13	61 x 15.8	6.45 x 9.4	VAR	MDL81809-LV	118-3125
16 x 1	80 x 36 x 13	65.5 x 13.8	3.07 x 6.56	TRID	TRIMODS1531	118-3127
16 x 2	84 x 44 x 10	61 x 15.8	2.96 x 5.56	TRID	TRIMODS1535	118-3128
16 x 4	87 x 60 x 10	61.7 x 25.2	2.95 x 4.75	TRID	TRIMODS1539	118-3129
20 x 2	115 x 40 x 10	83 x 18.6	3.25 x 5.63	TRID	TRIMODS1543	118-3130
20 x 4	98 x 60 x 10	76 x 25.2	3.01 x 4.83	TRID	TRIMODS1546	118-3131
20 x 4	98 x 60 x 10	76 x 25.2	3.01 x 4.83	TRID	TRIMODS1546	118-3131
40 x 2	182 x 33 x 11	154 x 15.8	3.15 x 4.85	TRID	TRIMODS1554NONB/L-TN	118-3155
STN (+5V dc only)						
16 x 1	122 x 33 x 11	99 x 13	4.84 x 9.22◆	VAR	MDLS16168-LV	118-3148
16 x 1	80 x 36 x 10	64.5 x 13.8	3.07 x 6.56	TRID	TRIMODS1533	118-3132
16 x 2	122 x 44 x 11	61 x 23	4.84 x 9.22◆	VAR	MDLS16268C-LV	118-3149
16 x 2	84 x 44 x 10	61 x 15.8	2.96 x 5.56	TRID	TRIMODS1537	118-3133
16 x 2	85 x 36 x 9.3	63.5 x 15.8	3.15 x 4.45◆	VAR	MDLS162D65-LV	118-3174
20 x 2	115 x 40 x 10	83 x 18.6	3.25 x 5.63	TRID	TRIMODS1544	118-3134
20 x 2	116 x 37 x 11	83 x 18.6	3.2 x 4.85	VAR	MDLS20265-LV	118-3176
20 x 4	98 x 60 x 12	76 x 25.2	2.9 x 4.75◆	VAR	MDLS20464-LV	118-3141
24 x 2	118 x 36 x 10	93.5 x 15.8	3.2 x 4.5	VAR	MDLS24265-LV	118-3177
40 x 2	182 x 33 x 11	93.5 x 15.8	3.15 x 4.85	TRID	TRIMODS1554NONB/L-STN	118-3156
40 x 4	196 x 56 x 11	154.4 x 27.6	3.14 x 5.5	VAR	MDLS40466-LV	118-3135

◆ = Large Character Displays

206233

Format	Order Code	Price Each 1+	5+	10+	25+	50+
TN (+5V Supply Only)						
8 x 1	**118-3125●**	19.51	16.63	15.48	12.09	11.48
16 x 1	**118-3127●**	9.38	7.12	6.16	4.56	3.60
16 x 2	**118-3128●**	11.43	10.09	8.97	5.90	4.38
16 x 4	**118-3129●**	13.81	12.03	10.36	7.46	7.22
20 x 2	**118-3130●**	17.71	14.82	13.24	8.12	6.66
20 x 4	**118-3131●**	23.95	20.45	15.67	10.88	9.23
40 x 2	**118-3155●**	21.77	20.11	18.88	15.10	14.66
STN (+5V Supply only)						
16 x 1	**118-3148●**	16.63	15.37	14.42	11.52	11.19
16 x 1	**118-3132●**	9.46	7.20	5.81	4.87	4.19
16 x 2	**118-3149●**	24.26	22.41	21.03	16.84	16.32
16 x 2	**118-3133●**	15.09	12.50	10.00	6.85	5.43
16 x 2	**118-3174●**	16.96	14.17	13.62	11.98	10.00
20 x 2	**118-3134●**	21.10	18.85	14.01	9.61	7.92
20 x 2	**118-3176●**	24.39	22.43	20.71	19.12	13.83
24 x 2	**118-3177●**	23.52	19.68	17.02	16.06	12.77
20 x 4	**118-3141●**	32.11	28.05	24.61	22.85	21.32
24 x 2	**118-3177●**	23.52	19.68	17.02	16.06	12.77
40 x 2	**118-3156●**	22.81	21.86	21.26	19.84	19.25
40 x 2	**118-3178●**	40.37	36.33	33.03	23.85	17.03
40 x 4	**118-3135●**	50.66	44.31	38.26	36.83	32.95

3 Volt, Alphanumeric LCD Modules — VARITRONIX

Reflective and Transflective with LED Backlighting

This DOT Matrix Character module range, operates from a SINGLE 3V supply and offers STN displays with wide viewing angle and contrast ratio. Interface is via the industry standard parallel format, with a temperature range of 0°C to 50°C.

All displays have built in controller.

	Format Char. Lines	Module Size W x H x D	Display Area W x H	Character Size W x H	Mftrs. List No.	Order Code
	16 x 1	80 x 36 x 11	64.5 x 13.8	3.15 x 6.3	MDLS161663V	118-3191
	16 x 2	84 x 44 x 10	61.0 x 13.8	2.95 x 5.55	MDLS162653V	118-3192
●	16 x 2	84 x 44 x 12.3	61.0 x 13.8	2.95 x 5.55	MDLS16265LED043V	118-3193

● Displays with LED backlighting

206400

Format	Order Code	Price Each 1+	5+	10+	25+
16 x 1	**118-3191●**	15.05	13.66	11.38	8.80
16 x 2	**118-3192●**	33.22	30.14	27.40	21.05
16 x 2	**118-3193●**	23.50	22.10	20.83	18.68

Modules with LED Backlighting — VARITRONIX / POWERTIP



Transflective intelligent LCD modules with built-in green LED backlighting, no inverter circuit is required. They interface directly to 8-bit and 4-bit microprocessors. The modules are equivalent to the standard reflective modules, with compatible display area and mounting. All types have 5 x 7 character font.

Supply: Single +5V dc only Operating temperature: VAR, TRID & BAT 0°C to +50°C Operating temperature: PTIP -20°C to +70°C

Format	Module Size W x H x D	Display Area W x H	Character Size W x H	Mftr.	Mftrs. List No.	Order Code
16 x 1	122 x 33 x 14.4	99 x 13	4.84 x 9.22◆	VAR	MDLS16168-STET-LED04	118-3153
16 x 2	84 x 44 x 10	61 x 15.8	2.96 x 5.56	TRID	TRIMODS1538STNLEDTFV	118-3136
16 x 2	85 x 36 x 9.3	63.5 x 15.8	3.15 x 5.75	VAR	MDLS162D65-LV-LED04	118-3181
16 x 2	122 x 44 x 14.4	99 x 23	4.84 x 9.22◆	VAR	MDLS16268-C-LV-LED04	118-3154
16 x 4	87 x 60 x 13	61.8 x 25.2	2.95 x 4.75	VAR	MDLS16465-LV-LED04	118-3137
20 x 2	115 x 40 x 10	83 x 18.6	3.25 x 5.63	TRID	TRIMODS1545	118-3139
20 x 2	116 x 37 x 11	83 x 18.6	3.2 x 4.85	VAR	MDLS20265-LV-LED04	118-3182
20 x 4	98 x 60 x 14.8	76 x 25.2	2.9 x 76	VAR	MDLS20464-LV-LED04	118-3142
24 x 2	118 x 36 x 10	93.5 x 15.8	3.2 x 4.5	VAR	MDLS24265SP-LV-LED04	118-3183
40 x 2	192 x 36 x 14	154 x 15.3	3.2 x 4.85	TRID	TRIMODS1554B/LSTN	118-3157
40 x 2	182 x 33.5 x 11	154 x 15.8	3.15 x 4.85	VAR	MDLS40266-LV-LED04	118-3184
40 x 4	196 x 56 x 11	154.4 x 27.6	3.14 x 5.5	VAR	MDLS40466-LV-LED04	118-3143

◆ = Large character displays

206229

Format	Order Code	Price Each 1+	5+	10+	25+	50+
STN (+5V Supply only)						
16 x 1	**118-3153●**	21.62	19.55	17.53	13.41	12.74
16 x 2	**118-3136●**	18.00	15.85	12.90	8.33	6.99
16 x 2	**118-3181●**	40.18	34.57	28.14	22.58	19.39
16 x 2	**118-3154●**	27.97	23.31	21.62	20.95	19.63
16 x 4	**118-3137●**	38.77	32.99	29.06	26.98	25.19
20 x 2	**118-3139●**	34.46	28.13	23.15	15.71	11.32
20 x 2	**118-3182●**	48.78	41.96	35.17	29.53	25.36
20 x 4	**118-3142●**	40.50	33.75	31.16	28.93	27.00
24 x 2	**118-3183●**	38.10	35.04	28.94	28.37	27.47
40 x 2	**118-3157●**	26.39	25.27	24.58	22.96	22.27
40 x 2	**118-3184●**	58.16	48.47	44.74	40.23	36.85
40 x 4	**118-3143●**	93.64	67.65	61.54	58.69	50.30

£ € 40,000 PRICES REDUCED

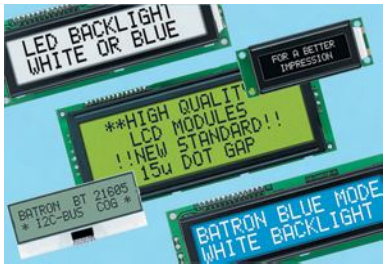
RL Re-reeling available

Farnell

Alphanumeric LCD Modules

BATRON

HQ Series



The HQ series of STN and FSTN alphanumeric LCD modules give an enhanced image with high contrast and wide viewing angle. This is achieved by implementing a 15 micron gap between pixels to give much denser characters.
These modules offer an attractive display with low power requirements and ease of interface. Efficient LED backlights include high intensity white or green LEDs.

- High definition pixels
- Industry standard sizes
- 4 bit or 8 bit parallel interface on most modules
- Reflective black/yellow
- Transflective black / green or black / white versions
- Transmissive white/blue versions
- 16 x 2 version with I²C interface

Format	Module Size (mm) W	H	D	Display Area W x H (mm)	Character Size W x H (mm)	Connector	Order Code
Reflective (Not backlit) - Black characters on a yellow/green background (STN)							
16 x 2	53	20	8	36 x 10	3.15 x 1.85	B, 1 x 16	944-8675
16 x 2	84	44	10	61 x 15.8	5.55 x 2.95	B, 1 x 16	944-8683
16 x 2	122	43	15	99 x 23	9.22 x 4.84	T, 1 x 14	944-8691
20 x 2	116	37	14	83 x 18.6	5.55 x 3.2	L, 2 x 8	944-8705
20 x 2	146	43	14	123 x 23	9.21 x 4.84	T, 1 x 14	944-8713
20 x 4	65	28	8.5	46 x 18.4	3.15 x 1.85	B, 1 x 16	944-8721
20 x 4	98	60	14	76 x 25.2	4.69 x 2.9	T, 1 x 16	944-8730
20 x 4	146	62.5	14	123 x 42.5	9.22 x 4.84	T, 1 x 14	944-8748
Transflective - Black characters on a yellow/green background (STN)							
16 x 2	53	20	8	36 x 10	3.15 x 1.85	B, 1 x 16	944-8756
16 x 2	84	44	14	61 x 15.8	5.55 x 2.95	B, 1 x 16	944-8764
16 x 2	84	44	14	61 x 15.8	5.55 x 2.95	T, 1 x 14	★944-8837
16 x 2	122	43	15	99 x 23	9.22 x 4.84	T, 1 x 14	944-8772
20 x 2	116	37	14	83 x 18.6	5.55 x 3.2	L, 2 x 8	944-8780
20 x 2	146	43	14	123 x 23	9.21 x 4.84	T, 1 x 14	944-8799
20 x 4	65	28	8.5	46 x 18.4	3.15 x 1.85	B, 1 x 16	944-8802
20 x 4	98	60	14	76 x 25.2	4.69 x 2.9	T, 1 x 16	944-8810
20 x 4	146	62.5	14	123 x 42.5	9.22 x 4.84	T, 1 x 14	944-8829
Transflective - Black characters on a white background (STN)							
16 x 2	53	20	8	36 x 10	3.15 x 1.85	B, 1 x 16	944-8900
16 x 2	84	44	10	61 x 15.8	5.55 x 2.95	B, 1 x 16	944-8918
16 x 2	122	43	15	99 x 23	9.22 x 4.84	T, 1 x 14	944-8926
20 x 2	116	37	14	83 x 18.6	5.55 x 3.2	L, 2 x 8	944-8934
20 x 2	146	43	14	123 x 23	9.21 x 4.84	T, 1 x 14	944-8942
20 x 4	65	28.4	8.5	46 x 18.4	3.15 x 1.85	B, 1 x 16	944-8950
20 x 4	98	60	14	76 x 25.2	4.69 x 2.9	T, 1 x 16	944-8969
20 x 4	146	62.5	14	123 x 42.5	9.22 x 4.84	T, 1 x 14	944-8977
Transmissive - White characters on a blue background (FSTN)							
16 x 2	53	20	8	36 x 10	3.15 x 1.85	B, 1 x 16	944-8845
16 x 2	84	44	10	61 x 15.8	5.55 x 2.95	B, 1 x 16	944-8853
20 x 2	116	37	14	83 x 18.6	5.55 x 3.2	L, 2 x 8	944-8861
20 x 2	146	43	14	123 x 23	9.21 x 4.84	T, 1 x 14	944-8870
20 x 4	98	60	14	76 x 25.2	4.69 x 2.9	T, 1 x 16	944-8888
20 x 4	146	62.5	14	123 x 42.5	9.22 x 4.84	T, 1 x 14	944-8896

★ - I²C Interface

338280

Format	Order Code	Price Each 1+	5+	10+	25+	50+
Black characters on a yellow/green background (STN) Not backlight						
16 x 2	**944-8675●**	10.82	9.85	9.03	8.33	7.74
16 x 2	**944-8683●**	10.62	9.66	8.84	8.17	7.59
16 x 2	**944-8691●**	22.62	20.57	18.86	17.42	16.17
20 x 2	**944-8705●**	14.65	13.32	12.20	11.27	10.48
20 x 4	**944-8721●**	22.78	20.72	18.98	17.52	16.26
20 x 4	**944-8730●**	23.15	21.05	19.30	17.83	16.56
20 x 4	**944-8748●**	53.94	49.05	44.96	41.50	38.54
Black characters on a yellow/green background (STN)						
16 x 2	**944-8756●**	13.20	12.00	11.00	10.16	9.43
16 x 2	**944-8764●**	13.13	11.94	10.95	10.10	9.39
16 x 2	**944-8772●**	28.53	25.94	23.77	21.95	20.38
20 x 2	**944-8780●**	20.04	18.23	16.72	15.42	14.33
20 x 2	**944-8799●**	34.42	31.31	28.68	26.48	24.59
20 x 4	**944-8802●**	29.70	27.00	24.76	22.85	21.23
20 x 4	**944-8810●**	27.89	25.36	23.24	21.44	19.92
20 x 4	**944-8829●**	71.30	64.83	59.43	54.86	50.94
Black characters on a white background (STN)						
16 x 2	**944-8900●**	16.73	15.22	13.94	12.87	11.95
16 x 2	**944-8918●**	16.95	15.40	14.13	13.05	12.10
16 x 2	**944-8926●**	31.63	28.76	26.37	24.35	22.60
20 x 2	**944-8934●**	26.91	24.48	22.43	20.72	19.23
20 x 2	**944-8942●**	40.11	36.47	33.43	30.85	28.65
20 x 4	**944-8950●**	34.42	31.31	28.68	26.48	24.59
20 x 4	**944-8969●**	35.18	31.98	29.32	27.06	25.12
20 x 4	**944-8977●**	85.24	77.50	71.03	65.59	60.89
White characters on a blue background (FSTN)						
16 x 2	**944-8845●**	16.95	15.40	14.13	13.05	12.10
16 x 2	**944-8853●**	17.16	15.61	14.31	13.21	12.25
20 x 2	**944-8861●**	27.34	24.87	22.79	21.03	19.53
20 x 2	**944-8870●**	40.53	36.86	33.77	31.17	28.96
20 x 4	**944-8888●**	35.61	32.38	29.67	27.38	25.44
20 x 4	**944-8896●**	86.41	78.58	72.02	66.47	61.74

Transflective, 5 x 8 Dot Characters

BATRON

Serial Interface



Serial Bus



I²C Serial Bus

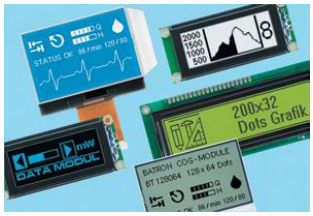
Font Colour	Back Colour	No. Characters	External Dimensions	Order Code
I²C Serial Interface				
Black	White	32	27.8 x 67 x 2.8	122-0409
Black	White	32	29.8 x 74.5 x 4.5	122-0411

451764

Mftrs. List No.	Order Code	Price Each 1+	5+	10+	25+
BTHQ21605V-COG-FSRE-I2C	**122-0409●**	15.64	14.33	12.74	11.94
BTHQ21605V-COG-FSTF-I2C-LED-WHITE	**122-0411●**	30.71	28.15	25.03	23.46

BTHQ Series

BATRON



- Compact Design
- Easy interfacing
- Wide Viewing angle
- STN Reflective

External Dimensions 52 x 64 x 5

Character Size	Mftrs. List No.	Order Code
128	BTHQ128064AVC1-COG-STF-LED02 GREEN	113-7386
128	BTHQ128064AVC1-COG-FSTF-LED05 WHITE	113-7387

461278

Font Colour	Background Colour	Order Code	Price Each 1+	5+	10+	25+
Black	Yellow / Green	**113-7385●**	34.85	31.68	29.05	26.82
Black	Green	**113-7386●**	44.69	40.63	37.24	34.38
Black	White	**113-7387●**	54.10	49.18	45.08	41.63

Alphanumeric Modules - LCD

STN



16 x 2



20 x 2



20 x 4

- High contrast pixels
- Industry standard sizes
- 4 bit or 8 bit parallel interfaces
- Large Character versions available
- Extended temperature versions available, -20 to +70°C
- STN technology

A range of STN alphanumeric LCD modules offering low profile and low power consumption in popular industry standard sizes.
STN reflective and STN transflective devices with LED backlighting are available with high contrast black characters on a yellow/green background.
Operating temperatures from 0°C to 50°C

Format (column x row)	Back Lit	Features	Module Size W x H x D (mm)	Display Area W x H (mm)	Character Size W x H (mm)	Connector	Order Code
8 x 2	N		32 x 58 x 9.8	16 x 38	2.96 x 2.96		167-1493
8 x 2	Y		32 x 58 x 13.5	16 x 38	2.96 x 2.96		167-1494
16 x 1	N		80 x 36 x 14.5	64.5 x 13.8	3.07 x 3.07	T 1 x 16	167-1495
16 x 1	Y		80 x 36 x 14.5	64.5 x 13.8	3.07 x 3.07	T 1 x 16	167-1496
16 x 1	Y		80 x 36 x 14.5	64.5 x 13.8	3.07 x 3.07	T 1 x 16	167-1497
16 x 2	Y	Ext. Temp.	85 x 36 x 10.2	66.0 x 16.2	2.96 x 2.96	L 2 x 8	167-1498
16 x 2	Y		122 x 44 x 14	99 x 24	4.84 x 4.84	T 1 x 16	121-8616
16 x 2	Y		44 x 84 x 14	15.8 x 61	2.96 x 2.96		167-1499
16 x 2	N	Ext. Temp.	85 x 36 x 14.5	66.0 x 16.2	2.96 x 2.96	L 2 x 8	160-2985
16 x 2	Y	Large Char.	85 x 36 x 14.5	66.0 x 16.2	2.96 x 2.96	L 2 x 8	167-1501
16 x 4	Y	Large Char.	87 x 60 x 14	62 x 25.6	2.95 x 2.95	T 1 x 16	167-1502
16 x 4	Y	Ext. Temp.	87 x 60 x 14.0	62.0 x 25.6	2.95 x 2.95	T 1 x 16	167-1503
20 x 2	Y	Ext. Temp.	116 x 37 x 14.5	85 x 18.6	3.2 x 3.2	L 2 x 8	167-1504
20 x 2	Y		116.0 x 37.0 x 12.2	85.0 x 18.5	3.2 x 3.2	L 2 x 8	167-1505
20 x 2	Y	Ext. Temp.	146 x 43 x 14.2	23 x 123	4.84 x 4.84	T 1 x 14	167-1506
20 x 4	Y		98.0 x 60.0 x 13.8	76.0 x 25.2	2.95 x 2.95	T 1 x 16	167-1508
24 x 2	Y	Ext. Temp.	118 x 36 x 14	93.5 x 15.8	3.2 x 3.2	L 2 x 7	167-1511
20 x 4	N		98 x 60 x 10.1	76 x 25.2	2.95 x 2.95	T 1 x 16	167-1507

Connector details:
B = Bottom, L = Left, T = Top. No. of rows x No. of pins (e.g. 1 x 20 = 1 row x 20 pins)

338838

Format	Mftrs. List No.	Order Code	Price Each 1+	5+	10+
8 x 2	PC0802ARS-AWA-A-Q	NEW **167-1493●**	3.06	2.71	2.44
8 x 2	PC0802LRS-AWA-B-Q	NEW **167-1494●**	4.18	3.71	3.34
16 x 1	PC1601ARU-AWA-A-Q	NEW **167-1495●**	3.93	3.49	3.14
16 x 1	PC1601LRU-AWB-B-Q	NEW **167-1496●**	5.31	4.72	4.24
16 x 1	PC1601LRU-AWB-H-Q	NEW **167-1497●**	5.31	4.72	4.24
16 x 2	PC1602ARU-HWB-G-Q	NEW **167-1498●**	3.69	3.28	2.95
16 x 2	PC1602LRS-LWA-B	**121-8616●**	33.73	25.29	20.65
16 x 2	PC1602LRS-FWA-B-Q	NEW **167-1499●**	5.54	4.92	4.43
16 x 2	PC1602LRS-HWB-H-Q	**160-2985●**	12.15	9.72	8.50
16 x 2	PC1602LRU-HWB-H-Q	NEW **167-1501●**	5.54	4.92	4.43

RL Re-reeling available

Farnell

Alphanumeric LCD Modules - continued

Alphanumeric Modules - LCD - continued

STN - continued

Format	Mftrs. List No.	Order Code	Price Each 1+	5+	10+
16 x 4	PC1604LRS-AWA-B-Q	NEW **167-1502●**	9.15	8.13	7.32
16 x 4	PC1604LRU-AWB-H-Q	NEW **167-1503●**	9.15	8.13	7.32
20 x 2	PC2002LRS-AWA-B-Q	NEW **167-1504●**	8.51	7.57	6.81
20 x 2	PC2002LRU-BWB-H-Q	NEW **167-1505●**	8.51	7.57	6.81
20 x 2	PC2002LRU-LWA-B-Q	NEW **167-1506●**	13.05	11.59	10.44
20 x 4	PC2004LRU-AWB-H-Q	NEW **167-1508●**	10.61	9.43	8.49
24 x 2	PC2402LRS-AWA-B-Q	NEW **167-1511●**	8.46	7.51	6.77
20 x 4	PC2004ARS-AWA-A-Q	NEW **167-1507●**	7.43	6.60	5.95

Alphanumeric LCD Modules

TN and STN

EVERBOUQUET INTERNATIONAL WAYTON TECHNOLOGY



- Temperature range 0 - 50°C
- Standard 5v power supply
- Hi intensity white or Green backlight LEDs
- Minimum backlight intensity 6cd/m^2
- Low power requirements
- High contrast

A TN and a range of STN LCD modules available in reflective black on grey or yellow/green (non illuminated), transflective black on yellow / green and also a very high contrast transmissive white on black or white on blue 'negative' modes.
These modules are compatible with industry standard sizes and feature standard parallel 4 bit or 8 bit interfaces. Suitable for indoor or outdoor viewing.

Format	Module Size (mm) W	H	D	Display Area W x H (mm)	Character Size W x H (mm)	Connector	Mftrs. List No.	Order Code
Reflective - Black characters on a grey background (STN)								
8 x 2	25	17.5	4.3	21 x 9	1.845 x 2.95	T, 1 x 14	MC0802A-SGR	113-7380
Reflective - Black characters on a grey or Yellow/Green background (STN)								
16 x 2	85	30	10	21 x 9	5.56 x 2.96	L, 2 x 7	MC1602D-SYR	944-8624
16 x 2	84	44	14	61 x 15.8	5.55 x 2.95	T, 1 x 14	BTHQ21605AV-YETF-LED04-I2C	113-7381
16 x 2	85	32.6	10	64.5 x 16	5.56 x 2.96	L, 2 x 7	MC1602M-SYR	944-8632
16 x 2	59	29.3	4	52 x 15	4.67 x 2.54	T, 1 x 15	MC1602X-SYR	944-8640
16 x 4	72	48	10	61.8 x 25.2	4.76 x 2.95	T, 1 x 16	MC1604C-SYR	944-8659
Transflective - Black characters on a Yellow/Green background (STN)								
16 x 2	85	30	15	21 x 9	5.56 x 2.96	L, 1 x 7	MC1602D-SYL	944-8985
16 x 2	85	32.6	15	64.5 x 16	5.56 x 2.96	L, 1 x 7	MC1602M-SYL	944-8993
16 x 2	59	29.3	5	52 x 15	4.67 x 2.54	T, 1 x 15	MC1602X-SYL	944-9000
16 x 4	72	48	15	61.8 x 25.2	4.76 x 2.95	T, 1 x 16	MC1604C-SYL	944-9019
Transmissive - White characters on a black background (STN)								
40 x 2	182	33.5	10	154 x 15.3	5.55 x 3.2	L, 2 x 7	MC4002D7-SBLW	113-7382
Transmissive - White characters on a blue background (STN)								
16 x 1	80	36	10	21 x 9	64.5 x 3.07	T, 1 x 16	MC16011A8-SBLW	944-9027
16 x 1	122	33	15	99 x 13	8.06 x 4.85	B, 1 x 16	MC1601H-SBLW	944-9035
16 x 2	80	36	10	64.5 x 16	5.56 x 2.96	T, 1 x 16	MC1602C8-SBLW	944-9043
16 x 2	84	44	10	64.5 x 16	5.56 x 2.96	B, 1 x 16	MC16021E8-SBLW	944-9051
16 x 2	85	36	10	64.5 x 16	5.56 x 2.96	L, 2 x 7	MC1602F7-SBLW	944-9060
16 x 2	122	44	10	99 x 24	8.06 x 4.85	B, 1 x 16	MC1602J-SBLW	944-9078
16 x 4	87	60	15	61.8 x 25.2	4.76 x 2.95	T, 1 x 16	MC1604B-SBLW	944-9086
16 x 4	77	51	10	61.8 x 25.2	5.55 x 2.95	B, 1 x 16	MC1604D9-SBLW	944-9094
20 x 2	116	37	14	84 x 19	4.85 x 3.2	L, 2 x 8	MC2002DA-SBLW	944-9108
20 x 2	190	54	15	149 x 31	12.75 x 6	L, 2 x 8	MC2002E-SBLW	944-9116
20 x 4	98	60	15	76 x 25.2	4.75 x 2.95	T, 1 x 16	MC2004E-SBLW	944-9132
24 x 2	118	36	15	96 x 18.8	5.55 x 3.2	L, 2 x 8	MC24021A9-SBLW	944-9124
40 x 4	190	54	15	149 x 31	4.89 x 2.78	L, 2 x 8	MC4004A-SBLW	944-9159

Connector details:
B = Bottom, L = Left, T = Top. No. of rows x No. of pins (e.g. 1 x 20 = 1 row x 20 pins)

454694

Format	Order Code	Price Each 1+	5+	10+	25+	50+
Black characters on a grey background (STN)						
8 x 2	**113-7380●**	5.41	4.92	4.60	4.24	3.87
Black characters on a grey background (STN)						
16 x 2	**944-8624●**	9.30	8.46	7.74	7.16	6.65
16 x 2	**944-8632●**	9.65	8.77	8.04	7.43	6.89
16 x 2	**944-8640●**	10.41	9.47	8.68	8.01	7.44
16 x 4	**944-8659●**	14.06	12.79	11.72	10.82	10.05
Black characters on a Yellow/Green background (STN)						
16 x 2	**944-8985●**	11.55	10.52	9.64	8.88	8.26
16 x 2	**944-8993●**	12.81	11.65	10.67	9.85	9.16
16 x 2	**944-9000●**	12.15	11.04	10.13	9.34	8.69
16 x 2	**113-7381●**	17.21	15.66	14.35	13.25	12.30
16 x 4	**944-9019●**	16.66	15.14	13.88	12.82	11.88
White characters on a black background (STN)						
40 x 2	**113-7382●**	39.32	35.75	32.77	30.25	28.09
White characters on a blue background (STN)						
16 x 1	**944-9027●**	19.34	17.60	16.13	14.88	13.83
16 x 1	**944-9035●**	20.88	18.97	17.39	16.05	14.90
16 x 2	**944-9043●**	20.56	18.69	17.15	15.82	14.69
16 x 2	**944-9051●**	21.24	19.31	17.70	16.35	15.17
16 x 2	**944-9060●**	20.98	19.07	17.49	16.14	14.99
16 x 2	**944-9078●**	31.52	28.66	26.27	24.26	22.50
16 x 4	**944-9086●**	30.66	27.88	25.56	23.59	21.91
16 x 4	**944-9094●**	30.20	27.45	25.17	23.23	21.56

Format	Order Code	Price Each 1+	5+	10+	25+	50+
White characters on a blue background (STN)						
20 x 2	**944-9108●**	25.80	23.46	21.50	19.85	18.43
20 x 2	**944-9116●**	43.04	39.13	35.86	33.11	30.74
24 x 2	**944-9124●**	26.16	23.79	21.80	20.13	18.69
20 x 4	**944-9132●**	40.00	36.37	33.33	30.77	28.59
40 x 4	**944-9159●**	51.01	46.37	42.51	39.24	36.42

STN Alphanumeric Displays

5 x 7 Dots + Cursor

EVERBOUQUET INTERNATIONAL WAYTON TECHNOLOGY



Standard



Backlight version

- Green Font, Yellow Background
- Parallel Interface
- 5 x 7 Dotmatrix + Cursor
- Backlight Versions

No. Characters	No. Lines	Dimensions External (H,W)	Character	Order Code
16	1	36 x 80	5.73 x 3.07	122-0423
16	2	36 x 80	4.86 x 2.96	122-0424
16	2	36 x 85	4.86 x 2.96	122-0426
16	2	36 x 80	4.86 x 2.96	122-0432
16	2	36 x 85	4.86 x 2.96	122-0435
16	2	44 x 64.5	4.86 x 2.96	122-0434
16	2	44 x 84	4.86 x 2.96	122-0425
16	4	60 x 60	4.16 x 2.96	122-0428
20	2	37 x 116	4.85 x 3.2	122-0437
20	4	60 x 76	4.15 x 2.95	122-0439
20	4	60 x 98	4.15 x 2.95	122-0431
24	2	36 x 118	4.85 x 3.2	122-0438
24	2	36 x 118	4.85 x 3.2	122-0430
40	2	33.5 x 182	4.85 x 3.2	122-0440

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Mftrs. List No.	Order Code	Price Each 1+	5+	10+
MC16011A-SYR	**122-0423●**	5.97	5.48	4.87
MC1602C-SYR	**122-0424●**	6.22	5.70	5.07
MC16021E-SYR	**122-0425●**	6.79	6.23	5.54
MC1602F-SYR	**122-0426●**	6.51	5.96	5.30
MC1604B-SYR	**122-0428●**	10.64	9.76	8.68
MC24021A-SYR	**122-0430●**	9.96	9.13	8.11
MC2004E-SYR	**122-0431●**	12.74	11.68	10.39
Integrated Backlight				
MC1602C8-SYL	**122-0432●**	7.94	7.27	6.46
MC16021E8-SYL	**122-0434●**	8.45	7.74	6.88
MC1602F7-SYL	**122-0435●**	8.05	7.39	6.56
MC2002D-SYL	**122-0437●**	12.30	11.28	10.03
MC24021A-SYL	**122-0438●**	13.45	12.33	10.97
MC2004E-SYL	**122-0439●**	16.17	14.82	13.17
MC4002D-SYL	**122-0440●**	19.63	17.98	15.98

Alphanumeric LCD Modules

TN and STN Transmissive



A TN module and a range of STN LCD modules available in reflective black on grey or yellow/green (non illuminated), transflective black on yellow / green and also a very high contrast transmissive white on blue 'negative' mode.
These modules are compatible with industry standard sizes and feature standard parallel 4 bit or 8 bit interfaces. Suitable for indoor or outdoor viewing.

- Temperature range 0 - 50°C
- Standard 5V power supply
- Hi intensity white or Green backlight LEDs
- Minimum backlight intensity 6cd/m^2
- Low power requirements
- High contrast

Format	Module Size (mm) W	H	D	Display Area W x H (mm)	Character Size W x H (mm)	Connector	Mftrs. List No.	Background Colour	Order Code
Reflective - Black characters on a grey or Yellow/Green background (STN)									
16 x 2	85	30	10	21 x 9	5.56 x 2.96	L, 2 x 7	MC1602D-SYR	Yell/Grn	944-8624
16 x 2	85	32.6	10	64.5 x 16	5.56 x 2.96	L, 2 x 7	MC1602M-SYR	Yell/Grn	944-8632
16 x 2	59	29.3	4	52 x 15	4.67 x 2.54	T, 1 x 15	MC1602X-SYR	Yell/Grn	944-8640
16 x 4	72	48	10	61.8 x 25.2	4.76 x 2.95	T, 1 x 16	MC1604C-SYR	Yell/Grn	944-8659
Transflective - Black characters on a Yellow/Green background (STN)									
16 x 2	85	30	15	21 x 9	5.56 x 2.96	L, 1 x 7	MC1602D-SYL	Yell/Grn	944-8985
16 x 2	85	32.6	15	64.5 x 16	5.56 x 2.96	L, 1 x 7	MC1602M-SYL	Yell/Grn	944-8993
16 x 2	59	29.3	5	52 x 15	4.67 x 2.54	T, 1 x 15	MC1602X-SYL	Yell/Grn	944-9000
16 x 4	72	48	15	61.8 x 25.2	4.76 x 2.95	T, 1 x 16	MC1604C-SYL	Yell/Grn	944-9019
Transmissive - White characters on a blue background (STN)									
16 x 1	80	36	10	21 x 9	64.5 x 3.07	T, 1 x 16	MC16011A8-SBLW	Blue	944-9027
16 x 1	122	33	15	99 x 13	8.06 x 4.85	B, 1 x 16	MC1601H-SBLW	Blue	944-9035
16 x 2	80	36	10	64.5 x 16	5.56 x 2.96	T, 1 x 16	MC1602C8-SBLW	Blue	944-9043
16 x 2	84	44	10	64.5 x 16	5.56 x 2.96	B, 1 x 16	MC16021E8-SBLW	Blue	944-9051
16 x 2	85	36	10	64.5 x 16	5.56 x 2.96	L, 2 x 7	MC1602F7-SBLW	Blue	944-9060
16 x 2	122	44	10	99 x 24	8.06 x 4.85	B, 1 x 16	MC1602J-SBLW	Blue	944-9078

RL Re-reeling available

Farnell

Format	Module Size (mm)	Display Area	Character Size		Mftrs.	Background	
Transmissive - White characters on a blue background (STN)							
16 x 4	87 x 60 x 15	61.8 x 25.2	4.76 x 2.95	T, 1 x 16	MC1604B-SBLW	Blue	944-9086
16 x 4	77 x 51 x 10	61.8 x 25.2	5.55 x 2.95	B, 1 x 16	MC1604D9-SBLW	Blue	944-9094
20 x 2	116 x 37 x 14	84 x 19	4.85 x 3.2	L, 2 x 8	MC2002DA-SBLW	Blue	944-9108
20 x 2	190 x 54 x 15	149 x 31	12.75 x 6	L, 2 x 8	MC2002E-SBLW	Blue	944-9116
24 x 2	118 x 36 x 15	96 x 18.8	5.55 x 3.2	L, 2 x 8	MC24021A9-SBLW	Blue	944-9124
20 x 4	98 x 60 x 15	76 x 25.2	4.75 x 2.95	T, 1 x 16	MC2004E-SBLW	Blue	944-9132
40 x 4	190 x 54 x 15	149 x 31	4.89 x 2.78	L, 2 x 8	MC4004A-SBLW	Blue	944-9159

Connector details:
B = Bottom, L = Left, T = Top. No. of rows x No. of pins (e.g. 1 x 20 = 1 row x 20 pins)

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Format	Order Code	Price Each 1+	5+	10+	25+	50+
Black characters on a grey background (STN)						
16 x 2	**944-8624●**	9.30	8.46	7.74	7.16	6.65
16 x 2	**944-8632●**	9.65	8.77	8.04	7.43	6.89
16 x 2	**944-8640●**	10.41	9.47	8.68	8.01	7.44
16 x 4	**944-8659●**	14.06	12.79	11.72	10.82	10.05
Black characters on a Yellow/Green background (STN)						
16 x 2	**944-8985●**	11.55	10.52	9.64	8.88	8.26
16 x 2	**944-8993●**	12.81	11.65	10.67	9.85	9.16
16 x 2	**944-9000●**	12.15	11.04	10.13	9.34	8.69
16 x 4	**944-9019●**	16.66	15.14	13.88	12.82	11.88
White characters on a blue background (STN)						
16 x 1	**944-9027●**	19.34	17.60	16.13	14.88	13.83
16 x 1	**944-9035●**	20.88	18.97	17.39	16.05	14.90
16 x 2	**944-9043●**	20.56	18.69	17.15	15.82	14.69
16 x 2	**944-9051●**	21.24	19.31	17.70	16.35	15.17
16 x 2	**944-9060●**	20.98	19.07	17.49	16.14	14.99
16 x 2	**944-9078●**	31.52	28.66	26.27	24.26	22.50
16 x 4	**944-9086●**	30.66	27.88	25.56	23.59	21.91
16 x 4	**944-9094●**	30.20	27.45	25.17	23.23	21.56
20 x 2	**944-9108●**	25.80	23.46	21.50	19.85	18.43
20 x 2	**944-9116●**	43.04	39.13	35.86	33.11	30.74
24 x 2	**944-9124●**	26.16	23.79	21.80	20.13	18.69
20 x 4	**944-9132●**	40.00	36.37	33.33	30.77	28.59
40 x 4	**944-9159●**	51.01	46.37	42.51	39.24	36.42

Modules with Electroluminescent Backlighting

VARITRONIX / POWERTIP



Transflective intelligent LCD modules with integral electroluminescent backlighting.

An inverter is required to generate the ac drive signal for the backlight, and operating from the unregulated +5V dc supply. Order Code 175-264 is suitable for all types.

Single line modules have 5 x 10 character fonts. Others have 5 x 7 character fonts.

Format	Module Size W x H x D	Display Area W x H	Character Size W x H	Mftr.	Mftrs. List No.	Order Code
24 x 2	118 x 36 x 10	93.5 x 15.8	3.2 x 4.5	TRID	MDLS24265-LV-EL	118-3179
40 x 2	182 x 33.5 x 11	154 x 15.8	3.15 x 4.85	TRID	MDLS40266-LV-EL	118-3180

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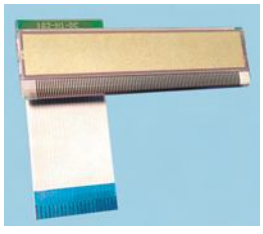
Format	Order Code	Price Each 1+	5+	10+	25+	50+
STN (+5V Supply only)						
24 x 2	**118-3179●**	37.62	34.70	32.24	31.31	29.34
40 x 2	**118-3180●**	51.94	49.69	44.51	43.25	40.54

Graphic LCD Modules- Monochrome

2 x 16 & 2 x 20 Character, 33 x 100 & 64 x 100 Graphic Displays

Monochrome Transflective with LED Backlight

DENSITRON DISPLAYS



- 2 x 16 and 2 x 20 offer 5V only input
- On-board character generator
- 33 x 100, 64 x 100 offer on-board graphic controller with memory
- Serial or parallel input
- All displays feature low-profile LED backlighting
- Simple 1.0mm pitch flexible cable interconnection

These modules use STN (Supertwisted Nematic) technology and have a space saving of up to 50% when compared to similar resolution panels, this range of "mini-modules" offers the ultimate in miniature high-resolution display technology.

Format	Module Size	Display Area	Character Size	Pixel Size	Mftrs. List No.
2 x 16	65 x 19.5 x 7.8	54.7 x 9.0	2.95 x 4.35	0.60 x 0.55	LMR4047BG2C16HNG/5V
2 x 20	80 x 21.5 x 7.8	68.5 x 10.7	2.95 x 5.15	0.60 x 0.65	LMR4052BG2C20HNG/5V
33 x 100	75 x 35 x 8.6	59.96 x 21.74	—	0.60 x 0.66	LMR4900BG33G100SNY

206630

Format	Mftrs. List No.	Order Code	Price Each 1+	3+	5+	10+	25+
2 x 16	LMR4047BG2C16HNG/5V	**114-4459●**	12.74	12.10	11.28	9.94	8.57
2 x 20	LMR4052BG2C20HNG/5V	**114-4460●**	16.08	15.15	13.92	12.56	11.19
33 x 100	LMR4900BG33G100SNY	**114-4462●**	27.36	26.15	25.17	23.72	22.26

Monochrome

VARITRONIX / POWERTIP

32x80 / 128x64 / 240x64 / 240x128 Pixels



- STN / FSTN technologies with flat, space saving profiles
- Blue/black on yellow/green background, LED and CCFL backlighting available
- T6963/KS0108/SED1520 controllers to display text, graphics or both
- Versions with touchscreens
- Ultrathin models

Features	Flex Film Connector	Pixel Format	Module Size W x H x D	Display Area W x H	Pixel Size W x H	Mftr.	Order Code
●	20-way	32 x 80	75 x 54 x 13.5	60 x	0.38 x	VAR	118-3186
■		128 x 64	78 x 70 x 10	62 x 44	0.39 x 0.55	VAR	118-3188
■●		128 x 64	78 x 70 x 13	62 x 44	0.39 x 0.55	VAR	118-3189
■●		128 x 64	78 x 70 x 13	62 x 44	0.39 x 0.55	VAR	118-3150
■●		128 x 64	78 x 70 x 13	62 x 44	0.39 x 0.55	VAR	118-3152
●T/S,FSTN	16-way	128 x 64	55.2 x 39 x 6	27 x 45.2	0.55 x 0.39	PTIP	167-1491
■		240 x 64	180 x 65 x 12	132 x 39	0.48 x 0.48	VAR	118-3190
■●		240 x 64	180 x 65 x 14.5	132 x 39	0.48 x 0.48	VAR	118-3194
■●		240 x 64	180 x 65 x 14.5	132 x 39	0.48 x 0.48	VAR	118-3195
■●		240 x 128	144 x 104 x 12.5	114 x 64	0.40 x 0.40	VAR	118-3196

● Displays with LED backlighting
SED SED1520 controller
T/S Touch Screen

■ Displays with built-in T6963 controller
U/T Ultra Thin display

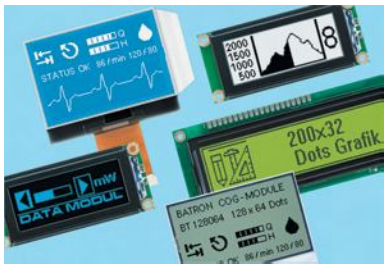
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Mftrs. List No.	Order Code	Price Each 1+	5+	10+	25+	50+
MGLS10032A-LV2-LED03	**118-3186●**	43.07	39.76	36.91	35.85	33.62
MGLS12864T	**118-3188●**	44.53	37.81	32.86	30.89	28.96
MGLS12864T-LV2-LED03	**118-3189●**	50.44	42.42	36.60	34.99	32.80
MGLS128128T-STD2	**118-3150●**	67.86	62.22	58.33	57.16	55.48
MGLS128128T-LV2-LED04	**118-3152●**	80.76	71.39	63.96	61.63	57.78
PG12864LRF-NRA-H-Q	**167-1491●**	9.00	8.00	7.20	6.54	6.00
MGLS19264-LED03	**118-3190●**	73.06	67.43	62.63	60.82	57.03
MGLS2406G-STD2	**118-3194●**	49.84	48.57	47.14	42.06	39.40
MGLS24064-STD2-LED03	**118-3195●**	74.92	63.73	55.45	51.97	48.73
MGLS240128T-STD2-LED3	**118-3196●**	93.55	85.05	70.36	64.90	60.83

Graphic LCD Modules

HQ Series

BATRON



Applications include:
- Instrumentation
- POS equipment
- Metering
- Consumer Electronics
- Graphical User Interfaces (GUI)
- Medical

The HQ series of STN graphic LCD modules give an enhanced graphic image with high contrast and wide viewing angle. This is achieved by implementing a 15 micron gap between pixels to give a much denser image.
Available in reflective, transflective and transmissive variants these modules offer an attractive display with low power requirements and ease of interface.
LED backlit versions include high intensity white or green LEDs.

Mftrs. List No:	Order Code
BTHQ100032V-SRE WC	944-9302
BTHQ128064AVC-COG-SRE	944-9337
BTHQ128064AVD-COG-SRE	944-9370
BTHQ100032V-STF-LED YG WC	944-9310
BTHQ128064AVC-COG-STF-LED02 GREEN	944-9345
BTHQ128064AVD-COG-STF-LED02 GREEN	944-9388
BTHQ240064AVB-COG-YETF-LED02 GREEN	944-9418
BTHQ100032V-FSTF-LED WHITE WC	944-9329
BTHQ128064AVC-COG-FSTF-LED05 WHITE	944-9353
BTHQ128064AVD-COG-FSTF-LED05 WHITE	944-9396
BTHQ240064AVB-COG-FETF-LED05 WHITE	944-9426
BTHQ128064AVC-COG-SMN-LED05 WHITE	944-9361
BTHQ128064AVD-COG-SMN-LED05 WHITE	944-9400
BTHQ240064AVB-COG-EMN-06-LED WHITE	944-9434

RL Re-reeling available

Graphic LCD Modules- Monochrome - continued

Graphic LCD Modules - continued

HQ Series - continued

Format	Module Size W	H	D	Display Area W x H	Controller	Connector	Order Code
Reflective - Black characters on a yellow/green background							
128 x 64	54.6	42.2	1.8	50.6 x 50.6	S1D 10605D04B	T, 1 x 28	944-9370
Transflective - Black characters on a green background							
100 x 32	65	28.4	8	46 x 46	SED 1520	T, 1 x 17	944-9310
128 x 64	54.6	42.2	1.8	50.6 x 50.6	S1D 10605D04B	T, 1 x 28	944-9388
Transflective - Black characters on a white background							
100 x 32	65	28.4	8	46 x 46	SED 1520	T, 1 x 18	944-9329
128 x 64	54.6	42.2	1.8	50.6 x 50.6	S1D 10605D04B	T, 1 x 28	944-9396
Transmissive - White characters on a blue background							
128 x 64	54.6	42.2	1.8	50.6 x 50.6	S1D 10605D04B	T, 1 x 28	944-9400
240 x 64	120	44.8	5	102.4 x 102.4	S1D 10605D04B	T, 1 x 22	944-9434

338281

Format (connection)	Order Code	Price Each 1+	5+	10+	25+	50+
Black Characters on a yellow/green background						
128 x 64 (C)	**944-9370●**	13.45	12.22	11.20	10.34	9.62
Black Characters on a green background						
100 x 32 (A)	**944-9310●**	28.96	26.33	24.13	22.27	20.70
128 x 64 (C)	**944-9388●**	16.09	14.63	13.41	12.37	11.49
Black Characters on a white background						
100 x 32 (A)	**944-9329●**	34.84	31.68	29.05	26.81	24.91
128 x 64 (C)	**944-9396●**	23.65	21.50	19.71	18.20	16.91
White Characters on a blue background						
128 x 64 (C)	**944-9400●**	22.69	20.64	18.90	17.46	16.20
240 x 64 (C)	**944-9434●**	87.41	79.48	72.84	67.24	62.44

Connection:
(A) With Connector, (B) Universal Interface, (C) FPC Cable

LCD Accessories

BATRON



No. of Ways	Pitch	Order Code
22	1	122-0450
16	1	122-0461
16	1	122-0462
16	1	122-0460
28	0.5	122-0453
30	0.5	122-0454

Bezels

451826

Mftrs. List No.	Compatability		Order Code	Price Each 1+	5+	10+
Connectors						
BT21019 (BT21007)	BTHQ128064AVC1		**122-0450●**	3.67	2.86	2.57
BT63314	BTHQ128064AVE		**122-0454●**	4.43	3.44	3.10
BT21020 (BT21018)	Batron 3mm C.H.	SMD	**122-0460●**	3.21	2.49	2.24
BT21216 (BT21201)	Batron 3mm C.H. LCDs		**122-0461●**	4.47	3.47	3.12
BT21300	Batron 3mm C.H. LCDs	SMD	**122-0462●**	1.99	1.54	1.39
HI03297	BTHQ128064AVD		**122-0453●**	11.86	9.22	8.30
Bezels						
BT21012	BTHQ128064AVC1 B/L		**122-0452●**	2.55	1.98	1.78
BT21014	BTHQ128064AVD B/L		**122-0456●**	3.67	2.86	2.57

Graphic Displays

BATRON



1220412
1220413



1220422



1220420



1220414
1220415



1220416
1220418
1220419

- High resolution
- Easy to interface
- Compact design

Font Resolution	Font Colour	Back Colour	Dimensions Display	External	Order Code
96 x 40 Dots	Black	Yellow	18.2 x 35.2	36.2 x 46 x 1.845	132-3369
96 x 40 Dots	Black	White	18.2 x 35.2	36.2 x 46 x 1.845	132-3370
120 x 32 Dots	Black	Yellow	16 x 60	92.8 x 66.6 x 5	122-0415
128 x 64 Dots	Black	White	35.5 x 66.8	47.5 x 74.8 x 1.83	122-0417
128 x 64 Dots	Black	White	35.5 x 66.8	49.8 x 89.7 x 6	122-0418
128 x 64 Dots	White	Blue	35.5 x 66.8	49.8 x 89.7 x 6	122-0419
128 x 64 Dots	Black	RGB	70.2 x 50.6	70.2 x 55.6 x 4.48	122-0416
240 x 64 Dots	Black	White	30.22 x 102.4	194.82 x 120 x 5.5	122-0420
240 x 64 Dots	Black	White	30.22 x 108	193.2 x 108 x 2.78	122-0422

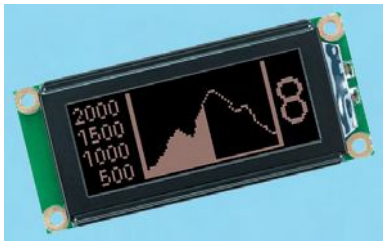
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Mftrs. List No.	Order Code	Price Each 1+	5+	10+
BTHQ96040 AV -COG-SRE-12-I2C	**132-3369●**	17.35	15.90	14.15
BT96040AV1-COG-FSTF-12-I2C	**132-3370●**	18.56	17.02	15.13
BT120032AVB-COG-STF-12-LED02YG	**122-0415●**	18.44	16.92	15.03
BTHQ128064AVD-COG-FSTF-LEDMULTI	**122-0416●**	25.47	23.34	20.76
BTHQ128064AVE-COG-FERE	**122-0417●**	20.11	18.44	16.39
BTHQ128064AVE-COG-FETF-06-LED-WHITE	**122-0418●**	33.24	30.48	27.08
BTHQ128064AVE-COG-EMN-06-LED-WHITE	**122-0419●**	30.13	27.62	24.55
BTHQ240064AVB-COG-FETF-06-LEDMULTI	**122-0420●**	74.80	68.56	60.96
BTHQ240064AVB-COG-FERE	**122-0422●**	66.47	60.95	54.17

Graphic LCD Modules

Transmissive

EVERBOUQUET INTERNATIONAL WAYTON TECHNOLOGY



- Temperature range 0 - 50°C
- Standard 5v power supply
- Hi intensity white backlight LED's
- Low power

A range of Graphic STN and FSTN graphic LCD modules featuring a transmissive 'negative mode' display. This gives a high contrast display with white graphics on a black or blue background.

Format	Module Size (mm) H	W	D	Display Area H x W (mm)	Controller	Connector	Mftrs. List No.	Background Colour	Order Code

Connector details:
B = Bottom, L = Left, T = Top. No. of rows x No. of pins (e.g. 1 x 20 = 1 row x 20 pins)

338278

Background Colour	Order Code	Price Each 1+	5+	10+	25+	50+
Blue	**944-9507●**	78.72	71.57	65.60	60.56	56.22

STN with Backlight

EVERBOUQUET INTERNATIONAL WAYTON TECHNOLOGY



122-0444
122-0446



1220448
1220449



1220443

- High Contrast, High Clarity
- Compact Designs

Resolution	Font	Colour Background	Dimensions External (H,W)	Mftrs. List No.	Order Code
128 x 64 Dots	Green	Yellow	70 x 93	MG1206B-SYL	122-0443
160 x 32 Dots	Green	Yellow	36 x 80	MG1603GC9-SYL	122-0446
160 x 32 Dots	White	Blue	36 x 80	MG1603GC9-SBLW	122-0444
240 x 64 Dots	Green	Yellow	62 x 140	MG2406B-SYL	122-0448
240 x 64 Dots	Green	Yellow	65 x 180	MG24065G-SYL	122-0449

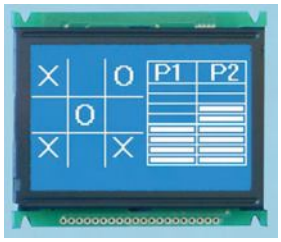
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Mftrs. List No.	Order Code	Price Each 1+	5+	10+
MG1206B-SYL	**122-0443●**	27.28	25.00	22.23
MG1603GC9-SBLW	**122-0444●**	18.66	17.11	15.20
MG1603GC9-SYL	**122-0446●**	14.37	13.18	11.72
MG2406B-SYL	**122-0448●**	50.67	46.45	41.30
MG24065G-SYL	**122-0449●**	60.90	55.83	49.62

Graphic LCD Modules

Transmissive

EVERBOUQUET INTERNATIONAL WAYTON TECHNOLOGY



A range of STN graphic LCD modules featuring a transmissive 'negative mode' display. This gives a high contrast display with white graphics on blue background.

- Temperature range 0 - 50°C
- Standard 5v power supply
- Hi intensity white backlight LED's
- Low power

RL Re-reeling available

Farnell

Format	Module Size (mm) H	W	D	Display Area H x W (mm)	Controller	Connector	Mftrs. List No.	Order Code
122 x 32	68	31.7	8	57.2 x 17.7	SED 1520	B, 1 x 20	MG1203D-SBLW	944-9442
128 x 64	63.2	54	8	54 x 36	S6B 0107B	T, 1 x 20	MG12064E3-SBLW	944-9469
128 x 64	93	70	15	71 x 39	S6B 0107B	B, 1 x 20	MG12064B-SBLW	944-9485
240 x 64	125	60	15	111.6 x 37	T 6963C	B, 1 x 20	MG24065F-SBLW	944-9507
240 x 64	140	62	15	111.6 x 37	LC 7981	B, 1 x 20	MG24065B-SBLW	944-9523

Connector details:
B = Bottom, L = Left, T = Top, R = Right. No. of rows x No. of pins (e.g. 1 x 20 = 1 row x 20 pins)

424666

Format	Order Code	Price Each 1+	5+	10+	25+	50+
122 x 32	**944-9442●**	35.53	32.30	29.61	27.34	25.38
128 x 64	**944-9469●**	35.47	32.25	29.56	27.30	25.34
128 x 64	**944-9485●**	54.85	49.86	45.71	42.20	39.18
240 x 64	**944-9507●**	78.72	71.57	65.60	60.56	56.22
240 x 64	**944-9523●**	78.16	71.06	65.14	60.13	55.84

STN Monochrome Graphic Displays

HITACHI

Transmissive



- The Starter Kit contains:
  - A comprehensive instruction leaflet with Module and Inverter details, handling precautions, suggestions for driver chip and connector suppliers
  - The matched Inverter
  - Input connector for the module
  - Input connector for the Inverter with flying leads
- Black on White Film STN - exept
- 1082030 which is Blue/White STN
- High contrast ratio 20:1
- Starter Kits and Inverters are also available
- Matched Inverter also available separately

Suitable Starter Kits & Inverters

Display Type	Order Code	Starter Kit	Order Code	Matched Inverter	Order Code
SP14N001-Z1	153-7050	STARTSP1N001	108-2087	INVC816	153-7059
SP14N001-Z1A	153-7051	STARTSP1N001	108-2087	INVC816	153-7059

Module Size (mm) W	H	D	Display Area (mm) W	H	Pixel Size (mm) W	H	Backlight Type	Inverter Type	Mftrs. List No.
256 x 64									
160	68	12	120	30	0.44	0.44	CCFL		SP12N002
240 x 128									
159.4	101	12.8	123	68	0.48	0.48	CCFL		SP14N001-Z1A●
159.4	101	11	123	68	0.48	0.48	White LED	N/A	SP14N01L6ALCZ
159.4	101	11	120	64	0.47	0.47	CCFL		SP14N002
159.4	101	11	120	64	0.47	0.47	CCFL		SP14N003
640 x 480									
257.5	174	7	192	144	0.27	0.27	CCFL	INVC817	SP24V001
264	183	9	211	158	0.3	0.3	CCFL	INVC818	LMG7550XUFC

● Touch Screen version

424437

Display Resolution Mftrs. List No.	Size	Order Code	Price Each 1+	5+	10+
256 x 64					
SP12N002	4.8"	**153-7049●**	89.71	81.56	74.77
240 x 128					
LMG7420PLFC-X	5.1"	**153-7063●**	91.75	85.63	83.94
SP14N001-Z1	5.1"	**153-7050●**	94.47	85.88	78.73
SP14N001-Z1A	5.1"	**153-7051●**	125.84	114.41	104.87
SP14N01L6ALCZ	5.1"	**153-7053●**	116.04	105.49	96.69
SP14N002	5.1"	**153-7054●**	102.44	93.14	85.37
SP14N003	5.1"	**153-7055●**	99.18	90.16	82.64
640 x 480					
SP24V001	9.4"	**153-7056●**	188.97	171.79	157.48
LMG7550XUFC	10.4"	**153-7057●**	247.30	224.82	206.09
Inverters					
INVC817		**153-7060●**	33.12	30.11	27.60
INVC818		**153-7061●**	32.14	29.20	26.79

Easy Drive TFT

DENSITRON DISPLAYS

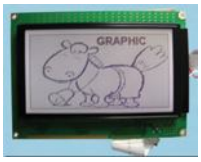





1220217 1220219 1220218







1220220 1220221 1220222



1220223

- High performance
- Transmissive and Transflective Options
- Easy to interface

Display Type	Font Colour	Back Colour	Display Polarisation	External Dimensions	Mftrs. List No.	Order Code
240 x 64 Dots, (65 x 133 mm)						
STN	Blue	Yellow / Green	Transflective	65 x 180 x 16	LMR4270BG-WCY	122-0217
STN	White	Blue	Transmissive	65 x 180 x 16	LMR4270EW-WCB	122-0218
240 x 128 Dots, (64 x 114 mm)						
STN	Blue	Yellow	Transflective	104 x 144 x 14.3	LMR4234BG-WCY	122-0220
STN	White	Blue	Transmissive	104 x 144 x 14.3	LMR4234EW-WCB	122-0221
FSTN	Black	White	Transflective	104 x 144 x 14.3	LMR4234BW-WCF	122-0222
329 x 240 Dots, (92 x 120 mm)						
STN	White	Blue	Transflective	120.24 x 154.79 x 15.6	LMR4769EW-WCB	122-0223
FSTN	Black	White	Transmissive	120.24 x 154.79 x 15.6	LMR4769BW-WNF	122-0224

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Mftrs. List No.	Order Code	Price Each 1+	3+	5+	+
LMR4270BG-WCY	**122-0217●**	72.89	65.81	63.18	– –
LMR4270EW-WCB	**122-0218●**	66.66	60.18	57.76	– –
LMR4234BG-WCY	**122-0220●**	103.22	93.18	89.45	– –
LMR4234EW-WCB	**122-0221●**	112.75	101.78	97.72	– –
LMR4234BW-WCF	**122-0222●**	106.70	96.33	92.47	– –
LMR4769EW-WCB	**122-0223●**	139.03	125.52	120.49	– –
LMR4769BW-WNF	**122-0224●**	145.38	131.25	126.00	– –

Monochrome

DENSITRON DISPLAYS

240 x 128 Pixels



- FSTN medium resolution module
- Enhanced contrast ratio and wide viewing angle
- In-built control circuitry to allow direct interfacing
- Backlighting available via suitable inverter

Direct replacement for the Hitachi LMG7400

Description	Back Light	Module Size W x H x D (mm)	Display Area W x H (mm)	Pixel Size W x H (mm)	Mftrs. List No.
240 x 128 Pixels Film black & white transflective		x x	x	x	LMR7400128G240SF

337255

Format	Mftrs. List No.	Order Code	Price Each 1+	5+	10+
Pixels	LMR7400128G240SF	**114-4464●**	118.28	94.62	86.02
Inverter	INVC132(G)	**117-4975●**	34.14	– –	– –

STN Monochrome Graphic Displays

HITACHI

¼VGA, Transmissive



- The Starter Kit contains:
  - A comprehensive instruction leaflet with Module and Inverter details, handling precautions, suggestions for driver chip and connector suppliers
  - The matched Inverter
  - Input connector for the module
  - Input connector for the Inverter with flying leads
- Black on White Film STN - exept
- 1082045 & 1082047 which are Blue/White STN
- High contrast ratio 20:1
- Starter Kits and Inverters are also available
- Matched Inverter also available separately

Suitable Starter Kits & Inverters

Display Type	Order Code	Starter Kit	Order Code
SP10Q010-T	108-2037	STARTSP10Q010	108-2089
SP10Q010-ZZA	108-2040	STARTSP10Q010	108-2089

Module Size (mm) W	H	D	Display Area (mm) W	H	Pixel Size (mm) W	H	Backlight Type	Inverter Type	Mftrs. List No.
320 x 240									
94.7	73.3	5.5	76.785	57.585	0.225	0.225	White LED	N/A	SP10Q010-T
94.7	73.3	6.5	76.785	57.585	0.225	0.225	White LED	N/A	SP10Q010-ZZA●
129.6	92.6	7.5	100	75.5	0.285	0.0285	CCFL	INVC818/ INVC819	LMG7520RPFC
129.6	92.6	7.5	100	75.5	0.285	.0285	White LED	N/A INVC819	SP12Q01L6ALZZ
167	109	10	120	89	0.345	0.345	CCFL	INVC 186/ INVC 196	SP14Q003
167	109	11.4	120	89	0.345	0.345	CCFL	INVC 186/ INVC 196	SP14Q003-C1
167	109	10	120	89	0.345	0.345	CCFL	INVC 186/ INVC 196	SP14Q002-T
167	109	10	120	89	0.345	0.345	White LED	N/A	SP14Q006-ZZA●
167	109	10	120	89	0.345	0.345	White LED	N/A	SP14Q006-T
167	109	11.4	120	89	0.345	0.345	White LED	N/A	SP14Q006-TZA●

● Touch Screen version

424481

Display Resolution Mftrs. List No.	Size	Order Code	Price Each 1+	5+	10+
320 x 240					
SP10Q010-T	3.8"	**108-2037●**	44.96	40.87	37.48
SP10Q010-ZZA	3.8"	**108-2040●**	67.84	61.67	56.52
LMG7520RPFC	4.7"	**153-7058●**	90.42	82.20	75.35
SP12Q01L6ALZZ	4.7"	**108-2042●**	101.22	91.99	84.33

RL Re-reeling available

Farnell

Graphic LCD Modules- Monochrome - continued

STN Monochrome Graphic Displays - continued

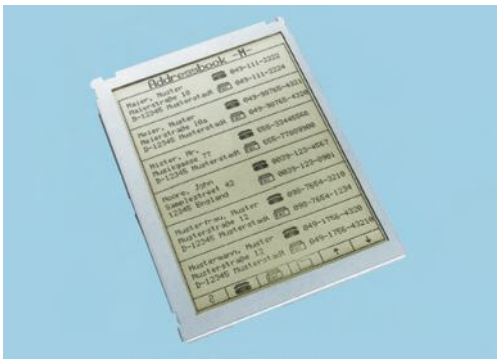
¼VGA, Transmissive - continued

Display Resolution Mftrs. List No.	Size	Order Code	Price Each 1+	5+	10+
320 x 240					
SP14Q003	5.7"	**108-2045**	100.42	91.29	83.67
SP14Q003-C1	5.7"	**108-2047**	87.99	79.99	73.32
SP14Q002-T	5.7"	**108-2054**	89.86	81.69	74.90
SP14Q006-ZZA	5.7"	**108-2056**	117.04	106.39	97.53
SP14Q006-T	5.7"	**108-2057**	100.85	91.67	84.04
SP14Q006-TZA	5.7"	**108-2058**	123.79	112.53	103.15
Starter Kits					
STARTSP10Q010		**108-2089**	61.56	55.96	51.31
Inverters					
INVC 186		**108-2079**	21.31	19.36	17.76
INVC 196		**108-2080**	18.78	17.06	15.66
INVC818		**153-7061**	32.14	29.20	26.79
INVC819		**153-7062**	31.38	29.05	27.06

SP10xx & SP14xx STN Monochrome Graphic Displays

HITACHI

240 x 320 (3.8"), 320 x 240 (5.7") - Transmissive & Transflective, CFL & LED Backlight



- Starter Kits and Inverters are also available
- Each Starter Kit contains:
  - A comprehensive instruction leaflet with Module and Inverter details, handling precautions, suggestions for driver chip and connector suppliers
  - The matched Inverter
  - Input connector for the module
  - Input connector for the Inverter with flying leads
- Matched Inverter also available separately

Suitable Starter Kits & Inverters

Display Type	Order Code	Matched Inverter	Order Code
SP10Q003-T	120-0166	Not Required	
SP10Q005-T	120-0167	Not Required	
SP14Q002-A1	120-0168	INVC 196	108-2080

Screen Size	Backlight Type	Module Size W	H	D	Display Area W	H	Pixel Size W	H	Mftrs. List No.
240 x 320 - FSTN, Black on White Transflective. Low Power, Resistive Touchscreen									
3.8"	LED	70.1	92.1	9.0	60.6	79.8	0.225	0.225	SP10Q003-T
240 x 320 - FSTN, Black on White Transflective. Low Power.									
3.8"	LED	70.1	92.1	7.9	60.6	79.8	0.225	0.225	SP10Q005-T
240 x 320 - FSTN									
5.7"	LED	131	102.2	10.9	115.2	86.4	0.345	0.345	SPQ14Q011-A1
320 x 240 - FSTN, Black on White Transmissive. High Brightness									
5.7"	CFL	167	109	10.0	120	89	0.345	0.345	SP14Q002-A1
320 x 240 - FSTN, Black on White Transflective. Low Power, Sunlight Readable.									
5.7"	CFL	167	109	10.0	120	89	0.345	0.345	SP14Q002-T

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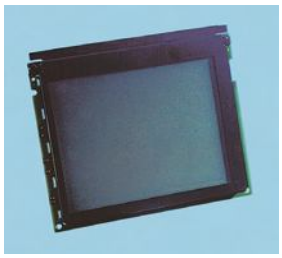
Mftrs. List No.	Order Code	Price Each 1+	3+	5+
Display Resolution				
240 x 320				
SP10Q003-T	**120-0166**	76.72	71.62	70.17
SP10Q005-T	**120-0167**	64.48	60.18	58.98
SPQ14Q011-A1	NEW **162-6201**	80.95	74.22	68.51
320 x 240				
SP14Q002-A1	**120-0168**	65.01	60.66	59.47
SP14Q002-T	**108-2054**	89.86	81.69	74.90
Inverter				
INVC 196	**108-2080**	18.78	17.06	15.66

Over 480,000 products online GO

5" ¼VGA LCDs with Built In Controller

DENSITRON DISPLAYS

LED, CCFL Backlight



- Either LED or CCFL backlight options
- 8-bit parallel input
- On-board memory mapped graphic control
- Suitable for any 6800 or 8080 environment
- CCFL backlight Inverter available
- FSTN technology

A choice of 2.5" ¼VGA LCDs (320 x 240 pixels) with on-board controllers for simple hardware and software integration.

Format	Backlight	Module Size W x H x D	Display Area W x H	Pixel Size W x H	Mftrs. List No.
320 x 240	LED	148 x 120 x 23.1	115.17 x 86.37	0.33 x 0.33	LMR4755BG240G320WCF
64 x 100	LED	53 x 79 x 7.9	52.95 x 40.27	0.54 x 0.51	LMR4068BG64G100SNY/C
Inverter		44 x 14 x 21			INV-12

206632

Format	Mftrs. List No.	Order Code	Price Each 1+	3+	5+
320 x 240 LED	LMR4755BG240G320WCF	**114-4453**	164.84	155.95	151.68
64 x 100 LED	LMR4068BG64G100SNY/C	**124-3362**	41.82	39.28	37.59
Inverter	INV-12	**118-0975**	11.84	10.99	10.18

Graphic LCD Modules - Colour

TFT Colour LCD Modules, LED Backlit

NEC

QVGA



- Touchscreen options
- SR-NLT — Super reflective, natural light technology (*)
- ST-NLT — Super transmissive, natural light technology (**)

New

Screen Size	Resolution	Luminance	Power Consumption	Voltage Supply	Mftrs List No.	Order Code
3.5"	240 x 320	220cd/m²	50mW	3V	NL2432HC22-40J *	162-6054

QVGA - Touchscreen

Screen Size	Resolution	Luminance	Power Consumption	Voltage Supply	Mftrs List No.	Order Code
3.5"	240 x 320	200cd/m²	50mW	3V	NL2432HC22-41K *	162-6053

VGA

Screen Size	Resolution	Luminance	Power Consumption	Voltage Supply	Mftrs List No.	Order Code
6.5"	640 x 480	550cd/m²	—	3.3V	NL6448BC20-21D	162-6059
6.5"	640 x 480	800cd/m²	—	3.3V	NL6448BC20-21C **	162-6060

WVGA - Widescreen

Screen Size	Resolution	Luminance	Power Consumption	Voltage Supply	Mftrs List No.	Order Code
7"	800 x 480	400cd/m²	2.9W	3.3V	NL8048BC19-02	162-6062

523759

Screen Size	Mftrs. List No.	Order Code	Price Each 1+	3+	+	+
QVGA						
3.5"	NL2432HC22-41K	**162-6053**	56.81	52.77	– –	– –
QVGA - Touchscreen						
3.5"	NL2432HC22-40J	**162-6054**	53.83	49.98	– –	– –
VGA						
6.5"	NL6448BC20-21D	**162-6059**	249.92	242.97	– –	– –
6.5"	NL6448BC20-21C	**162-6060**	327.67	318.57	– –	– –
WVGA						
7"	NL8048BC19-02	**162-6062**	188.83	183.59	– –	– –

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Live technical chat at www.farnell.co.uk

RL Re-reeling available

TFT Colour LCD Modules

New

NEC

QVGA

CCFL Backlit



- SR-NLT - Super reflective, natural light technology (*)
- ST-NLT - Super transmissive, natural light technology (**)
- SA-SFT (***)
- UA-SFT (****)

Screen Size	Resolution	Luminance	Power Consumption	Voltage Supply	Mftrs List No.	Order Code
5.5"	320 x 240	400cd/m²	3.8W	3.3V	NL3224BC35-20	162-6055
5.5"	320 x 240	750cd/m²	3.8W	3.3V	NL3224BC35-22 **	162-6056

SVGA

Screen Size	Resolution	Luminance	Power Consumption	Voltage Supply	Mftrs List No.	Order Code
8.4"	800 x 600	400cd/m²	—	3.3V	NL8060BC21-02	162-6066
8.4"	800 x 600	650cd/m²	—	3.3V	NL8060BC21-03 **	162-6067
10.4"	800 x 600	400cd/m²	—	3.3V	NL8060BC26-27 ***	162-6075
12.1"	800 x 600	400cd/m²	—	3.3V	NL8060BC31-27	162-6078
12.1"	800 x 600	400cd/m²	—	3.3V	NL8060BC31-41C	162-6079
12.1"	800 x 600	400cd/m²	—	3.3V	NL8060BC31-41D	162-6080

VGA

Screen Size	Resolution	Luminance	Power Consumption	Voltage Supply	Mftrs List No.	Order Code
6.5"	640 x 480	650cd/m²	—	3.3V	NL6448BC20-20 **	162-6058
8.4"	640 x 480	450cd/m²	—	3.3V	NL6448BC26-09	162-6064
8.4"	640 x 480	750cd/m²	—	3.3V	NL6448BC26-09C **	162-6065
10.4"	640 x 480	380cd/m²	—	3.3V	NL6448BC33-53 ***	162-6070
10.4"	640 x 480	450cd/m²	—	3.3V	NL6448BC33-63D **	162-6071
10.4"	640 x 480	450cd/m²	—	3.3V	NL6448BC33-64	162-6072
10.4"	640 x 480	450cd/m²	—	3.3V	NL6448BC33-63C **	162-6074

XGA

Screen Size	Resolution	Luminance	Power Consumption	Voltage Supply	Mftrs List No.	Order Code
8.4"	1024 x 768	400cd/m²	9.8W	3.3V	NL10276BC16-01 ****	162-6063
10.4"	1024 x 768	300cd/m²	6.2W	3.3V	NL10276BC20-04	162-6068
12.1"	1024 x 768	400cd/m²	7W	3.3V	NL10276BC24-13	162-6076
12.1"	1024 x 768	400cd/m²	7W	3.3V	NL10276BC24-13C **	162-6077
15"	1024 x 768	500cd/m²	15.7W	3.3V	NL10276BC30-18	162-6082

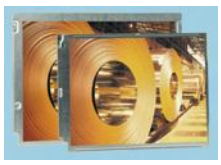
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Screen Size	Mftrs. List No.	Order Code	Price Each 1+	3+	+	+
QVGA						
5.5"	NL3224BC35-20	162-6055●	163.83	159.28	– –	– –
5.5"	NL3224BC35-22	162-6056●	208.26	202.48	– –	– –
SVGA						
8.4"	NL8060BC21-02	162-6066●	221.60	215.83	– –	– –
8.4"	NL8060BC21-03	162-6067●	294.16	286.52	– –	– –
10.4"	NL8060BC26-27	162-6075●	282.50	275.16	– –	– –
12.1"	NL8060BC31-27	162-6078●	246.21	239.82	– –	– –
12.1"	NL8060BC31-41C	162-6079●	303.23	295.35	– –	– –
12.1"	NL8060BC31-41D	162-6080●	228.07	222.15	– –	– –
VGA						
6.5"	NL6448BC20-20	162-6058●	244.36	237.58	– –	– –
8.4"	NL6448BC26-09	162-6064●	206.04	200.69	– –	– –
8.4"	NL6448BC26-09C	162-6065●	241.03	234.77	– –	– –
10.4"	NL6448BC33-53	162-6070●	279.91	272.64	– –	– –
10.4"	NL6448BC33-63D	162-6071●	217.71	212.05	– –	– –
10.4"	NL6448BC33-64	162-6072●	203.45	198.17	– –	– –
10.4"	NL6448BC33-63C	162-6074●	248.81	242.34	– –	– –
XGA						
8.4"	NL10276BC16-01	162-6063●	366.73	357.20	– –	– –
10.4"	NL10276BC20-04	162-6068●	349.88	340.79	– –	– –
12.1"	NL10276BC24-13	162-6076●	316.19	307.98	– –	– –
12.1"	NL10276BC24-13C	162-6077●	392.65	382.45	– –	– –
15"	NL10276BC30-18	162-6082●	290.27	282.73	– –	– –
Inverters						
	55PW131	162-6083●	27.54	25.42	– –	– –
	65PW061	162-6084●	21.05	19.43	– –	– –
	84PW021	162-6086●	29.16	26.92	– –	– –
	84PW031	162-6088●	24.30	22.43	– –	– –
	104PW161	162-6089●	23.00	21.24	– –	– –
	104PW201	162-6090●	22.68	20.93	– –	– –
	121PW181	162-6091●	30.77	28.41	– –	– –
	150PW231	162-6092●	50.22	46.35	– –	– –
Backlights						
	55LHS11	162-6093●	21.71	20.03	– –	– –
	65LHS10	162-6094●	19.44	17.94	– –	– –
	84LHS03	162-6095●	37.26	34.39	– –	– –
	84LHS06	162-6096●	40.49	37.38	– –	– –
	84LHS01	162-6098●	14.58	13.45	– –	– –
	104LHS35	162-6099●	19.44	17.94	– –	– –
	104LHS38	162-6100●	21.05	19.44	– –	– –
	104LHS39	162-6101●	18.31	16.89	– –	– –
	104LHS46	162-6102●	19.44	17.94	– –	– –
	121LHS18	162-6104●	22.68	20.93	– –	– –
	121LHS22	162-6105●	25.92	23.92	– –	– –
	150LHS29	162-6106●	39.17	36.16	– –	– –

LCD TFT Displays

SHARP

New



Overall Size H x W x D (mm)	Display Size (diagonal)	Resolution	Display Format	Backlight Type	Mftrs. List No.	Order Code
76.9 x 63.9 x 3.5	3.5"	320 x 240	QVGA	LED	LQ035Q3DW02	168-5285
104.6 x 144 x 12.3	5.7"	640 x 480	VGA	LED	LQ057V3DG02	168-5286
149.5 x 199.5 x	8.4"	640 x 480	VGA	LED	LQ084V3DG02	168-5287
x x	10.4"	640 x 480	VGA	LED	LQ104V1DG62	168-5288
134 x 212 x 12.5	8.5"	800 x 480	WVGA	LED	LQ085Y3DG06	168-5289
152.5 x 251.1 x 5	10.6"	1280 x 768	XGA	LED	LQ106K1LA05	168-5290
184 x 278 x 11.3	12.1"	1280 x 800	XGA	LED	LQ121K1LG11	168-5291
179.4 x 246.5 x 13.7	10.4"	800 x 600	SVGA	LED	LQ104S1DG61	168-5292
179.4 x 246.5 x 13.7	10.4"	800 x 600	SVGA	LED	LQ104S1LG61	168-5293
209 x 276 x 11	12.1"	800 x 600	SVGA	LED	LQ121S1DG61	168-5294
209 x 276 x 11	12.1"	800 x 600	SVGA	LED	LQ121S1LG61	168-5295
Touchscreen Version						
76.9 x 63.9 x 4.5	3.5"	320 x 240	QVGA	LED	LQ035Q1DH01	168-5283

528926

Resolution	Mftrs. List No.	Order Code	Price Each 1+	3+
320 x 240	LQ035Q3DW02	168-5285●	33.47	29.53
640 x 480	LQ057V3DG02	168-5286●	103.07	90.94
640 x 480	LQ084V3DG02	168-5287●	196.77	173.62
640 x 480	LQ104V1DG62	168-5288●	224.88	198.42
800 x 480	LQ085Y3DG06	168-5289●	139.21	122.84
1280 x 768	LQ106K1LA05	168-5290●	228.90	201.97
1280 x 800	LQ121K1LG11	168-5291●	198.12	174.81
800 x 600	LQ104S1DG61	168-5292●	168.66	148.82
800 x 600	LQ104S1LG61	168-5293●	168.66	148.82
800 x 600	LQ121S1DG61	168-5294●	168.66	148.82
800 x 600	LQ121S1LG61	168-5295●	168.66	148.82
Touchscreen Version				
320 x 240	LQ035Q1DH01	168-5283●	38.82	34.25

For **LCD Drivers**, **Controllers** and **Invertors** turn to page 912

LCD - TFT Colour Module

SHARP

260k Display Colours



These devices are colour active matrix transmissive LCD modules incorporating amorphous silicon TFT (Thin Film Transistor). They are composed of a colour TFT-LCD panel, driver IC, control circuits and power supply circuitry and backlight unit. Graphics and text can be displayed by feeding the input data signal, 4 timing signals, TFT DC power and AC power for the backlight.

- High luminance
- High contrast ratio
- Wide temperature range
- Wide viewing angle
- Front polarize filter
- Long life backlight
- Easily replaceable (slide type) back-light

Size Overall H x W x D (mm)	Display Size Diagonal (cm)	Display Format	Display Type	Backlight Qty x Type	Mftrs. List No.
104.6 x 144 x 13	14.4	Q-VGA and VGA	Transmissive	1 x CCFT	LQ057Q3DC12
117 x 161.3 x 12	16.32	VGA	Transmissive	2 x CCFT	LQ064V3DG01
117 x 161.3 x 12	16.32	VGA	Transmissive	2 x CCFT	LQ064V3DG02
149.5 x 199.5 x 11.6	14.4	S-VGA	Transmissive	2 x CCFT	LQ084S3DG01
179.4 x 246.5 x 15.5	26	VGA	Transmissive	1 x CCFT	LQ104V1DG51
179.4 x 246.5 x 15.5	26	VGA	Transmissive	2 x CCFT	LQ104V1DW02
179.4 x 246.5 x 15.5	26	SVGA	Transmissive	2 x CCFT	LQ104S1DG21
86.2 x 65 x 3.2	8.9	Q-VGA	Transmissive & reflection	LED	LQ035Q7DH03

419157

Format (Bits) Row x Col.	Mftrs. List No.	Order Code	Price Each 1+	3+	5+	10+
240 x 320	LQ057Q3DC12	109-8277●	131.49	122.10	117.02	113.10
480 x 640	LQ064V3DG01	109-8278●	145.99	135.56	129.93	125.58
480 x 640	LQ064V3DG02	109-8279●	172.83	160.61	153.81	148.68
600 x 800	LQ084S3DG01	109-8280●	316.29	293.73	271.03	265.50
480 x 640	LQ104V1DG51	109-8281●	217.49	201.97	193.56	187.10
480 x 640	LQ104V1DW02	109-8282●	214.45	199.14	190.84	184.47
600 x 800	LQ104S1DG21	109-8283●	262.50	243.76	235.36	227.49
320 x 240	LQ035Q7DH03	109-8286●	57.50	53.40	51.18	49.47

Low Power Consumption Display

SHARP



4.3" 5.7" 10.7" 10.4"

RL Re-reeling available

Farnell

Graphic LCD Modules - Colour - continued

Low Power Consumption Display - continued

Dimensions (mm) L	W	D	Interface Type.	Anti-glare Coating?	Mftrs List No.
90.6	79.9	9.9	Digital RGB	✓	LQ043T1DG02
105.5	67.2	3.95	Digital RGB	✓	LQ043T1DG01
144	104.6	12.3	Digital RGB		LQ038Q3DC01
184	139.8	12.7	Digital RGB	✓	LQ057V3DG01
199.5	149.5	11.6	Digital RGB	✓	LQ075V3DG01
199.5	149.5	11.6	Digital RGB	✓	LQ084V3DG01
246.5	179.4	13.7	Digital RGB	✓	LQ104V1DG61

- High quality TFT-LCD Screens
- High contrast
- 24 bit 16 Million colour RGB
- Composes of driver IC, input FPC and backlight
- Anti-glare screen coating
- Digitally controllable horizontal & verticle flipping

Screen Size (cm)	Resolution	Luminance (cd/m²)	Backlight Type.	Integrated Touchscreen?	Pixel Pitch (mm)	Mftrs List No.	Order Code
9.6	320 x 3 x 240	240	14 x LED		0.240 x 0.240	LQ038Q3DC01	130-5465
10.9	480 x 3 x 272	500	9 x LED	✓	0.192 x 0.192	LQ043T1DG01	130-5462
10.9	480 x 3 x 272	600	9 x LED		0.192 x 0.192	LQ043T1DG02	130-5464
14.4	640 x 3 x 480	430	CCFL		0.180 x 0.180	LQ057V3DG01	130-5466
19	640 x 3 x 480	400	CCFL		0.237 x 0.237	LQ075V3DG01	130-5467
21.4	640 x 3 x 480	400	CCFL		0.267 x 0.267	LQ084V3DG01	130-5468
26	640 x 3 x 480	450	CCFL		0.330 x 0.330	LQ104V1DG61	130-5470

451226

Size cm.(inch)	Mftrs. List No.	Order Code	Price Each 1+	3+	5+
9.6(4")	LQ038Q3DC01	130-5465●	121.97	110.89	100.89
10.9(4.3")	LQ043T1DG01	130-5462●	75.30	68.44	62.28
10.9(4.3")	LQ043T1DG02	130-5464●	69.65	63.33	57.62
14.4(5.7")	LQ057V3DG01	130-5466●	162.63	147.84	134.51
19(7.5")	LQ075V3DG01	130-5467●	132.68	120.61	109.74
21.4(8.4")	LQ084V3DG01	130-5468●	214.54	195.04	177.46
26(10")	LQ104V1DG61	130-5470●	252.96	229.97	209.24

TFT Colour Graphic Displays

HITACHI

Transmissive



- 262k colours
- Excellent optical performance
- Compact dimensions
- Low power consumption
- Touch screen options available
- Starter kits and inverters available separately

QVGA

Screen Size	Resolution	Module Size (mm) W	H	D	Display Area (mm) W	H	Backlight Type	Inverter Type	Order Code
2.7"	320 x 240	50.54	2.6	68.62	41.04	54.72	LED	N/A	162-6185
3.5"	320 x 240	64	3.12	86	53.64	71.52	LED	N/A	162-6187
5.7"	320 x 240	64	8.05	86	53.64	71.52	LED	N/A	108-2060
5.7"	320 x 240	131	10.9	102	115.2	86.4	LED	N/A	162-6191

QVGA - Touchscreen

Screen Size	Resolution	Module Size (mm) W	H	D	Display Area (mm) W	H	Backlight Type	Inverter Type	Order Code
2.7"	320 x 240	50.54	3.63	68.62	41.04	54.72	LED	N/A	162-6186
3.5"	320 x 240	64	4	86	53.64	71.52	LED	N/A	162-6189
5.7"	320 x 240	64	8.05	86	53.64	71.52	LED x 6	N/A	108-2059
5.7"	320 x 240	167	10.9	109	115.2	86.4	CCFL	INVC 657	108-2067
5.7"	320 x 240	131	12.4	102	115.2	86.4	LED	N/A	162-6192

VGA

Screen Size	Resolution	Module Size (mm) W	H	D	Display Area (mm) W	H	Backlight Type	Inverter Type	Order Code
5.7"		131	11.6	102.2	115.2	86.4	LED		162-6194

VGA - Touchscreen

Screen Size	Resolution	Module Size (mm) W	H	D	Display Area (mm) W	H	Backlight Type	Inverter Type	Order Code
5.7"		131	13.1	102.2	115.2	8.64	LED		162-6195

WVGA

Screen Size	Resolution	Module Size (mm) W	H	D	Display Area (mm) W	H	Backlight Type	Inverter Type	Order Code
7"	800 x 480	165	10.5	106	152.4	91.44	CCFL	INVC 657	108-2070
8"	800 x 480	189	10.5	120	174	104.4	CCFL	INVC 657	162-6196
9"	800 x 480	236	12.5	135	195	117	CCFL	INVC789	162-6198
12"	800 x 480	283	12.4	173.8	261.6	117	CCFL	INVC784	162-6200

WVGA - Touchscreen

Screen Size	Resolution	Module Size (mm) W	H	D	Display Area (mm) W	H	Backlight Type	Inverter Type	Order Code
7"	800 x 480	165	12.3	106	152.4	91.44	CCFL	INVC 657	108-2071
8"	800 x 480	189	12.1	120	174	104.4	CCFL	INVC 657	162-6197
9"	800 x 480	236	12.5	135	195	117	CCFL	INVC 657	162-6199

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Mftrs. List No.	Size	Order Code	Price Each 1+	5+	10+
QVGA					
TX09D70VM1CDA	5.7"	108-2060●	107.06	97.34	89.22
TX07D09VM1CAB	2.7"	NEW 162-6186●	50.61	46.39	42.82
TX09D40VM3CBA	3.5"	NEW 162-6187●	55.88	51.22	47.28
TX14D12VM1CBC	5.7"	NEW 162-6191●	128.14	118.99	115.69
QVGA - Touchscreen					
TX07D09VM1CBB	2.7"	NEW 162-6185●	45.29	41.51	38.32
TX09D40VM3CAA	3.5"	NEW 162-6189●	63.04	57.78	53.34
TX14D12VM1CPC	5.7"	NEW 162-6192●	140.27	130.25	126.63
TX09D70VM1CCA	5.7"	108-2059●	116.74	106.13	97.29
TX14D11VM1CAA	5.7"	108-2067●	118.89	108.10	99.08
VGA					
TX14D14VM1BAB	5.7"	NEW 162-6194●	152.39	141.51	137.58
VGA - Touchscreen					
TX14D14VM1BPB	5.7"	NEW 162-6195●	163.66	151.97	147.75
WVGA					
TX18D16VM1CAA	7"	108-2070●	247.24	224.76	206.03
TX20D16VM2BAA	8"	NEW 162-6196●	154.13	143.12	139.15
TX23D12VM0CAA	9"	NEW 162-6198●	187.02	173.67	168.84
TX31D55VM2BAA	12"	NEW 162-6200●	199.16	184.93	179.79
WVGA - Touchscreen					
TX18D16VM1CBA	7"	108-2071●	277.82	252.57	231.51
TX20D16VM2BBA	8"	NEW 162-6197●	175.79	163.23	158.69
TX23D12VM0CAB	9"	NEW 162-6199●	213.00	197.79	192.29
Inverters					
INVC 657		108-2082●	13.43	12.21	11.19
INVC 695		108-2084●	20.52	18.67	17.11
INVC784		NEW 162-6202●	41.83	38.36	35.40
INVC789		NEW 162-6203●	36.50	33.46	30.88
Cable					
FFC0.50A40/0150L5.0-5.0100100SBBB		NEW 162-6204●	5.58	5.12	4.72

Active Matrix TFT Displays

TOSHIBA



Displays incorporating active matrix technology, enables the design engineer to fit high quality compact LCD displays into applications never previously envisaged.
High brightness and contrast ensure accurate readable pixel representation even in the smaller panels. Offering high quality colour rendition, and photo-realistic image quality.

- LCDs for automotive and AV applications
- High brightness
- Wide viewing angles
- Compact Design

Applications:
- P.O.S terminals
- Kiosks
- Factory automation monitors
- Long life, easy to service backlighting systems

Screen Size	Resolution	Luminance	Power Consumption	I/F Signal (V_s)	Mftrs List No.	Order Code
SVGA						
8.4"	800 x 600	350cd/m²	6.4W	CMOS (3.3V)	LTM08C351S	122-5915
8.4"	800 x 600	350cd/m²	6.4W	LVDS (3.3V)	LTM08C351L	122-5916
8.4"	800 x 600	400cd/m²	5.9W	LVDS (3.3V)	LTA084C270F	162-7163
10.4"	800 x 600	400cd/m²	6.3W	LVDS (3.3V)	LTA104D182F	162-7166
12.1"	800 x 600	380cd/m²	7.5W	LVDS (3.3V)	LTD121C34S	162-7169
SVGA - Anti-reflection Coating						
8.4"	800 x 600	350cd/m²	6.4W	LVDS (3.3V)	LTM08C351R	162-7162
VGA						
6.5"	640 x 480	400cd/m²	4.2W	CMOS (3.3V)	LTA065B0D0F	122-5914
10.4"	640 x 480	400cd/m²	6.3W	CMOS (3.3/5V)	LTD104C11R	162-7165
WVGA						
7"	800 x 480	350cd/m²	3.1W	CMOS (3.3V)	LTA070A320F	162-7160
XGA						
12.1"	1024 x 768	350cd/m²	7.7W	LVDS (3.3V)	LTD121GA0S	122-5920
SVGA - Touchscreen						
8.4"	800 x 600	320cd/m²	5.9W	LVDS (3.3V)	LTA084C272F	162-7164
10.4"	800 x 600	320cd/m²	6.3W	LVDS (3.3V)	LTA104D183F	162-7167
WVGA - Touchscreen						
7"	800 x 480	280cd/m²	3.1W	CMOS (3.3V)	LTA070A321F	162-7161

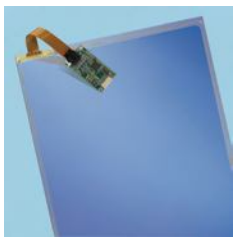
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Screen Size	Mftrs. List No.	Order Code	Price Each 1+	3+	5+	+
SVGA						
8.4"	LTM08C351S	122-5915●	304.97	281.51	261.41	– –
8.4"	LTM08C351L	122-5916●	185.42	– –	– –	– –
8.4"	LTA084C270F	NEW 162-7163●	200.36	188.57	183.18	– –
10.4"	LTA104D182F	NEW 162-7166●	255.00	240.00	233.14	– –
12.1"	LTD121C34S	NEW 162-7169●	318.74	299.99	291.41	– –
SVGA - Anti-reflection Coating						
8.4"	LTM08C351R	NEW 162-7162●	255.00	240.00	233.14	– –
VGA						
6.5"	LTA065B0D0F	122-5914●	218.15	201.36	186.99	– –
10.4"	LTD104C11R	NEW 162-7165●	255.00	240.00	233.14	– –
WVGA						
7"	LTA070A320F	NEW 162-7160●	163.95	154.30	149.89	– –
XGA						
12.1"	LTD121GA0S	122-5920●	359.43	331.78	308.08	– –
SVGA - Touchscreen						
8.4"	LTA084C272F	NEW 162-7164●	218.58	205.71	199.84	– –
10.4"	LTA104D183F	NEW 162-7167●	273.22	257.15	249.80	– –
WVGA - Touchscreen						
7"	LTA070A321F	NEW 162-7161●	180.16	169.57	164.72	– –

RL Re-reeling available

MicroTouch™ ClearTek™ II

3M



New

- Excellent light transmission of 91.5% (±1.5%) provides vibrant optical characteristics with optimal anti-glare properties
- Resilient top coat provides smooth, easy glide surface while offering durable scratch resistance
- The accuracy, durability, and fast touch response expected from a MicroTouch™ ClearTek™ II product
- Performance unaffected by everyday contaminants in the environment

527385

	Mftrs. List No.	Order Code	Price Each 1+	5+
Serial				
15"	17-8031-221	**165-0502●**	229.03	221.98
17"	17-8421-221	**165-0503●**	239.84	232.45
19"	17-8051-221	**165-0504●**	248.48	240.84
Cable	7310101	**165-0510●**	11.52	– –
USB				
15"	17-8031-218	**165-0505●**	229.03	221.98
17"	17-8421-218	**165-0507●**	239.84	232.45
19"	17-8051-218	**165-0508●**	248.48	240.84
Cable	7312256	**165-0511●**	11.52	– –

TFT Displays, LED Backlit

TOSHIBA



New

General features:
- Low power LED backlight
- Wide viewing angle

Touchscreen features:
- 4-wire resistive touch

Screen Size	Resolution	Luminance	Power Consumption	I/F Signal (V_s)	Mftrs List No.	Order Code
QVGA						
3.5"	320 x 240	350cd/m²	0.87W	CMOS (3.3V)	LTA035A350F	162-7157
5.7"	320 x 240	400cd/m²	1.36W	—	LTA057A340F	162-7158
QVGA - Touchscreen						
5.7"	320 x 240	320cd/m²	1.36W	CMOS (3.3V)	LTA057A344F	162-7159

523812

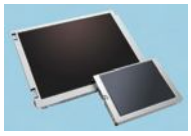
Screen Size	Mftrs. List No.	Order Code	Price Each 1+	3+	5+	+
QVGA						
3.5"	LTA035A350F	**162-7157●**	81.97	77.15	74.94	– –
5.7"	LTA057A340F	**162-7158●**	136.62	128.58	124.91	– –
QVGA - Touchscreen						
5.7"	LTA057A344F	**162-7159●**	154.83	145.72	141.56	– –

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Our trained engineers are here to help!
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Live technical chat at www.farnell.co.uk

TFT and CSTN LCD Displays

CFL and LED Backlit

KYOCERA



TFT Displays



5W Invertor



8W Invertor

New

- Optical Performance: Very High Quality, focus on strong viewing angle and contrast
- High Quality / Precision Manufacturer Kyocera recognised as performance/technology leader, lowest failure rates in market
- Long Term Supply Minimum 7 years
- Long Lifetime Displays (as standard - 50K + hrs LED) For standard range of industrial panels, KC have longest lifetimes available (50K hrs LED, 75K hrs CFL)

Size (")	Resolution	Brightness (cd/m²)	Backlight	Invertor	Standard	Mftrs. List No.	Order Code
TFT Displays							
5.7	320 x 240	240	LED	—	TFT-QVGA	TCG057QVLBB-G00	150-0403
5.7	320 x 240	300	LED	—	TFT-QVGA	TCG057QVLBA-G00	150-0402
5.7	320 x 240	350	LED	—	TFT-QVGA	TCG057QVLAC-G00	150-0407
5.7	320 x 240	1000	CFL		TFT-QVGA	TCG057QV1AC-G50	162-6427
5.7	640 x 480	200	CFL	150-0410	TFT-VGA	THG057VG1AC-H00	150-0408
5.7	640 x 480	200	LED	—	TFT-VGA	TCG057VGLBB-G00	162-6426
5.7	640 x 480	250	LED	—	TFT-VGA	TCG057VGLBA-G00	162-6424
5.7	640 x 480	280	CFL	150-0410	TFT-VGA	TCG057VG1AD-G00	150-0409
5.7	640 x 480	300	CFL		TFT-VGA	TCG075VG2AD-G00	162-6429
5.7	640 x 480	350	CFL		TFT-VGA	TCG057VG1AC-G00	162-6430
5.7	640 x 480	800	CFL		TFT-VGA	TCG057VG1AC-G50	162-6428
8.5	800 x 480	400	CFL		TFT-VGA	TCG085WV1AB-G00	150-0398
10.4	640 x 480	450	CFL	150-0411	TFT-VGA	TCG104VG2AA-G00	150-0397
CSTN Displays							
4.7	320 x 240	120	LED	—	CSTN	KCG047QVLAB-A21	162-6422
5.7	320 x 240	130	CFL		CSTN	KHS057QV1CJ-G01	150-0400
5.7	320 x 240	180	LED	—	CSTN	KCG057QVLDG-G000	162-6423
5.7	320 x 240	245	LED	—	CSTN	KCG057QVLDG-G77	150-0401

495268

Size (")	Mftrs. List No.	Order Code	Price Each 1+	3+	5+
TFT Displays					
5.7	TCG057QVLBB-G00	**150-0403●**	187.60	175.49	167.39
5.7	TCG057QVLBA-G00	**150-0402●**	171.28	160.23	152.84
5.7	TCG057QVLAC-G00	**150-0407●**	212.07	198.39	189.24
5.7	TCG057QV1AC-G50	NEW **162-6427●**	128.26	119.10	111.15
5.7	THG057VG1AC-H00	**150-0408●**	190.31	178.03	169.82
5.7	TCG057VGLBB-G00	NEW **162-6426●**	138.77	128.85	120.26
5.7	TCG057VGLBA-G00	NEW **162-6424●**	119.84	111.28	103.86
5.7	TCG057VG1AD-G00	**150-0409●**	217.52	203.48	194.08
5.7	TCG075VG2AD-G00	NEW **162-6429●**	147.18	136.66	127.55
5.7	TCG057VG1AC-G00	NEW **162-6430●**	136.67	126.91	118.45
5.7	TCG057VG1AC-G50	NEW **162-6428●**	145.08	134.72	125.74
8.5	TCG085WV1AB-G00	**150-0398●**	198.48	185.68	177.10
10.4	TCG104VG2AA-G00	**150-0397●**	304.52	284.87	271.72
CSTN Displays					
4.7	KCG047QVLAB-A21	NEW **162-6422●**	86.20	80.05	74.71
5.7	KHS057QV1CJ-G01	**150-0400●**	146.82	137.35	131.02
5.7	KCG057QVLDG-G000	NEW **162-6423●**	103.02	95.66	89.29
5.7	KCG057QVLDG-G77	**150-0401●**	168.56	157.69	150.41
Invertor, 6" to 13" compatability, single bulb drive					
—	CX-L0612A	**150-0410●**	43.51	40.70	38.83
Invertor, 10" to 12" compatability, dual bulb drive capable					
—	CX-A0308	**150-0411●**	67.97	63.58	60.65

TFT and LCD Display Evaluation Kits

KYOCERA



New

These include the chosen display, plus:
- Invertor(if CCFL backlit)
- Display Cables
- Power supply
- Documentation CD with chipset drivers and flash memory utility
- Single Board Computer (I Kits) or Driver Card (K Kits)

The I-Kits include a pre configured 3.5" Disk Size Single Board Computer and TFT, including a pre loaded evaluation version of embedded Windows XP.

The K-Kits integrate the TFT with a dedicated Driver Card, allowing the display to be driven via DVI or VGA.

515836

	Mftrs. List No.	Order Code	Price Each 1+	+	+
Evaluation Kit (including 1500407 display)					
5.7"	I-KIT	TFT-I-KIT-007	**150-0416●**	680.32	– –	– –
5.7"	K-KIT	TFT-K-KIT-007	**150-0413●**	420.33	– –	– –
Evaluation Kit (including 1500397 display)					
10.4"	I-KIT	TFT-I-KIT-001	**150-0415●**	795.90	– –	– –
10.4"	K-KIT	TFT-K-KIT-001	**150-0412●**	505.60	– –	– –

Over 480,000 products online QGO

RL Re-reeling available
Farnell

Graphic LCD Modules - Colour - continued

Easy Drive Graphic LCD Modules



- 960 x RGB x 234 dots TFT
- 32,000 RGB stripe colours
- Transmissive - Negative
- Duty Ratio: 1/234
- Uses popular Hit1270 IC controller/driver
- Backlight: Edge CCFL
- Built in DC-DC convertor
- Operating Temp: 0°C to +60°C

H=120, W=148, D=19.4

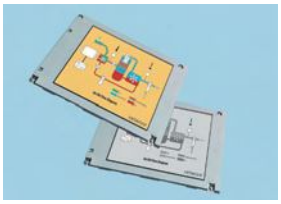
451672

Mftrs. List No.	Order Code	Price Each 1+	3+	5+	+
LMR67802	122-0216●	220.08	198.69	190.73	– –

STN Colour Graphic Displays

HITACHI

320 x 240 (5.7"), Transmissive, CFL Backlight. With or Without Touchscreen



- High contrast ratio of 40:1
- High Brightness of 150cd/m^2
- 3.3V only supply
- Matched Inverter available separately

Inverters

Display Type	Order Code	Matched Inverter	Order Code
SX14Q001	120-0170	INVC 196	108-2080
SX14Q004-ZZA	108-2065	INVC 667	108-2081

Screen Size	Backlight Type	Module Size W	H	D	Display Area W	H	Pixel Size W	H	Mftrs. List No.
320 x 240 - Mechanically Compatible with SP14Qxxx Range									
5.7"	CFL	167	109	10.0	115.18	86.38	0.34	0.70	SX14Q001
320 x 240 - Touchscreen									
5.7"	CCFL	167	109	8.9	115.18	86.38	0.1	0.34	SX14Q004
5.7"	CCFL	167	109	8.9	115.18	86.38	0.1	0.34	SX14Q004-ZZA

233711

Mftrs. List No.	Order Code	Price Each 1+	3+	5+
Display Resolution				
320 x 240				
SX14Q001	120-0170●	125.11	116.77	114.43
SX14Q004	108-2064●	94.89	86.27	79.07
SX14Q004-ZZA	108-2065●	146.94	133.60	122.45
Inverters				
INVC 196	108-2080●	18.78	17.06	15.66
INVC 667	108-2081●	23.95	21.76	19.96

LCD Drivers, Controllers and Invertors

LED Backlight Driver

DATAKRAFT



New

- Ideal for LED backlit display development and low quantity production
- Drives up to 6 LED's @ 25mA
- High output voltage: Up to 30V
- Optimized for single supply, typically 3.3V to 12V input
- High efficiency: Greater Than 75%
- Ultra low shutdown current: 10nA
- Brightness adjustment input

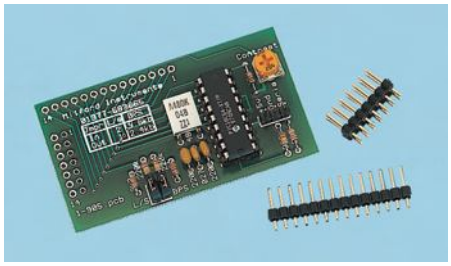
D=12, W=25, H=5

526480

Mftrs. List No.	Order Code	Price Each 1+	3+	5+	10+	25+
LEDV1	167-3054●	24.88	23.53	22.30	21.56	20.87

LCD Driver Board

Milford Instruments



The board is supplied with pin headers for 14 x 1 and 7 x 2 LCD connection configurations. Two jumpers on the board configure the LCD and signals at either 2400 Baud (jumper missing) or 9600 Baud (jumper installed), accepted via RS-232. The display contrast can be adjusted by the on-board potentiometer. An incoming signal, ground and a +5V at approximate 5mA makes it suitable for driving from the BASIC Stamp, Order code 111-235.

343625/210902

	Order Code	Price Each
LCD Driver Board	120-9612	18.93

LCD Invertors

TDK·Lambda

Compact invertors designed for use with LCD displays and any application that needs high voltage AC when using low voltage DC power supplies.

- High voltage invertors
- Range of input voltage options
- Compact design

Output (kV)	Power Rating (W)	Input (V)	Dimensions H,W,D (mm)	Mftrs List No.	Order Code
1.8	5	12	8, 20, 95.5	CXA-L0612A-VJL	114-4726
1.7	9	12	10, 24, 147	CXA-P1212A-WJL	114-4729
1.7	9	12	8.5, 21.5, 153	CXA-P1212B-WJL	114-4731

457749

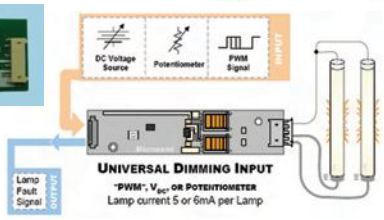
Order Code	Price Each 1+	3+	10+	+
114-4726●	21.78	20.93	20.27	– –
114-4729●	27.39	26.34	25.49	– –
114-4731●	36.25	31.58	25.44	– –

LCD Invertors

Microsemi



L=113, W=30, D=6.5



The LXMG1626-xx-45 are Dual 6W Output Direct Drive™ CCFL (Cold Cathode Fluorescent Lamp) Inverter Modules specifically designed to becompatible with variety of LCD panels that have both lamps on one side of the panel and use a single common lamp return wire

Power Rating	Voltage Input	Voltage Output (min)	(max)	Voltage Supply (min)	(max)	Mftrs List No.	Order Code
3W	5V	385V	485V	4.75V	5.25V	LXMG1626-05-45	130-7668
6W	12V	385V	485V	10.8V	13.2V	LXMG1626-12-45	167-4357

498160

Mftrs. List No.	Order Code	Price Each 1+	3+	10+
LXMG1626-05-45	130-7668●	27.39	26.50	25.68
LXMG1626-12-45	NEW 167-4357●	27.39	26.50	25.68

LCD Module Inverters

TOSHIBA HITACHI

CCFL Backlight



Input Voltage (typ)	Dimensions (mm) W	D	H	Input Current (typ)	Output Current (typ)	Compatibility	Mftrs. List No.
Hitachi LCDs							
5V	90	20	12.5	0.36A	5mA	320x240 dots Hitachi	INVC 196
5V	90	22	10	0.59A	5.5mA	SX14Q001	INVC 667
5V	84	16	6.2	0.46A - 0.69A	2.5mA - 5mA	TX14D12VM1CBA	INVC 695
12V	90	20	8.4	0.17A	5mA	SP14Q*** or 320x240 other	INVC 186
12V	130	18	6	0.21A	4.2mA	LMG5278, LMG5271	INVC817
12V	110	13	8	0.31A	5mA	LMG9200, LMG9300, LMG9400, LMG9600	INVC818
12V	90	22	14.1	0.2A	5mA	SX21V*** or 640x240 other	INVC819
12V	120	12	6	0.32A	4mA	TX14D	INVC 657
Toshiba LCDs							
12V	153	10	21.5	0.75A	6mA	Dual O/P, 10 to 15" lamps	PS-DA0253-01(S)
12V	95.5	8	20	0.4A	6mA	LTA070 Series	CXA-L0612A-VSL

424537

Mftrs. List No.	Order Code	Price Each 1+	5+	10+
INVC 196	108-2080●	18.78	17.06	15.66
INVC 667	108-2081●	23.95	21.76	19.96
INVC 695	108-2084●	20.52	18.67	17.11
INVC 186	108-2079●	21.31	19.36	17.76
INVC816	153-7059●	28.55	25.98	23.80

RL Re-reeling available

Mftrs. List No.	Order Code	Price Each 1+	5+	10+
INVC817	153-7060●	33.12	30.11	27.60
INVC818	153-7061●	32.14	29.20	26.79
INVC819	153-7062●	31.38	29.05	27.06
INVC 657	108-2082●	13.43	12.21	11.19
		1+	3+	5+
PS-DA0253-01(S)	122-5921●	37.37	34.24	31.61
CXA-L0612A-VSL	NEW 162-7171●	48.83	44.39	42.10

LCD Display Driver Board

DATACRAFT



Evaluation Board

The Display Driver Board is aimed at design engineers, to enable them to evaluate LCD's (small to medium monochrome and colour) using a low cost serial interface.

- Epson display controller with 80K byte of embedded SRAM
- Drives active matrix TFT/TFD and passive single and dual scan displays. Up to 640 x 480 resolution.
- 1/2/4/8 bit per pixel (bpp) colour depth support

640 x 480 at 2 bpp
640 x 240 at 4 bpp
320 x 240 at 8 bpp

- Up to 16 shades of grey on monochrome panels
- Hardware portrait mode enabling direct hardware 90-degree rotation of display image.
- 3.3V and 5V panel support
- RS232 (optional RS485, I2C, and SPI) interface
- LCD VEE voltage generation on board, with contrast adjustment
- Up to 128K byte of E^2prom on board, for picture storage (32K standard)
- Character set built in to micro-controller FLASH memory
- Character size 8 x 8 and 8 x 16 available
- Direct write and character write modes
- Block transfer of graphics data from E^2 memory to display memory
- On board FLASH based in circuit programmable micro-controller for easy updates and customization (Interface directly to MPLAB ICD via CN2)

338100

Description	Mftrs. List No.	Order Code	Price Each 1+	5+	10+
Evaluation Board	MCLVBWV1	113-7378●	151.72	137.92	133.11

Touch Panels

5-Wire Resistive Touch Screen

HIGGSTEC



A durable range of analogue touch screens used over flat screen monitors in place of a mouse. The simple 5 wire resistive interface, facilitates simple interfacing using your own custom hardware, or using the optional windows compatable USB interface and supplied software.

- Simple 5 wire interface
- Input mode: Stylus or finger
- Knock tested to 350,000 times
- Operating temp: -10°C to +70°C

Size (")	Frame Size (mm)	Viewable Size (mm)	Active Size (mm)	Total Thickness (mm)	Tail Length (mm)	Order Code
6.4	150 x 115.5	133.6 x 101.4	130.6 x 98.4	1.5	85	1657627
7.0	170.1 x 106.3	158 x 94.6	154.4 x 92.1	1.5	205	1657629
8.4	196.09 x 149.86	174.8 x 132.2	171.4 x 128.8	2.2	155	1657631
10.4	248.92 x 186.69	219.9 x 167.83	215.9 x 163.83	2.2	205	1657632
12.1	271.27 x 205.74	252.87 x 191.4	248.87 x 187.4	2.2	205	1657633
15.0	332.9 x 248.9	311.1 x 235.1	307.1 x 231.1	3.2	205	1657634
15.1	356.01 x 264.39	320.01 x 242	310.01 x 232	3.2	305	1657635
17.0	356 x 286.5	343 x 275.5	337 x 269.5	2.2	205	1657636
17.1	365.4 x 290.18	343 x 275.4	340 x 272.4	3.2	305	1657637
19.0	401 x 323.4	387 x 311.7	378.5 x 303	2.2	205	1657638
19.2	401 x 323.4	387 x 311.7	381 x 305.7	3.2	205	1657639

496714

Size	Mftrs. List No.	Order Code	Price Each 1+	5+
6.4"	T064S-5RA003N-0A11R0-080FH	165-7627●	16.56	15.74
7"	T070S-5RBA05N-0A11R0-200FH	165-7629●	16.95	16.10
8.4"	T084S-5RA002N-0A18R0-150FH	165-7631●	21.60	20.52
10.4"	T104S-5RA003N-0A18R0-200FH	165-7632●	32.40	30.78
12.1"	T121S-5RA006N-0A18R0-200FH	165-7633●	45.81	43.52
15"	T150S-5RA001N-0A28R0-200FH	165-7634●	52.58	47.33
15.1"	T151S-5RA011N-0A28R0-300FH	165-7635●	52.58	47.33
17"	T170S-5RB004N-0A18R0-200FH	165-7636●	55.54	49.99
17.1"	T171S-5RA001N-0A28R0-300FH	165-7637●	55.54	49.99
19"	T190S-5RB001N-0A28R0-300FH	165-7638●	64.80	58.98
19.2"	T192S-5RB005N-0A28R0-200FH	165-7639●	64.80	58.98
Controller				
	COM-R5W-HT-580-R	145-4009●	20.70	18.63

Organic LED (OLED) Displays

OLED Evaluation Kits

PDK Series

DENSITRON DISPLAYS



New

- Easy to use yet powerful and versatile development and demonstration tool for driving passive matrix OLED displays from the USB port of a PC
- The kit consists of an OLED display with transition Board, USB controller card, mini USB cable and a CD with software application and drivers
- USB controller card is common for all the available kits

527690

Display Size	Mftrs. List No.	Order Code	Price Each 1+
128 x 65	PDK-N-12864WE-1A	167-6986●	276.92
26 x 64	PDK-N-2864BY-2A	167-6987●	276.92
28 x 32	PDK-N-2832BE-2A	167-6988●	276.92
33.4 x 21.7	PDK-N-32645C-2A	167-6989●	276.92
160 x 128	PDK-N-160128FC-1A	167-6990●	276.92
128 x 64	PDK-N-12864YO-3A	167-6991●	276.92
128 x 32	PDK-N-12832YW-1A	167-6992●	276.92
128 x 32	PDK-N-12832BE-1A	167-6993●	276.92
128 x 33	PDK-N-12833YW-2A	167-6995●	276.92
128 x 33	PDK-N-12833BE-2A	167-6996●	276.92
128 x 64	PDK-N-12864YO-1A	167-6997●	276.92
128 x 64	PDK-N-12864YO-5A	167-6998●	276.92
128 x 34	PDK-N-12864YO-7A	167-6999●	276.92
256 x 64	PDK-N-25664YW-3A	167-7000●	276.92
256 x 64	PDK-N-25664BE-4A	167-7001●	276.92
256 x 64	PDK-N-25664YW-4A	167-7002●	276.92
256 x 64	PDK-N-25664BE-3A	167-7003●	276.92

OLED Transition Boards

PDT Series

DENSITRON DISPLAYS



New

- Simple interface board for OLED displays
- For use with separate controllers

527691

Display Size	Mftrs. List No.	Order Code	Price Each 1+
28 x 64	PDT-N-2864BY-2A	167-7004●	83.33
32 x 645	PDT-N-32645C-2A	167-7005●	83.33
128 x 128	PDT-N-128128FC-5B	167-7006●	83.33
128 x 64	PDT-N-12864YO-3A	167-7008●	83.33
128 x 64	PDT-N-160128FC-2A	167-7009●	83.33
160 x 128	PDT-N-12832YW-1A	167-7010●	83.33
128 x 32	PDT-N-12832BE-1A	167-7011●	83.33
128 x 33	PDT-N-12833YW-2A	167-7012●	83.33
128 x 33	PDT-N-12833BE-2A	167-7013●	83.33
128 x 64	PDT-N-12864YO-1A	167-7014●	83.33
128 x 64	PDT-N-12864YO-5A	167-7015●	83.33
128 x 64	PDT-N-12864YO-7A	167-7016●	83.33
256 x 64	PDT-N-25664YW-3A	167-7017●	83.33
256 x 64	PDT-N-25664BE-4A	167-7018●	83.33
256 x 64	PDT-N-25664YW-4A	167-7021●	83.33
256 x 64	PDT-N-25664BE-3A	167-7022●	83.33

Active Matrix OLED Transition Boards

ADT Series

DENSITRON DISPLAYS



New

- Simple interface board for Active Matrix OLED displays
- For use with separate controllers

527693

Mftrs. List No.	Order Code	Price Each 1+
ADT-N-2"	167-7030●	83.33
ADT-N-2.4"	167-7031●	83.33
ADT-T-2.4"	167-7033●	83.33
ADT-N-2.8"	167-7034●	83.33
ADT-T-2.8"	167-7035●	83.33

RL Re-reeling available

Farnell

Organic LED (OLED) Displays - continued

Active Matrix OLED Evaluation Kits

ADK Series

DENSITRON DISPLAYS



New

- Easy to use yet powerful and versatile development and demonstration tool for driving active matrix OLED displays from the USB port of a PC
- The kit consists of an OLED display with transition Board, USB controller card, mini USB cable and a CD with software application and drivers
- USB controller card is common for all the available kits

527692

Mftrs. List No.	Order Code	Price Each 1+
ADK-N-2"	**167-7025●**	276.92
ADK-N-2.4"	**167-7026●**	276.92
ADK-T-2.4"	**167-7027●**	276.92
ADK-N-2.8"	**167-7028●**	276.92
ADK-T-2.8"	**167-7029●**	276.92

Active Matrix OLED Displays

DENSITRON DISPLAYS



New

- 10000 to 1 contrast ratio
- 180 degree superior viewing angle
- Super thin and low power
- Ultra fast response rates
- Full colour pixels

Operating Temperature -20°C to +60°C

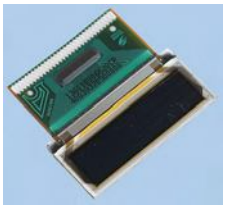
Display Size	Power Consumption	Dimensions H	D	W	Mftrs. List No.	Order Code
31.68 x 39.6	240	68.8	1.5	38	C02000ILC-C	158-9471
36.72 x 48.96	300	58.6	1.65	42	C0240QGLA-T	158-9472
36.72 x 48.96	300	58.6	2.75	42	C0240QGLH-T	158-9473
43.2 x 57.6	400	67.75	1.75	49.1	C0283QGLD-T	158-9474
43.2 x 57.6	400	67.75	2.9	49.1	C0283QGLH-T	158-9475
95 x 53.8	800	98.05	1.95	103.5	P0430WQLC-T	158-9476
95 x 53.8	800	98.05	3.05	103.5	P0430WQLB-T	158-9478
74.88 x 42.43	700	85.45	1.6	82.8	P0340WQLC-T	167-7023
74.88 x 42.43	700	85.45	2.8	82.8	P0340WQLB-T	167-7024

509604

Display Size	Mftrs. List No.	Order Code	Price Each 1+	5+	10+
31.68 x 39.6	C02000ILC-C	**158-9471●**	26.29	24.26	23.20
36.72 x 48.96	C0240QGLA-T	**158-9472●**	36.80	33.98	32.48
36.72 x 48.96	C0240QGLH-T	**158-9473●**	42.94	39.64	37.89
43.2 x 57.6	C0283QGLD-T	**158-9474●**	47.33	43.69	41.76
43.2 x 57.6	C0283QGLH-T	**158-9475●**	53.45	49.34	47.17
95 x 53.8	P0430WQLC-T	**158-9476●**	145.60	135.19	– –
95 x 53.8	P0430WQLB-T	**158-9478●**	161.77	150.22	– –
74.88 x 42.43	P0340WQLC-T	**167-7023●**	87.95	80.62	78.02
74.88 x 42.43	P0340WQLB-T	**167-7024●**	95.89	87.90	85.06

RIT OLED Displays

pacer advancing technology



- Small molecular organic light emitting diode
- monochrome and colour options
- Easy interfacing
- High contrast ratio
- Wide viewing angle (170°)
- Excellent response time (10µs)
- Strong environmental resistance
- Wide operating temperature (with no degradation of response time)

New generation OLED displays offer several advantages over LCD, superb response time, low power consumption (approx 400mw avg), and wide operating temperature.

Size	Contrast Ratio	Luminance (typ) (cd/m²)	Active Area (mm) H	W	Colour	Pixels	Power Supply (V) V_{DD}	V_{CC}	Order Code
1"	—	90	12.14	21.74	Yellow	128 x 64	2.7	12	162-6307
1.1"	—	—	15.65	23.49	Yellow	96 x 64	—	—	162-6306
1.3"	500:1	-	20.14	26.86	White	128 x 96	3.3	15	122-6871
1.46"	2000:1	100	26.279	26.284	Full Colour ***	128 x 3 x 128	—	—	162-6313
1.6"	—	—	18.21	36.45	Yellow	128 x 64	—	—	162-6312
1.8"	2000:1	85	28.012	35.015	Full Colour ***	160 x 3 x 128	1.8	17	162-6315
2.4"	500:1	80	27.49	55.01	Blue/Yellow	128 x 64	3.3	1.8V to 6V	122-6870
2.7"	—	—	30.69	61.41	Yellow	128 x 64	—	—	162-6311
3.2"	—	120	19.756	79.084	White	256 x 64	—	—	162-6308
—	500:1	60	6.86	27.5	Blue	128 x 32	2.7	10	162-6316

* 65K
** 252K
*** 65K and 252K

489266

Pixels	Mftrs. List No.	Order Code	Price Each 1+	5+	10+	25+
128 x 64	PMO 13505	NEW **162-6307●**	17.02	13.92	12.36	– –
96 x 64	PMO 19601	NEW **162-6306●**	17.02	13.92	12.36	– –
128 x 96	PMO14201	**122-6871●**	25.93	20.47	17.66	16.26
128 x 3 x 128	PFO 19001	NEW **162-6313●**	25.30	20.70	18.36	– –
128 x 64	PMO 19401	NEW **162-6312●**	17.02	13.92	12.36	– –
160 x 3 x 128	PFO 16807	NEW **162-6315●**	34.50	28.22	25.04	– –
128 x 64	PMO09704	**122-6870●**	75.61	59.73	51.49	47.40
128 x 64	PMO 19301	NEW **162-6311●**	34.50	28.22	25.04	– –
256 x 64	PMO 16301	NEW **162-6308●**	41.40	33.88	30.05	– –
128 x 32	PMO 13601	NEW **162-6316●**	17.02	13.92	12.36	– –

OLED Displays

DENSITRON DISPLAYS



1498856



1498842
1498843
1498846
1498847









1498838 | 1498841 1498857 | 1498858 1583044 | Evaluation Kit | EVK Connection Board

- Vibrant colors
- High contrast
- Wide viewing angle
- Low power consumption
- Wide operating temperature range
- A thin and lightweight form factor

492686

Size Displays	Pixel Colours	Mftrs. List No.	Order Code	Price Each 1+	5+
64x64	Blue	DD-6448BE-2A	**149-8838●**	7.73	6.87
96x64	Red, Green, Blue	DD-9664FC-2A	**149-8841●**	10.70	9.51
128x32	Yellow	DD-12832YW-1A	NEW **162-6431●**	20.99	18.66
128x32	Blue	DD-12832BE-1A	NEW **162-6432●**	20.99	18.66
128x64	White	DD-12864WE-1A	**149-8853●**	6.90	6.13
128x64	Yellow	DD-12864YO-3A	**149-8860●**	16.65	14.79
128x64	Yellow	DD-12864YO-1A	**149-8862●**	37.57	33.40
128x64	Yellow	DD-12864YO-5A	**149-8863●**	37.57	33.40
128x64	Blue, Yellow	DD-2864BY-1A	**149-8842●**	7.84	6.98
128x64	Blue, Yellow	DD-2864BY-2A	**149-8843●**	13.10	11.65
128x128	Red, Green, Blue	DD-128128FC-5B	NEW **158-3044●**	15.45	13.74
132x32	Blue	DD-2832BE-1A	**149-8844●**	9.51	8.46
132x32	Blue	DD-2832BE-2A	**149-8845●**	12.41	11.04
132x64	Blue, Yellow, Orange, Green	DD-32645C-1A	**149-8846●**	11.65	10.35
132x64	Blue, Yellow, Orange, Green	DD-32645C-2A	**149-8847●**	14.24	12.66
160x128	Red, Green, Blue	DD-160128FC-1A	**149-8857●**	14.98	13.31
160x128	Red, Green, Blue	DD-160128FC-2A	**149-8858●**	19.74	17.54
Evaluation Kits					
128x33	Blue	PDT-N-12833BE-1A	**150-0745●**	276.92	– –
128x33	Yellow	PDT-N-12833YW-1A	**150-0746●**	282.46	– –
128x64	White	PDT-N-12864WE-1A	**150-0751●**	282.46	– –
128x128	Red, Green, Blue	PDK-N-128128FC-5B	NEW **158-3045●**	282.46	– –
132x32	Blue	PDT-N-2832BE-2A	**150-0743●**	282.46	– –
160x128	Red, Green, Blue	PDT-N-160128FC-1A	**150-0749●**	282.46	– –
160x128	Red, Green, Blue	PDK-N-160128FC-2A	**150-0750●**	282.46	– –
256x64	Yellow	PDT-N-25664YW-1A	**150-0747●**	282.46	– –
256x64	Blue	PDT-N-25664BE-1A	**150-0748●**	282.46	– –
EVK Connection Boards					
		EVK-CONNECT-001	**150-0753●**	14.71	13.91
		EVK-CONNECT-002	**150-0754●**	14.71	13.91
		EVK-CONNECT-004	**150-0755●**	14.71	13.91
		EVK-CONNECT-005	**150-0756●**	14.42	13.64
		EVK-CONNECT-008	**150-0757●**	14.71	13.91
		EVK-CONNECT-010	**150-0758●**	14.71	13.91
		EVK-CONNECT-012	**150-0759●**	14.71	13.91
		EVK-CONNECT-013	**150-0760●**	14.71	13.91
		EVK-CONNECT-014	NEW **162-6377●**	14.71	13.91
		EVK-CONNECT-015	**150-0761●**	14.71	13.91
		EVK-CONNECT-016	**150-0762●**	14.71	13.91
		EVK-CONNECT-017	**150-0763●**	14.71	13.91
		EVK-CONNECT-018	**150-0765●**	14.71	13.91
		EVK-CONNECT-019	**150-0766●**	14.71	13.91
		EVK-CONNECT-020	NEW **162-6378●**	14.71	13.91
		EVK-CONNECT-021	NEW **162-6379●**	14.71	13.91
		EVK-CONNECT-022	NEW **162-6380●**	14.71	13.91
		EVK-CONNECT-023	NEW **162-6381●**	14.71	13.91

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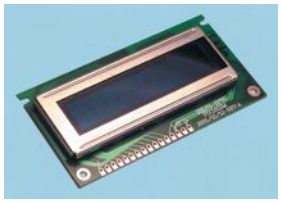
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RL Re-reeling available

PLED Alphanumeric and Graphic Displays

PLED Alphanumeric Displays

DELTA OPTO
DELTA OPTOELECTRONICS, INC.



Polymer LED (PLED) display utilising the new display technology.
These displays offer high contrast green characters against a black background, the displays may be viewed from almost 180° unlike conventional LCDs and feature very low power consumption. The pixels illuminate without the need for backlighting, this makes them suitable for portable equipment whereby power must be conserved.
The Alphanumeric version is a direct replacement for a standard 16 character x 2 line LCD, this module has the same driving requirements as the HD44780 but with all the adavantages of PLED technology.

- High Contrast
- Wide Viewing Angle
- Low Power
- Compatibility with LCD drivers

Module size H	W	D	Display Area	Characters x Lines	Pixel Format	Pixel Size	Character size	V_{DD} max	I_{cc} max @ 5Vdc
44	84	9.4	56.1 x 36	16 x 2	5 x 8	0.5 x 0.6	5.5 x 2.9	5.5	0.6

240924

Mftrs. List No.	Order Code	Price Each 1+	5+	10+	25+
PDC1602M03S	167-1079●	30.62	24.78	21.22	18.16

Vacuum Fluorescent Displays

Alphanumeric Character Displays

Clock Serial Interface - 1937 Compatible

Noritake itron



These 1-row x 16 character starburst VF display modules are available in 9 and 12.5mm character heights and consist of an 8-bit synchronous serial HCMOS buffered interface. DC/DC converter, compatible 1937 VFD controller, with refresh memory and a 64 character font generator. Single 5Vdc power supply with connection on the 6-way 2.5mm data connector. The mating half and crimps are available in this catalogue.

Character / Height	Module Size H	W	D	Display Area H x W	Power Supply	Interface	Order Code
16 x 1	37.8	225.5	28	10.0 x 138.4	5V@250mA	ClkSer	121-6698
16 x 1	45	217	13.1	14.25 x 174	5V@600mA	ClkSer	121-6695

525473

Mftrs. List No.	Order Code	Price Each 1+	3+	10+	25+
VAF169-2SSB	121-6698●	37.16	32.32	28.60	26.54
VAF1613-2SSB	121-6695●	39.29	34.16	30.23	28.07

Standard ASCII 5 x 7 Dot Matrix Modules

Parallel / Async Serial Interface plus Bold Character Format

Noritake itron



The modules include a micro-controller with refresh RAM, character generator and interface logic. The high-speed 8-bit parallel interface is 5V CMOS compatible suitable for connection to a host CPU bus. The asynchronous serial interface accepts baud rates up to 19200 with or without parity. Font tables can be either hardware or software selected.

- High Speed Parallel / Serial Interface
- Operating Temperature: -30°C to +70°C
- ASCII, Katakana and International character fonts
- User definable fonts

Power and Serial data connection is through a 3-way connector, mating half supplied and parallel data connections use a standard 16 way IDC connector.

Format / Height	Module Size H	W	D	Display Area H x W	Power Supply	Interface	Order Code
20 x 1 / 8.8	34	164	26.5	8.85 x 112.6	5V@300mA	Serial or Parallel	121-6670
20 x 2 / 4.7	40	124	24.5	15 x 78.65	5V@320mA	Serial or Parallel	121-6665
20 x 4 / 5	64	150	25.5	26 x 90.4	5V@400mA	Serial or Parallel	121-6667
40 x 2 / 5.1	43	240	26.5	16 x 188.55	5V@800mA	Serial or Parallel	121-6672

525474

Mftrs. List No.	Order Code	Price Each 1+	3+	10+	25+
CU209-TW202A	121-6670●	96.66	84.06	74.36	69.05
CU20025-TW200A	121-6665●	94.67	82.33	72.83	67.63
CU20045SCPB-T31A	121-6667●	150.61	130.99	115.87	107.58
CU40026-TW200A	121-6672●	131.01	113.91	100.78	93.58
RS232 Adapter					
RS232-INT	121-6693●	7.97	7.90	7.82	5.70

£ € **40,000 PRICES REDUCED**

LCD Compatible 5 x 7 Dot Character Modules

Noritake itron



Parallel Interface with 5mm and 9mm character heights.
These 5x7 dot matrix VF displays are designed to be interchangeable with most LCD modules without the need for a re-design. This allows the user to upgrade their equipment to give a high quality, bright visible display with a wide operating temperature.

- Selectable 4/8bit M68/i80 Interface
- ASCII + extended character fonts
- Single 5Vdc supply
- 4-level brightness control
- U series Operating Temp -20°C to +70°C
- Software power-down function
- W series Operating Temp -40°C to +85°C

Format	Character Height	Module Size H	W	D	Display Area H x W	Power Supply	Interface	Order Code
2 x 16	5	36	80	12	11.5x51.36	5.25V@158mA	4/8 BitParallel LCD & Serial	121-6659
2 x 16	9	44	122	20	19x82.7	5.25V@368mA	4/8 BitParallel LCD & Serial	121-6662
2 x 20	9	43	146	19	18.8x102.6	5.25V@420mA	4/8 BitParallel LCD & Serial	121-6666
2 x 20	5	37	116	15	11.5x70.8	5.25V@137mA	4/8 BitParallel LCD & Serial	121-6663

206483

Mftrs. List No.	Order Code	Price Each 1+	3+	10+	25+
CU16025ECPB-W6J	121-6659●	37.10	32.27	28.55	26.50
CU16029ECPB-W1J	121-6662●	49.23	42.82	37.87	35.17
CU20029ECPB-W1J	121-6666●	55.53	48.30	42.73	39.67
CU20025ECPB-W1J	121-6663●	37.74	32.82	29.03	26.96

Double Density 5 x 7 LCD Emulation Modules

Graphics+ Parallel, SPI, Async Interfaces + 6 Character Font Sizes

Noritake itron



New

20 x 4

The high brightness of the VFD allows double the rows of text in the existing PCB size of popular 5 x 7 Dot Character LCD formats. A new 7 x 7 dot matrix font maintains readability up to 2 metres for a 3mm character through increased character width. The modules are backward compatible with 2 x 16, 2 x 20, 4 x 20 and 2 x 40 models and expand to 4 x 16, 4 x 20 and 8 x 20 and 4 x 40 with graphics upload, menu draw commands and 6 font sizes.

- New 7 x 7 font enables easy viewing
- Place Cursor on any pixel
- SPI / Asynchronous serial port as Slave or 'Pass Through' Host
- Graphic and Box / Fill / Invert Commands
- Mono-Spaced / Proportional fonts
- Mini, 5 x 5, 5 x 7, 7 x 7, 7 x 15, 10 x 14 and 20 x 28 Fonts

Format / Height	Module Size H	W	D	Display Area H x W	Power Supply	Interface	Order Code
16 x 4 / 3	36	80	10	13.9 x 54.9	5V@250mA	4/8 BitParallel LCD & Serial	168-4354
16 x 4 / 5	44	122	13	20.7 x 83.1	5V@350mA	4/8 BitParallel LCD & Serial	168-4359
20 x 4 / 3	37	116	11	14.3 x 71.9	5V@250mA	4/8 BitParallel LCD & Serial	168-4355
20 x 4 / 5	43	146	11	18.8 x 103	5V@470mA	4/8 BitParallel LCD & Serial	168-4357
20 x 8 / 3	60	98	10	25.5 x 63.9	5V@350mA	4/8 BitParallel LCD & Serial	168-4356
40 x 4 / 3	34	182	10	11 x 137	5V@400mA	4/8 BitParallel LCD & Serial	168-4364

525565

Mftrs. List No.	Order Code	Price Each 1+	3+	10+	25+
GU128X32D-7806A	168-4354●	51.25	46.58	41.33	39.42
GU128X32F-7806A	168-4359●	71.44	64.94	57.61	54.96
GU160X32D-7806A	168-4355●	58.34	53.04	47.05	44.88
GU160X32F-7806A	168-4357●	71.18	64.71	57.40	54.75
GU160X64D-7806A	168-4356●	84.95	77.22	68.50	65.34
GU280X32D-7806A	168-4364●	75.44	68.59	60.84	58.03

Dot Graphic Modules - 0.3mm pixel

Noritake itron



498065

Mftrs. List No.	Size	Order Code	Price Each 1+	3+	10+
GU144X40D-K610A8	144 x 40	149-5425●	54.30	50.12	47.91
GU180X32D-K610A8	180 x 32	149-5426●	52.38	48.35	46.22
GU256X32D-K610A8	256 x 32	149-5427●	55.21	50.97	48.72
GU256X64C-3900	256 x 64	149-5428●	91.07	84.07	80.36
GU256X64D-7000	256 x 64	149-5429●	71.81	66.28	63.36
GU256X128C-3900	256 x 128	149-5430●	129.52	119.56	114.28

RL Re-reeling available

Farnell

Vacuum Fluorescent Displays - continued

Dot Graphic Modules - 0.5mm pixel

Asynchronous Serial Interface



These VF display modules use a patented transformerless power supply unit. The serial interface is fully duplex and accepts various baud rates up to 38400Bd. The modules have numerous customer options available including special fonts, application specific commands and key scanning.

- High brightness Dot Graphic Display.
- Single 5Vdc supply.
- SOI and RS232 serial interfaces.
- 3 ASCII fonts (4x4, 5x7 and 10x14).
- 8 user I/O pins.

498063

Mftrs. List No.	Size	Order Code	Price Each 1+	3+	10+
GU128X64D-K610A8	128 x 64	149-5424●	59.03	54.49	52.08

5 x 7 Dot Character LCD Emulation Modules

4/8 Bit Parallel Interface with 5mm and 9mm character heights



These 5x7 dot matrix VF displays are designed to be interchangeable with popular LCD modules without the need for a re-design. This allows customers to upgrade their equipment to give a high quality, bright visible display with a wide operating temperature.

- Selectable 4/8bit M68/i80 Interface
- ASCII + extended character fonts
- Wide Operating Temperature -40°C to +85°C
- Single 5V dc supply
- 4-level brightness control
- Software power-down function

Format / Height	Module Size H	W	D	Display Area H x W	Power Supply	Interface	Order Code
16 x 2 / 4.7	36	80	9.7	11.4 x 51.36	5V@150mA	4/8 BitParallel LCD & Serial	149-5416
16 x 2 / 9	44	122	20	19 x 82.7	5V@350mA	4/8 BitParallel LCD & Serial	121-6662
20 x 2 / 5	37	116	15	11.5 x 70.8	5V@130mA	4/8 BitParallel LCD & Serial	121-6663
20 x 2 / 9	43	146	19	18.8 x 102.6	5V@400mA	4/8 BitParallel LCD & Serial	121-6666
20 x 4 / 4.7	60	98	15.6	20.9 x 70.8	5V@275mA	4/8 BitParallel LCD & Serial	149-5417
40 x 2 / 4.7	33.5	182	21	11.5 x 138.8	5V@300mA	4/8 BitParallel LCD & Serial	149-5418

525558

Mftrs. List No.	Order Code	Price Each 1+	3+	10+	25+
CU16025-UW6J	149-5416●	31.18	28.78	27.51	26.72
CU16029ECPB-W1J	121-6662●	49.23	42.82	37.87	35.17
CU20025ECPB-W1J	121-6663●	37.74	32.82	29.03	26.96
CU20029ECPB-W1J	121-6666●	55.53	48.30	42.73	39.67
CU20045-UW5J	149-5417●	52.14	48.12	46.00	44.69
CU40025-UW6J	149-5418●	57.75	53.31	50.96	49.50

Dot Graphic LCD Compatible Modules

Parallel/Serial Interface with 2 Character Font Sizes



This range of modules can display large and small ASCII characters using the commands found in existing character modules plus extended graphics control. The modules operate from a 5Vdc power supply, and are capable of operating from -40 to +85C in humid applications.Graphics formats are 112x16, 140x16 and 140x32.

498058

Mftrs. List No.	Size	Order Code	Price Each 1+	3+	10+
GU112X16G-7806A	112 x 16	149-5419●	34.29	31.65	30.25
GU140X16G-7806A	140 x 16	149-5420●	34.90	32.21	30.79
GU140X32F-7806A	140 x 32	149-5421●	53.96	49.81	47.61
GU280X16G-7806A	280 x 16	149-5423●	59.50	54.93	52.50

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5x7 LCD Emulation Modules with Graphics

Parallel, SPI, Async Interfaces + 3 Character Font Sizes



These VFD modules are designed to be backwardly compatible with existing LCD modules and provide easy upgrade for font and graphic functions with minimal change of software. The modules operate from a single 5Vdc power supply, and are capable of 40°C to +85°C. Control additional SPI or asynchronous serial interfaced peripherals or LEDs and switches using the pass through serial port.

- Place Cursor on any pixel
- Graphic and Box / Fill / Invert Commands
- Mono-Spaced / Proportional fonts
- Mini 5 x 5, 5 x 7 and 10 x 14 Fonts

Format / Height	Module Size H	W	D	Display Area H x W	Power Supply	Interface	Order Code
18 x 2 / 5mm	36	80	12.3	11.5 x 52.5	5V@250mA	4/8 BitParallel LCD & Serial	149-5419
20 x 2 / 5mm	37	116	10.3	11.45 x 69.9	5V@250mA	4/8 BitParallel LCD & Serial	149-5420
20 x 2 / 9mm	43	146	11	18.8 x 103	5V@470mA	4/8 BitParallel LCD & Serial	168-4361
23 x 4 / 5mm	60	98	10.0	21.61 x 69.9	5V@350mA	4/8 BitParallel LCD & Serial	149-5421
46 x 2 / 5mm	33.5	182	10.2	11.0 x 137.0	5V@400mA	4/8 BitParallel LCD & Serial	149-5423

525560

Mftrs. List No.	Order Code	Price Each 1+	3+	10+	25+
GU112X16G-7806A	149-5419●	34.29	31.65	30.25	29.39
GU140X16G-7806A	149-5420●	34.90	32.21	30.79	29.92
GU140X16J-7806A	NEW 168-4361●	68.05	61.86	54.89	52.35
GU140X32F-7806A	149-5421●	53.96	49.81	47.61	46.25
GU280X16G-7806A	149-5423●	59.50	54.93	52.50	51.00

Intelligent Compact, Dot Graphic Modules

Bi-Directional Asynchronous and SPI Interface with Keyscan



These compact high brightness VF display modules have asynchronous baud rates of 4800 to 38400 and high speed Clock Serial Interface. The single 5Vdc PSU uses a patent non-inductive component circuit. 3 ASCII fonts and user-defined fonts/macros are incorporated. The user I/O pins provide scanning of up to 16 key matrix, or 8-bit Bi-directional port allowing these modules to provide complete front panel functionality.

Format	Module Size H	W	D	Display Area H x W	Power Supply	Interface	Order Code
8 x 21	46.5	96	12.7	28.65x56.55	5.25V@357mA	As/SPI	121-6677
5 x 24	33.5	95	8.2	15.85x57.45	5.25V@400mA	As/SPI	121-6684
4 x 42	31.5	159	8.3	14.25x114.15	5.25V@525mA	As/SPI	121-6687
256 x 64 Dot Graphic	50.0	159	11.5	28.65x115.05	5.25V@893mA	Serial/Parallel	121-6689
256 x 128 Dot Graphic	90.0	170	26	57.5x115.1	5.25V@893mA	Serial/Parallel	121-6688

240257

Mftrs. List No.	Order Code	Price Each 1+	5+	10+	25+
GU126X64D-K610A4	121-6677●	66.50	57.82	53.21	50.01
GU144X40D-K610A4	121-6684●	66.50	57.82	53.21	50.01
GU254X32D-K610A4	121-6687●	60.29	52.44	48.24	45.34
GU256X64D-3900	121-6689●	132.16	114.92	101.67	94.40
GU256X128D-3900	121-6688●	194.44	169.10	149.58	138.89

Intelligent Compact, Dot Graphic Modules

Extensive Command Set + Integrated User ports for key scan / LED drive



These compact high brightness VF display modules have asynchronous baud rates of 4800 to 38400 and high speed SPI Clock Serial or Parallel interfaces. They include ASCII and extended fonts with an extensive range of commands for draw and graphics image upload. The user I/O pins provide scanning of up to 16 key matrix, or 8-bit Bi-directional port allowing these modules to provide front panel functionality.

Graphic Format	Module Size H	W	D	Display Area H x W	Power Supply	Interface	Order Code
128 x 18	30	126	10	13.7 x 83	5V@300mA	RS232 / SPI	121-6679
126 x 32	38	126	13	20.6 x 82	5V@500mA	RS232 / SPI	121-6676
128 x 64	47	96	12	28.7 x 56.6	5V@410mA	Async / SPI	149-5424
126 x 64	72	129	17	41.5 x 82	5V@750mA	RS232 / SPI	121-6678
144 x 40	34	95	11	15.9 x 57.5	5V@410mA	Async / SPI	149-5425
180 x 32	31	124	10	14 x 79.1	5V@350mA	Async / SPI	149-5426
256 x 32	32	159	11	14.3 x 114.6	5V@450mA	Async / SPI	149-5427
256 x 64	38	133	18	20.7 x 83.1	5V@430mA	RS232 / Par	149-5428
256 x 64	50	159	20	28.7 x 115.1	5V@850mA	RS232 / Par	149-5429
256 x 128	66	131	23	41.5 x 83.1	5V@850mA	RS232 / Par	149-5430
256 x 128	90.0	170	26	57.5 x 115.1	5V@850mA	RS232 / Par	121-6688

525568

RL Re-reeling available

Mftrs. List No.	Order Code	Price Each 1+	3+	10+	25+
GU128X18F-K612A4	121-6679●	29.99	– –	– –	– –
GU126X32F-K612A4	121-6676●	62.75	54.58	48.29	44.84
GU128X64D-K610A8	149-5424●	59.03	54.49	52.08	50.59
GU126X64F-K612A4	121-6678●	87.97	76.49	67.67	62.83
GU144X40D-K610A8	149-5425●	54.30	50.12	47.91	46.54
GU180X32D-K610A8	149-5426●	52.38	48.35	46.22	44.89
GU256X32D-K610A8	149-5427●	55.21	50.97	48.72	47.33
GU256X64C-3900	149-5428●	91.07	84.07	80.36	78.06
GU256X64D-7000	149-5429●	71.81	66.28	63.36	61.55
GU256X128C-3900	149-5430●	129.52	119.56	114.28	111.02
GU256X128D-3900	121-6688●	194.44	169.10	149.58	138.89

Message Sign / System Modules

Smooth Scrolling Characters plus EEPROM message storage



The modules include a dot graphic VFD, microcontroller with refresh RAM, character generation, interface logic and transformer-less DC/DC converter. Modules can be connected to a multi-drop address system with communication settings and address set using jumpers or switches on the rear of the module. The modules with IR interface can be controlled with the KBC56A keyboard.

Character / Height	Module Size H	W	D	Display Area H x W	Power Supply	Interface	Order Code
21 x 5mm	20	133	9	6 x 85	5V@250mA	IR / Async / SPI	168-4362
42 x 5mm	20	216	8	6.33 x 166.3	5V@250mA	IR / Async / SPI	168-4363
16 x 10mm	27	215	15	12.6 x 153.4	12V@250mA	RS-232	121-6691
21 x 22mm	46	370	12.1	25.35 x 307	12V@500mA	RS-232	121-6681

525570

Mftrs. List No.	Order Code	Price Each 1+	3+	10+	25+
GU128X8F-K660A7	NEW 168-4362●	62.55	56.87	50.44	48.11
GU256X8F-K660A7	NEW 168-4363●	73.30	66.64	59.11	56.39
GU96X8M-K612C5	121-6691●	43.22	37.59	33.24	30.87
GU128X8T-K612C5	121-6681●	117.60	102.28	90.47	84.01

VFD Message Display Systems



The black V0ABS enclosure comes with a blue acrylic filter, a large dot graphic VFD module with refresh RAM, character generation, interface logic and patented transformerless DC/DC converter. Displays are available for serial interface or local stand-alone editing. The displays require a suitable 12V dc Power Supply with a 3.5mm jack socket with positive centre.The RS232 serial interface accepts 9600 or 19200 baud rates with optional parity bit with the capability to be connected to a 32-way multi-drop address system. The communication settings and address can be set using the three buttons on the rear of the display. An RS232 port adaptor supplied with the display permits control and message programming using an internet web browser or stand-alone software. Messages can be stored in internal non volatile memory for replay when power is applied.

Character / Height	Enclosure H	W	D	Display Area H x W	Power Supply	Interface	Order Code
96 x 8	36.0	210	19.0	12.6 x 153.4	12V@250mA	RS-232	117-2812
128 x 8	55.0	400	22.0	25.35 x 307	12V@500mA	RS-232	117-2813

525571

Mftrs. List No.	Order Code	Price Each 1+	5+	10+	25+
EGU96X8M-K612C5	117-2812●	61.85	53.79	47.58	44.19
EGU128X8T-K612C5	117-2813●	124.98	112.58	99.59	92.47

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KBC56A Compact IR Keyboard

PC Keyboard in a Remote



- 56 keys PC emulation capability
- 10 metre range
- Ideal for parameter update, user messages and menus
- Add mouse, password and user functionality
- Applications include vending, security, amusements, message signs, instruments, control systems

The KBC56A IR keyboard has been designed to meet a wide range of applications for remote data editing where a conventional keyboard would be too large, inconvenient or too expensive to justify. The IR Keyboard has proved to be a most versatile and cost effective solution to implement at a System or CPU level. Each key is independently transmitted allowing flexibility in the receiver to implement functionality to suit the application. Create your own IR receiver or choose one of our modules to convert the RC5 IR codes into ASCII+ characters to easily interface to your system. The KBR38A-PS2 includes a 600mm PC interface cable.

H=193mm, W=53mm, D=23mm

525573

Description	Mftrs. List No.	Order Code	Price Each 1+	3+
IR Keyboard	KBC56A-2	168-4365●	5.44	4.90
IR Receiver SPI/Async	KBR38A-1	168-4366●	5.44	4.90
IR Receiver SPI/I2C	KBR38A-2	168-4367●	5.44	4.90
IR Receiver PS2	KBR38A-PS2	168-4368●	5.44	4.90
IR Receiver USB2	KBR38A-USB2	168-4369●	5.44	4.90

Electro-Luminescent Materials

Super Bright Electroluminescent Wire


Electroluminescent Wire


Power Pack


Splitter

EL wire is a truly flexible light source allowing you to create lighting designs which would be virtually impossible to create with any other light source. All electroluminescent materials consume tiny amounts of energy and have the advantage of low maintenance.

Voltage	120V	Bending Diameter (max)	12mm
Supply Frequency	2000Hz	Stretching Force	1Kg
Operating Temperature	-20°C to +55°C	Twisting Angle	30°/m
External Diameter	2.5mm		

1.5m lengths

Colour	Luminance (cd/m²)	Operating Life (h)	Mftrs. List No.	Order Code
Aqua	270	5700	100-2782	149-8059
Blue	133	5700	100-2583	149-8062
Lime	368	5700	100-5463	149-8063
Pink	55.5	5700	100-7465	149-8064
White	96.1	4500	100-9448	149-8065
Red	54.3	5700	100-7330	149-8066

Mftrs. List No.	Order Code	Price Each 1+	5+	10+
100-2782	149-8059●	8.10	7.54	7.09
100-2583	149-8062●	8.10	7.54	7.09
100-5463	149-8063●	8.10	7.54	7.09
100-7465	149-8064●	8.10	7.54	7.09
100-9448	149-8065●	8.10	7.54	7.09
100-7330	149-8066●	8.10	7.54	7.09

3m lengths

Colour	Luminance (cd/m²)	Operating Life (h)	Mftrs. List No.	Order Code
Aqua	270	5700	101-2782	149-8067
Blue	133	5700	101-2583	149-8068
Lime	368	5700	101-5463	149-8069
Pink	55.5	5700	101-7465	149-8072
White	96.1	4500	101-9448	149-8074
Red	54.3	5700	101-7330	149-8075

Mftrs. List No.	Order Code	Price Each 1+	5+	10+
149-8067●	149-8067●	16.22	15.08	14.19
149-8068●	149-8068●	16.22	15.08	14.19
149-8069●	149-8069●	16.22	15.08	14.19
149-8072●	149-8072●	16.22	15.08	14.19
149-8074●	149-8074●	16.22	15.08	14.19
149-8075●	149-8075●	16.22	15.08	14.19

Power Packs

	Mftrs. List No.	Order Code	Price Each 1+	5+	10+
KD5	206-1001	149-8076●	7.09	6.59	6.08
KD30B	212-1002	149-8077●	14.19	13.20	12.16

RL Re-reeling available

Electro-Luminescent Materials - continued

Super Bright Electroluminescent Wire - continued

1.5m lengths - continued

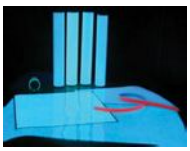
Splitters and Extension

497726

	Mftrs. List No.	Order Code	Price Each 1+	5+	10+
1:3 splitter	300-2003	149-8078●	2.02	1.78	1.51
1:4 splitter	300-2004	149-8079●	1.55	1.38	1.29
1:6 splitter	300-2006	149-8080●	1.84	1.64	1.53
1.5m extension	300-2015	149-8081●	2.15	1.90	1.79

Super Bright Electroluminescent Panels

surelight.com



Electroluminescent Panel



Power Pack



Splitter

EL panels are a new and cost-effective form of lighting. They are very thin, light-weight and flexible and can be easily shaped and cut creating a uniform light area. EL panels have great potential for safety lighting and back lighting applications where space is important.

60mm × 60mm

Colour	Luminance	Supply Frequency	Voltage Rating	Depth	Mftrs. List No.	Order Code
Aqua	50cd/m²	400Hz	100V	0.2mm	400-2004	149-8082
White	45cd/m²	400Hz	100V	0.2mm	400-2001	149-8084

Mftrs. List No.	Order Code	Price Each 1+	5+	10+
400-2004	149-8082●	5.72	5.08	4.76
400-2001	149-8084●	5.72	5.08	4.76

150mm × 120mm

Colour	Luminance	Supply Frequency	Voltage Rating	Depth	Mftrs. List No.	Order Code
Aqua	50cd/m²	400Hz	100V	0.2mm	400-2002	149-8085
White	45cd/m²	400Hz	100V	0.2mm	400-2003	149-8086

Mftrs. List No.	Order Code	Price Each 1+	5+	10+
149-8085●	149-8085●	18.37	16.33	15.31
149-8086●	149-8086●	18.37	16.33	15.31

Power Packs

	Mftrs. List No.	Order Code	Price Each 1+	5+	10+
KD5	206-1001	149-8076●	7.09	6.59	6.08
KD30B	212-1002	149-8077●	14.19	13.20	12.16

Splitters and Extension

497737

	Mftrs. List No.	Order Code	Price Each 1+	5+	10+
1:3 splitter	300-2003	149-8078●	2.02	1.78	1.51
1:4 splitter	300-2004	149-8079●	1.55	1.38	1.29
1:6 splitter	300-2006	149-8080●	1.84	1.64	1.53
1.5m extension	300-2015	149-8081●	2.15	1.90	1.79

Super Bright Electroluminescent Evaluation Kits

surelight.com



Evaluation Kits will provide you with a 'feel' for electroluminescent products and the opportunity to design products using EL materials on a smaller scale. These kits give scope to make any modifications needed before completion of the final designs.

Wire Kits

Please note, each supplied with multi output splitter and KD-5 power pack

Kit	Contents Blue	White	Red	Lime	Pink	Aqua	Mftrs. List No.	Order Code
3 piece	1	1	1				500-2003	149-8087
4 piece	1	1	1	1			500-2004	149-8088
6 piece	1	1	1	1	1	1	500-2006	149-8089

Mftrs. List No.	Order Code	Price Each 1+	5+	10+
500-2003	149-8087●	17.03	15.13	14.19
500-2004	149-8088●	20.49	18.22	17.08
500-2006	149-8089●	21.82	19.83	18.81

Panel Kit

Please note, supplied with connector, 0.2m lead wire and KD-5 power pack

	Mftrs. List No.	Order Code
60mm × 60mm panel	500-2007	149-8090

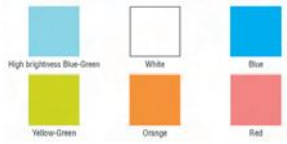
497743

Mftrs. List No.	Order Code	Price Each 1+	5+	10+
500-2007	149-8090●	11.59	10.31	9.66

Electro Luminescent Sheet kits — PACEL

50 x 60, 130 x 120, A5 (210 x 148.5), A4 (210 x 297), A3 (434 x 311)





N.B. The colours shown are before the ac voltage is applied therefore the colours will vary from those illustrated.

The Pacel EL Sheet Kit has a sheet of Electro Luminescent sheet together with copper contacts, conductive adhesive tape, insulating tape and instructions. When an ac voltage is applied, using an inverter, available seperately, the electro luminescent material emits light. The sheets are ultra-thin, very flexible, lightweight and vibration/impact resistant. They may be cut into any desired shape providing each shape has a terminal strip on one of the sides. The number of contact sets supplied with each size sheet are:

Sheet size:	50 x 60	130 x 120	A5	A4	A3
No.of Contact Sets:	1	4	6	10	20

Additional contact sets are also available.

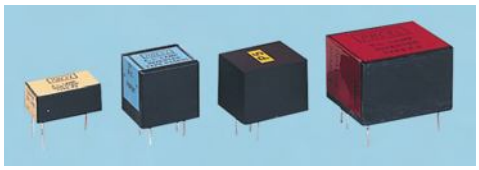
Brightness: Typically 70-100Cd/m2 when driven at 115V, 400-600Hz

206545

Colour	Order Code	Price Each 1+	5+	10+	25+	50+
50 x 60						
High Brightness						
Blue / Green	141-896●	8.70	8.50	7.54	6.23	5.96
White	141-902●	8.70	8.50	7.54	6.23	5.96
Blue	141-914●	8.70	8.50	7.54	6.23	5.96
Yellow / Green	141-926●	8.70	8.50	7.54	6.23	5.96
130 x 120						
High Brightness						
Blue / Green	141-951●	22.85	22.12	19.91	19.43	18.38
White	141-963●	22.85	22.12	19.91	19.43	18.38
Blue	141-975●	20.56	19.91	17.92	17.49	16.54
Red	142-001●	20.56	19.91	17.92	17.49	16.54
A5 (210 x 148.5)		1+	3+	6+	9+	15+
High Brightness						
Blue / Green	142-037●	32.01	31.37	28.50	23.08	22.51
White	142-049●	32.01	31.37	28.50	23.08	22.51
Yellow / Green	142-062●	32.01	31.37	28.50	23.08	22.51
A4 (210 x 297)						
High Brightness						
Blue / Green	142-098●	50.83	46.76	43.03	39.59	36.42
White	142-104●	50.83	46.76	43.03	39.59	36.42
Blue	142-116●	50.83	46.76	43.03	39.59	36.42
Red	142-141●	50.83	46.76	43.03	39.59	36.42
A3 (311 x 434)						
White	393-4640●	80.39	74.97	66.61	61.77	59.46

Contact Sets for EL Sheets		Price Per Pack 1+	10+	50+
Spare Con Sets(10)	142-153●	8.17	7.98	6.98

EL Inverters — PACEL



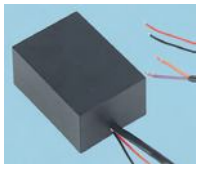
549-113, 1180996, 1180998
H=18.5, W=21.5, D=19.0



118-0993
H=17.5, W=25, D=19



118-0994
H=27,
W=70,
D=50



118-0995
H=27,
W=70,
D=50

A range of fully encapsulated dc to ac inverters for driving various sizes of electroluminescent (EL) backlit LCDs and EL sheets (available separately). The correct inverter may be chosen by calculating the area of EL to be lit. The P2 and P4 are open circuit and short circuit protected.

The P4 is available with 5V or 12V dc inputs and is a high current design giving higher brightness levels than the P5. The P5EHP is a high power version of the P5E.
The 086040 has a 12V dc input and will power sheets up to A4 size, the 086040 has a 12V dc input and can power sheets up to A3 size. Do not operate the larger inverters without a load connected.

RL Re-reeling available

DC Input Voltage V	AC Output Voltage (r.m.s.) V	Output @ Frequency KHz	Max. EL Area cm^2	Mftrs. List No.	Order Code
2-5	120	-1.2.0	100	P4SE05-R	118-0996
-12	120	-1.4.0	100	P4SE12-R	118-0998
2-6	-100	-0.7	100	P5E-R	118-0997
2-6	-120	1.82-	100	P5EHP-R	118-0993
-4-10	50-200	0.2-0.5	400	P6-R	121-0694
12 V max.	115 Vac max.	0.4-0.5	630	086040-R	118-0994
12 V max.	115 Vac max.	-0.45	1247	086030-R	118-0995

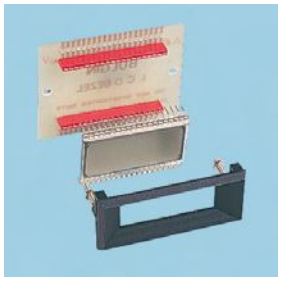
206327

Mftrs. List No.	Order Code	Price Each 1+	5+	10+	25+	50+
P4SE05-R	**118-0996●**	25.40	23.26	17.70	15.73	14.38
P4SE12-R	**118-0998●**	27.47	26.18	23.39	17.37	15.18
P5E-R	**118-0997●**	24.12	22.89	19.74	12.56	10.97
P5EHP-R	**118-0993●**	17.43	12.85	11.46	9.89	8.91
P6-R	**121-0694●**	37.86	35.17	30.31	22.47	18.49
086040-R	**118-0994●**	47.75	44.91	35.80	30.62	24.99
086030-R	**118-0995●**	50.46	47.46	37.85	32.38	26.41

Display Accessories

LCD Mounting Assembly and Bezels

BULGIN



Bezel assembly kit accepting liquid crystal displays, comprising a matt black panel bezel, complete with mounting clamps, also a PCB fitted with two single row socket strips for mounting the display. The PCB will accept 0.1" edge connectors, ribbon cable etc, for connection to other circuitry. Bezels are also available separately.

Bezels

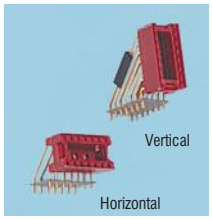
Bezel Overall	Panel Cutout	Aperture	6BA Stud Pitch	Order Code
69.5 x 28mm	67.51 x 23mm	44.5 x 29.8mm	62.5mm	121-0727
87.5 x 28mm	85.24 x 23mm	62.2 x 29.8mm	80.2mm	121-0728
111.5 x 28mm	104.25 x 23mm	86.2 x 29.8mm	104mm	121-0729

206488

Mftrs. List No.	Digits	Order Code	Price Each 1+	10+	25+
Bezels Only					
SA2612/4	3½, 4 and 4½ digit	**121-0727●**	5.44	4.74	3.97
SA2612/6	6 digit	**121-0728●**	7.46	6.52	5.38
SA2612/8	8 digit	**121-0729●**	6.88	6.04	5.00

PCB Mounting Display Sockets

ARIES Electronics (Europe)



A range of glass filled thermoplastic sockets intended for the mounting of displays with a 0.2", 0.3" or 0.6" pin pitch at a 90° angle from the PCB. The bifurcated contacts are Grade A spring tempered phosphor bronze with tin or gold plating.

Dimensions H (above PCB)	W	Order Code
14.0	7.6	1136580
19.1	10.2	1136576
10.2	19.1	1136577
10.2	26.7	1136581
17.8	14.0	1136578

Type	Plating	Typical Application
10 way, 0.2" pitch	Tin	Compact 0.3" LED displays
14 way, 0.3" pitch	Gold	0.3" and 0.43" LED displays
20 way, 0.3" pitch	Tin	10 segment LED bar graphs
10 way, 0.6" pitch	Gold	0.5" and 0.56" LED displays

206478

	Order Code	Price Each 1+	25+	100+
10 way 0.2" pitch	**113-6580●**	4.52	3.68	3.05
14 way 0.3" pitch	**113-6576●**	4.48	3.62	2.93
14 way 0.3" pitch	**113-6577●**	5.44	4.07	3.01
20 way 0.3" pitch	**113-6581●**	8.03	6.51	5.36
10 way 0.6" pitch	**113-6578●**	4.83	3.85	2.86

PCB Mounting Display Sockets

Additions

528860

	Mftrs. List No.	Order Code	Price Each 1+	25+	100+
Horizontal					
8 way 2.54mm pitch	08-823-90	**167-4731●**	3.03	2.66	2.06
20 way 2.54mm pitch	20-823-90	**167-4732●**	4.96	4.37	3.36
24 way 2.54mm pitch	24-6823-90	**167-4733●**	7.62	6.71	5.16
28 way 2.54mm pitch	28-6823-90	**167-4734●**	8.55	7.53	5.79
40 way 2.54mm pitch	40-6823-90	**167-4735●**	11.13	9.79	7.53
Vertical					
8 way 2.54mm pitch	08-810-90	**167-4736●**	3.68	3.24	2.49
8 way 2.54mm pitch	08-6810-90	**167-4740●**	3.64	3.20	2.47
8 way 2.54mm pitch	14-810-90R	**167-4743●**	3.15	2.77	2.13
8 way 2.54mm pitch	08-6810-90C	**167-4747●**	3.42	3.00	2.31
10 way 2.54mm pitch	10-2810-90	**167-4741●**	4.37	3.85	2.96
10 way 2.54mm pitch	10-810-90C	**167-4744●**	3.23	2.85	2.19
14 way 2.54mm pitch	14-810-90T	**167-4738●**	2.41	2.12	1.63
14 way 2.54mm pitch	14-810-90C	**167-4745●**	4.64	4.08	3.14
16 way 2.54mm pitch	16-810-90	**167-4737●**	5.68	5.00	3.85
16 way 2.54mm pitch	16-810-90T	**167-4739●**	3.27	2.88	2.21
16 way 2.54mm pitch	16-810-90C	**167-4746●**	5.14	4.52	3.48

Display Bezel and Filter Assemblies



A range of bezels and filters designed for fast and simple snap-in installation. The assemblies are suitable for the most popular sizes of display, with a common window height of 0.81" (20.6mm) and window width from 1 ⅜" (34.9mm) to 3" (76.2mm). The bezels are in black ABS plastic. The filters are anti-glare in red or neutral for LED and LCD displays.

Dimensions Overall	Cutout	Window	Order Code
34.1 x 48.4	29.4 x 44.5	20.6 x 34.9	175-705
34.1 x 64.3	29.4 x 60.4	20.6 x 50.8	175-707/708
34.1 x 89.7	29.4 x 85.7	20.6 x 76.2	175-709/710

221707

Window Width	Filter	Order Code	Price Each 1+	10+	25+
34.9mm (1.375")	Red	**175-705●**	4.31	3.86	3.36
50.8mm (2.0")	Red	**175-707●**	5.04	4.50	3.92
	Neutral	**175-708●**	5.04	4.50	3.92
76.2mm (3.0")	Red	**175-709●**	5.58	5.02	2.95
	Neutral	**175-710●**	5.58	5.02	4.35

Display Filters

Anti-Glare



Thickness 1.0mm (105 x 35), 1.5mm (250 x 105), 1.5mm (220 x 130)

High quality acrylic filters for display applications. One surface has a cast-in low glare finish. It is available in neutral (grey), red, light red and green.

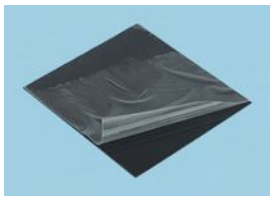
The 1mm thick material can be easily cut down by scoring with a sharp knife, then breaking. The 1.5mm thick material is ideally cut with a high speed tungsten carbide tipped bandsaw.

206498

105 x 35mm	Order Code	Price Each 1+	10+	25+	100+
Neutral	**177-145**	8.86	7.11	5.49	3.95
Light Red	**177-146**	8.36	6.72	5.18	3.73
220 x 130mm					
Red	**178-183**	17.67	11.00	8.06	– –
Light Red	**178-184**	19.41	13.32	10.00	– –
Green	**178-185**	14.09	9.86	7.00	– –
Neutral	**178-186**	14.09	9.86	7.00	– –

Infra-Red Filters

Infra-Red Filters



Infrared broad band acrylic filter material for use in conjunction with IR emitters in security applications etc. The filters transmit infrared light at wavelengths greater than 750nm and are virtually opaque to visible light. Transmittance is up to a maximum of approximately 90% from 750nm to 2000nm.

One surface has a cast-in low glare finish. The material gives excellent resistance to many common chemicals and solvents. It can be easily cut down by scoring with a sharp knife, then breaking.

H		Thickness	Order Code
100	305	1	177-143
305	305	1	177-144

RL Re-reeling available

Farnell

Infra-Red Filters - continued

Infra-Red Filters - continued

206520

Size	Order Code	Price Each 1+	5+	10+	15+	25+
100mm x 305mm	177-143●	19.58	16.37	13.23	9.03	7.51
305mm x 305mm	177-144●	40.34	34.36	29.57	26.30	23.28

Privacy Filters

Privacy Filters



New

Frameless:
- All frameless filters have a matte finish and contain the unique micro-louvre black out privacy technology from 3M
- A unique attachment system means the filter can remain inside the laptop - even when closed
- Easily removable to allow for screen sharing when privacy not required
- LCD screen protection

Fixed:
- All fixed filters contain the unique micro-louvre black out privacy technology from 3M
- All fixed filters offer anti-glare/radiation/static
- LCD/CRT desktop compatible

Frameless

Screen Size	Height	Width	Mftrs. List No.	Order Code
12.1"	18.6cm	24.8cm	PF12.1	168-2907
14.1"	21.4cm	28.6cm	PF14.1	168-2912
15"	22.9cm	30.5cm	PF15.0	168-2914
17"	26.2cm	34.3cm	PF17.0	168-2916
19"	30.2cm	37.7cm	PF19.0	168-2918
Widescreen:				
12.1"	16.4cm	26.1cm	PF12.1W	168-2909
13.3"	17.9cm	28.7cm	PF13.3W	168-2911
14.1"	19cm	30.5cm	PF14.1W	168-2913
15.4"	20.8cm	33.2cm	PF15.4W	168-2915
17"	23cm	36.8cm	PF17.0W	168-2917
22"	11.68cm	18.67cm	PF22.0W	168-2919

Screen Size	Mftrs. List No.	Order Code	Price Each 1+	5+	10+	+
12.1"	PF12.1	168-2907	53.18	45.84	42.89	– –
14.1"	PF14.1	168-2912	54.35	46.85	43.83	– –
15"	PF15.0	168-2914	60.56	52.21	48.84	– –
17"	PF17.0	168-2916	90.41	77.94	72.91	– –
19"	PF19.0	168-2918	101.39	87.41	81.77	– –
Widescreen						
12.1"	PF12.1W	168-2909	54.75	47.19	44.15	– –
13.3"	PF13.3W	168-2911	54.75	47.19	44.15	– –
14.1"	PF14.1W	168-2913	55.90	48.19	45.08	– –
15.4"	PF15.4W	168-2915	60.56	52.21	48.84	– –
17"	PF17.0W	168-2917	92.24	79.51	74.38	– –
22"	PF22.0W	168-2919	114.99	99.13	92.74	– –

Fixed

Screen Size	Height	Width	Mftrs. List No.	Order Code
17"	27.78cm	34.61cm	PF317	168-2920
19"	31.43cm	38.89cm	PF319	168-2923
Widescreen:				
17"	26.39cm	41.40cm	PF317.W	168-2922
19"	26.83cm	42.39cm	PF319W	168-2924

528324

Screen Size	Mftrs. List No.	Order Code	Price Each 1+	3+	10+	+
17"	PF317	168-2920	136.12	117.35	109.78	– –
19"	PF319	168-2923	158.93	137.01	128.17	– –
Widescreen						
17"	PF317.W	168-2922	149.58	128.95	120.63	– –
19"	PF319W	168-2924	177.23	152.78	142.93	– –

Avago Technologies Optocouplers

Half-Pitch Phototransistor Optocoupler



4-pin SO

New

Applications:
- I/O interface for programmable controllers, computers
- Sequence controllers
- System appliances, measuring instruments
- Signal transmission between circuits of different potentials and impedances

No. of Channels	Input Current	Power Dissipation	Isoation Voltage	Voltage, Vf Typ.	Max.	Response Time Rise	Fall	Operating Temperature
1	50mA	200mW	3000V	1.2V	1.4V	2μs	3μs	-55°C to +110°C

AC Input - ACPL-214

20% <CTR< 400%*	50% <CTR< 150%*	Surface Mount	Tape and Reel	IEC / EN / DIN EC 60747-5-2
-500E	-50AE	X	X	
-560E	-56AE	X	X	X

* If=[PlusMinus]5mA, V_{CE}=5V

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	1K+
ACPL-214-500E	160-2610●	0.370	0.270	0.220	0.197	0.185
ACPL-214-50AE	160-2611●	0.370	0.270	0.220	0.197	0.185
ACPL-214-560E	160-2612●	0.400	0.290	0.250	0.210	0.200
ACPL-214-56AE	160-2613●	0.400	0.290	0.250	0.210	0.200

DC Input - ACPL-217

50% <CTR< 600%*	80% <CTR< 160%*	130% <CTR< 260%*	200% <CTR< 400%*	300% <CTR< 600%*	Surface Mount	Tape and Reel	IEC / EN / DIN EC 60747-5-2
-500E	-50AE	-50BE	-50CE	-50DE	X	X	
-560E	-56AE	-56BE	-56CE	-56DE	X	X	X

* If=[PlusMinus]5mA, V_{CE}=5V

513026

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	1K+
ACPL-217-500E	160-2614●	0.310	0.210	0.180	0.161	0.151
ACPL-217-50AE	160-2616●	0.310	0.210	0.180	0.161	0.151
ACPL-217-50BE	160-2617●	0.310	0.210	0.180	0.161	0.151
ACPL-217-50CE	160-2619●	0.310	0.210	0.180	0.161	0.151
ACPL-217-50DE	160-2620●	0.310	0.210	0.180	0.161	0.151
ACPL-217-560E	160-2621●	0.340	0.250	0.200	0.178	0.168
ACPL-217-56AE	160-2622●	0.340	0.250	0.200	0.178	0.168
ACPL-217-56BE	160-2623●	0.340	0.250	0.200	0.178	0.168
ACPL-217-56CE	160-2624●	0.340	0.250	0.200	0.178	0.168
ACPL-217-56DE	160-2625●	0.340	0.250	0.200	0.178	0.168

Automotive Intelligent Power Module Optocoupler



New

SMD

Applications
- Automotive IPM isolation for battery management system and motor control
- Isolated IGBT/MOSFET gate drive
- AC and brushless dc motor drives
- Industrial inverters for power supplies and motor controls

AV Input Current (mA)	CTR @ 10mA (min)	Voltage Output (max) (V)	Package	Mftrs. List No.	Order Code
20	44%	30	5-SOIC	ACPL-M46T-000E	164-0547
20	44%	30	5-SOIC	ACPL-M46U-000E	164-0548
20	44%	30	6-SOIC Stretched	ACPL-P456-000E	164-0557
10	44%	25	6-SOIC Stretched	ACPL-P480-000E	164-0558
20	44%	30	6-SOIC Stretched	ACPL-W456-000E	164-0564

528169

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+
ACPL-M46T-000E	164-0547●	2.51	1.95	1.69	1.51
ACPL-M46U-000E	164-0548●	2.04	1.59	1.38	1.23
ACPL-P456-000E	164-0557●	2.01	1.56	1.35	1.21
ACPL-P480-000E	164-0558●	2.14	1.67	1.45	1.30
ACPL-W456-000E	164-0564●	2.01	1.56	1.35	1.21

Phototransistor Optocouplers

Single Channel, SMD Mini-flat Type



SMD Miniflat

The HCPL-181 contains a light emitting diode optically coupled to a phototransistor. It is packaged in a 4-pin mini-flat SMD package in a 2.0 mm profile. The small dimension of this product allows significant space saving. The package volume is 30% smaller than that of conventional DIP type. Input-output isolation voltage is 3750 Vrms. Response time, tr, is typically 4 μs and minimum CTR is 50% at input current of 5 mA.

CTR High, min. %	Case Style	Input Current, max. mA	Mftrs List No.
160	Mini Flat DIL SMD	50	HCPL-181-00AE
260	Mini Flat DIL SMD	50	HCPL-181-00BE
160	Mini Flat DIL SMD	50	HCPL-181-06AE
260	Mini Flat DIL SMD	50	HCPL-181-06BE
600	Mini Flat DIL SMD	50	HCPL-181-06DE
400	Mini Flat DIL SMD	50	HCPL-181-06CE
400	Mini Flat DIL SMD	50	HCPL-181-00CE
600	Mini Flat DIL SMD	50	HCPL-181-000E
600	Mini Flat DIL SMD	50	HCPL-181-060E
600	Mini Flat DIL SMD	50	HCPL-181-00DE

461102

Mftrs. List No.	Order Code	Price Each 1+	25+	100+
HCPL-181-000E	SMD 124-4525● RL	0.143	0.121	0.111
HCPL-181-00AE	SMD 124-4526● RL	0.143	0.121	0.111
HCPL-181-00BE	SMD 124-4527● RL	0.143	0.121	0.111
HCPL-181-00CE	SMD 124-4529● RL	0.143	0.121	0.111
HCPL-181-00DE	SMD 124-4531● RL	0.143	0.121	0.111
HCPL-181-060E	SMD 124-4532● RL	0.143	0.121	0.111
HCPL-181-06AE	SMD 124-4533● RL	0.143	0.121	0.111
HCPL-181-06BE	SMD 124-4534● RL	0.143	0.121	0.111
HCPL-181-06CE	SMD 124-4535● RL	0.143	0.121	0.111
HCPL-181-06DE	SMD 124-4536● RL	0.143	0.121	0.111

Darlington Output – Single and Dual, Low Current

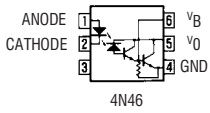
100 KBd Data-Rate



Split darlington output types (all except 4N46) provide low saturation.

The HCNW138 is for use in TTL applications. The HCNW139, HCPL4701 and HCPL4731 are for CMOS, LSTTL and other low power applications.

The HCNW138/9 are housed in wide body packages (0.4" row spacing), approved to **VDE 0884** and **BS415**. All types are **UL** recognised.



4N46

HCNW138/9
HCPL4701
6N138
6N139

Voltage V_{OL} 0.1V typ. Withstand test voltage HCNW 138/9

Channels	Current Transfer Ratio (min.) @ I_F	V_{CC} max.	Mftrs. List No.	Order Code
Single	500% @ 1.6mA	18V	HCNW139-300E	108-5024
Single	250% @ 10mA	7V	4N46-300E	108-5021
Single	300% @ 1.6mA	7V	6N138-300E	108-5022
Single	500% @ 0.5mA	18V	6N139-300E	108-5023
Single	600% @ 0.5mA	18V	HCPL-4731-300E	108-5029
Dual	300% @ 1.6mA	7V	HCPL-2730-300E	108-5026
Dual	500% @ 0.5mA	18V	HCPL-2731-300E	108-5027
Dual	600% @ 0.5mA	18V	HCPL-4701-300E	108-5028
Single	300% @ 1.6mA	7V	4N46-000E	999-4815
Single	300% @ 1.6mA	7V	6N138-000E	999-4823
Single	400% @ 0.5mA	18V	6N139-000E	999-4831
Single	300% @ 1.6mA	7V	HCPL-2730-000E	999-4840
Dual	400% @ 0.5mA	18V	HCPL-2731-000E	999-4858
Dual	600% @ 0.5mA	18V	HCPL-4701-000E	999-5137
Dual	600% @ 0.5mA	18V	HCPL-4731-000E	999-5145

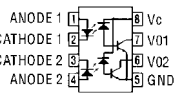
206206

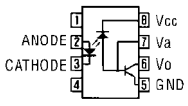
Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
HCNW139-300E	SMD 108-5024●	2.05	1.44	1.32	1.11	0.98
4N46-300E	SMD 108-5021●	1.64	1.15	1.06	0.89	0.79
6N138-300E	SMD 108-5022●	0.84	0.59	0.55	0.44	0.39
6N139-300E	SMD 108-5023●	1.04	0.73	0.68	0.55	0.49
HCPL-2730-300E	SMD 108-5026●	2.68	1.87	1.70	1.44	1.29
HCPL-2731-300E	SMD 108-5027●	2.81	1.98	1.80	1.52	1.36
HCPL-4731-300E	SMD 108-5029●	4.15	2.90	2.64	2.22	1.98
HCPL-4701-300E	SMD 108-5028●	1.83	1.31	1.16	0.99	0.89
4N46-000E	999-4815●	1.38	1.18	1.03	0.78	0.69
6N138-000E	999-4823●	0.87	0.81	0.72	0.55	0.42
6N139-000E	999-4831●	0.94	0.90	0.81	0.62	0.47
HCPL-2730-000E	999-4840●	2.04	1.98	1.77	1.54	1.19
HCPL-2731-000E	999-4858●	2.39	2.17	1.96	1.78	1.39
HCPL-4701-000E	999-5137●	1.58	1.42	1.27	0.94	0.79
HCPL-4731-000E	999-5145●	3.57	2.80	2.65	1.99	1.79

Transistor Output

Single and Dual, High Speed 1MBd Data-Rate



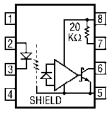




Single*

All types are **UL** recognised.

The HCNW135 is for use in TTL/CMOS, TTL/LSTTL or wide bandwidth analogue applications. The HCNW136 and SFH6136 are designed for high speed TTL/TTL applications.



HCNW4506/
HCPL4506

6N Series
HCPL Series
Standard width body, 0.3" row spacing

Dual
HCNW135/6, HCPL4506 and HCNW4502/3/6
Wide body, 0.4" row spacing

Note:
*HCNW4502/3, HCPL4502/3, and HCPL4504 are similar to 6N136, but have pin 7 unconnected, giving improved ESD protection.

Typical data rate (NRZ)
Output voltage V_O
Supply voltage V_{CC}

Common mode transient immunity:
HCPL-4503-000E/6HCPL-4503-000E/6
HCPL-4534-000Eand
Other types

15000V/μs
30000V/μs@ V_{CM} =1500V
10001000V/μs

Channels	Isolation Test Voltage ac rms	Curr. Trsfr. Ratio @ I_F = 16mA min.	Switching Time (μ) typ. t_{PHL}	t_{PLH}	Mftrs. List No.	Order Code
Single	2500	7%	0.2	1.3	6N135-000E	999-4750
Single	2500	7%	0.2	1.3	6N135-300E	108-4985
Single	2500	19%	0.2	0.6	6N136-000E	999-4769
Single	2500	19%	0.2	0.6	6N136-300E	108-4986
Single	2500	15%	0.2	0.6	HCNW136-000E	108-4988
Single	2500	15%	0.2	0.6	HCNW136-300E	108-4989
Single	2500	19%	0.2	0.6	HCPL-4502-000E	999-4777
Single	2500	19%	0.2	0.8	HCPL-4502-300E	108-4996
Single	2500	15%	0.2	0.6	HCPL-4503-000E	999-4785
Single	2500	15%	0.2	0.6	HCNW4503-000E	108-4991
Single	2500	25%	0.2	0.6	HCNW4503-300E	108-4992
Single	5000	40%	5	—	CNY17-3-300E	124-4521
Single	3750	50%	4	3	HCPL-181-000E	124-4525
Single	3750	80%	4	3	HCPL-181-00AE	124-4526
Single	3750	130%	4	3	HCPL-181-00BE	124-4527
Single	3750	200%	4	3	HCPL-181-00CE	124-4529
Single	3750	300%	4	3	HCPL-181-00DE	124-4531
Single	3750	50%	4	3	HCPL-181-060E	124-4532
Single	3750	80%	4	3	HCPL-181-06AE	124-4533
Single	3750	130%	4	3	HCPL-181-06BE	124-4534
Single	3750	200%	4	3	HCPL-181-06CE	124-4535
Single	3750	300%	4	3	HCPL-181-06DE	124-4536
Single	5000	50%	4	3	HCPL-817-300E	124-4557
Single	5000	80%	4	3	HCPL-817-30AE	124-4558
Single	5000	200%	4	3	HCPL-817-30CE	124-4560
Single	5000	300%	4	3	HCPL-817-30DE	124-4561
Single	5000	50%	4	3	HCPL-817-000E	124-4544
Single	5000	80%	4	3	HCPL-817-00AE	124-4545
Single	5000	130%	4	3	HCPL-817-00BE	124-4546
Single	5000	200%	4	3	HCPL-817-00CE	124-4547
Single	5000	300%	4	3	HCPL-817-00DE	124-4548
Single	5000	50%	4	3	HCPL-817-00LE	124-4549
Single	5000	50%	4	3	HCPL-817-060E	124-4550
Single	5000	80%	4	3	HCPL-817-06AE	124-4551
Single	5000	50%	4	3	HCPL-817-360E	124-4563
Single	5000	80%	4	3	HCPL-817-36AE	124-4564
Single	5000	130%	4	3	HCPL-817-36BE	124-4566
Single	5000	50%	4	3	HCPL-817-W00E	124-4570
Single	5000	80%	4	3	HCPL-817-W0AE	124-4571
Single	5000	50%	4	3	HCPL-817-W0LE	124-4575
Single	2500	20%	3	3	4N25-000E	124-4499
Single	2500	20%	3	3	4N25-060E	124-4500
Single	2500	20%	3	3	4N25-300E	124-4501
Single	2500	20%	3	3	4N25-360E	124-4502
Single	1500	32%			ACPL-M43T-000E	124-4509
Single	3750	15%			ACPL-K453-000E	124-4507
Single	5000	40%*	5	5	CNY17-1-000E	163-4737
Single	5000	40%*	5	5	CNY17-1-300E	163-4738
Single	5000	63%*	5	5	CNY17-2-000E	163-4740
Single	5000	63%*	5	5	CNY17-2-300E	163-4741
Single	5000	160%*	5	5	CNY17-4-000E	163-4743
Single	5000	160%*	5	5	CNY17-4-300E	163-4745
Single	5000				ACPL-K73L-000E	164-0545
Dual	2500	15%	0.2	0.6	HCPL-4534-000E	912-9979
Dual	2500	7%	0.2	1.3	HCPL-2530-000E	999-4793
Dual	2500	7%	0.2	1.3	HCPL-2530-300E	108-4994
Dual	2500	19%	0.2	0.6	HCPL-2531-300E	108-4995
Dual	2500	19%	0.2	0.6	HCPL-2531-000E	999-4807
Wide Body Packages **						
Single	5000	19%	0.2	0.35	HCNW-136-000E**	999-4742
Single	2500	19%	0.2	0.5	HCPL-4504-300E**	108-4998
Single	5000	44%*	0.4	0.55	HCNW4506-300E**	108-4993
Single	3750	44%*	0.4	0.55	HCPL-4506-300E**	108-5002
Single	5000	19%	0.2	0.6	HCNW-4503-000E**	999-5218
Single	2500	19%	0.2	0.8	HCPL-4503-300E**	108-4997
Single	5000	40%*	5	5	CNY17-1-W00E**	163-4739
Single	5000	63%*	5	5	CNY17-2-W00E**	163-4742
Single	5000	160%*	5	5	CNY17-4-W00E**	163-4746
AC Input						
Single	3750	20%	3	4	HCPL-354-000E	124-4538
Single	3750	50%	3	4	HCPL-354-00AE	124-4539
Single	3750	20%	3	4	HCPL-354-060E	124-4540
Single	3750	50%	3	4	HCPL-354-06AE	124-4542
Dual	5000	20%	3	4	ACPL-824-300E	133-9026
Dual	5000	50%	3	4	ACPL-827-300E	133-9034
Dual	5000	130%	3	4	ACPL-827-30BE	133-9036
Dual	5000	200%	3	4	ACPL-827-30CE	133-9038
Quad	5000	20%	3	4	ACPL-844-300E	133-9029
Quad	5000	50%	3	4	ACPL-847-300E	133-9044
Quad	5000	130%	3	4	ACPL-847-30GE	133-9045

* I_F = 10mA
** = **VDE 0884, BS415** approved

206202

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
6N135-000E	999-4750●	1.100	1.040	0.980	0.720	0.590
6N135-300E	SMD 108-4985●	0.970	0.690	0.610	0.520	0.460
6N136-000E	999-4769●	1.220	1.130	1.050	0.770	0.620
6N136-300E	SMD 108-4986●	1.000	0.710	0.630	0.530	0.470
HCNW136-000E	108-4988●	1.750	1.240	1.110	0.950	0.840
HCNW136-300E	SMD 108-4989●	1.840	1.310	1.170	1.000	0.890
HCPL-4502-000E	999-4777●	0.910	0.840	0.760	0.550	0.450
HCPL-4502-300E	SMD 108-4996●	0.980	0.690	0.610	0.520	0.460
HCPL-4503-000E	999-4785●	1.060	0.990	0.880	0.730	0.610
HCNW4503-000E	108-4991●	2.320	1.620	1.480	1.260	1.100
HCNW4503-300E	SMD 108-4992●	1.720	1.210	1.090	0.940	0.820
CNY17-3-300E	SMD 124-4521●	0.290	0.250	0.220	0.183	0.165
HCPL-181-000E	SMD 124-4525● RL	0.143	0.121	0.111	0.092	0.083
HCPL-181-00AE	SMD 124-4526● RL	0.143	0.121	0.111	0.092	0.083
HCPL-181-00BE	SMD 124-4527● RL	0.143	0.121	0.111	0.092	0.083
HCPL-181-00CE	SMD 124-4529● RL	0.143	0.121	0.111	0.100	0.097
HCPL-181-00DE	SMD 124-4531● RL	0.143	0.121	0.111	0.092	0.083

RL Re-reeling available

Avago Technologies Optocouplers - continued

Transistor Output - continued

Single and Dual, High Speed 1MBd Data-Rate - continued

Mftrs. List No.	Order Code	1+	25+	100+	250+	500+
		Price Each				
HCPL-181-060E	SMD 124-4532● RL	0.143	0.121	0.111	0.100	0.097
HCPL-181-06AE	SMD 124-4533● RL	0.143	0.121	0.111	0.100	0.097
HCPL-181-06BE	SMD 124-4534● RL	0.143	0.121	0.111	0.100	0.097
HCPL-181-06CE	SMD 124-4535● RL	0.143	0.121	0.111	0.092	0.083
HCPL-181-06DE	SMD 124-4536● RL	0.143	0.121	0.111	0.092	0.083
HCPL-817-300E	SMD 124-4557●	0.133	0.111	0.099	0.083	0.075
HCPL-817-30AE	SMD 124-4558●	0.270	0.220	0.197	0.166	0.150
HCPL-817-30CE	SMD 124-4560●	0.198	0.166	0.147	0.125	0.112
HCPL-817-30DE	SMD 124-4561●	0.133	0.111	0.099	0.083	0.075
HCPL-817-000E	124-4544●	0.240	0.200	0.176	0.150	0.135
HCPL-817-00AE	124-4545●	0.270	0.220	0.197	0.166	0.150
HCPL-817-00BE	124-4546●	0.198	0.166	0.147	0.125	0.112
HCPL-817-00CE	124-4547●	0.210	0.180	0.157	0.133	0.120
HCPL-817-00DE	124-4548●	0.270	0.220	0.197	0.166	0.150
HCPL-817-00LE	124-4549●	0.198	0.166	0.147	0.125	0.112
HCPL-817-060E	124-4550●	0.198	0.166	0.147	0.125	0.112
HCPL-817-06AE	124-4551●	0.270	0.220	0.197	0.166	0.150
HCPL-817-360E	SMD 124-4563●	0.220	0.196	0.180	0.146	0.133
HCPL-817-36AE	SMD 124-4564●	0.220	0.196	0.180	0.146	0.133
HCPL-817-36BE	SMD 124-4566●	0.146	0.125	0.113	0.094	0.084
HCPL-817-W00E	124-4570●	0.210	0.180	0.157	0.133	0.120
HCPL-817-W0AE	124-4571●	0.270	0.220	0.197	0.166	0.150
HCPL-817-W0LE	124-4575●	0.106	0.093	0.083	0.074	0.067
4N25-000E	124-4499●	0.270	0.220	0.197	0.166	0.150
4N25-060E	124-4500●	0.146	0.125	0.113	0.094	0.084
4N25-300E	SMD 124-4501●	0.290	0.250	0.220	0.183	0.165
4N25-360E	SMD 124-4502●	0.167	0.143	0.131	0.108	0.097
ACPL-M43T-000E	SMD 124-4509●	3.340	2.350	2.130	1.790	1.700
ACPL-K453-000E	SMD 124-4507●	1.690	1.170	1.080	0.910	0.880
CNY17-1-000E	NEW 163-4737●	0.230	0.163	0.136	0.121	0.114
CNY17-1-300E	NEW 163-4738●	0.270	0.187	0.155	0.139	0.131
CNY17-2-000E	NEW 163-4740●	0.230	0.163	0.136	0.121	0.114
CNY17-2-300E	NEW 163-4741●	0.270	0.187	0.155	0.139	0.131
CNY17-4-000E	NEW 163-4743●	0.230	0.163	0.136	0.121	0.114
CNY17-4-300E	NEW 163-4745●	0.270	0.187	0.155	0.139	0.131
ACPL-K73L-000E	NEW 164-0545●	3.780	2.940	2.540	2.290	2.130
HCPL-4534-000E	912-9979●	1.880	1.620	1.470	1.290	1.180
HCPL-2530-000E	999-4793●	1.650	1.630	1.530	1.400	1.310
HCPL-2530-300E	SMD 108-4994●	2.060	1.440	1.320	1.100	0.970
HCPL-2531-300E	SMD 108-4995●	2.150	1.500	1.370	1.150	1.020
HCPL-2531-000E	999-4807●	2.110	1.950	1.860	1.450	1.150
Wide Body Packages						
HCNW-136-000E	999-4742●	1.300	1.130	0.960	0.820	0.750
HCPL-4504-300E	SMD 108-4998●	1.780	1.260	1.130	0.960	0.850
HCNW4506-300E	SMD 108-4993●	2.510	1.750	1.600	1.350	1.190
HCPL-4506-300E	SMD 108-5002●	2.020	1.420	1.290	1.100	0.970
HCNW-4503-000E	999-5218●	2.070	1.660	1.510	1.280	1.170
HCPL-4503-300E	SMD 108-4997●	1.340	0.940	0.850	0.720	0.640
CNY17-1-W00E	163-4739●	0.270	0.187	0.155	0.139	0.131
CNY17-2-W00E	163-4742●	0.270	0.187	0.155	0.139	0.131
CNY17-4-W00E	163-4746●	0.270	0.187	0.155	0.139	0.131
AC Input						
HCPL-354-000E	SMD 124-4538● RL	0.300	0.260	0.240	0.188	0.169
HCPL-354-00AE	SMD 124-4539● RL	0.330	0.270	0.240	0.200	0.180
HCPL-354-060E	SMD 124-4540● RL	0.330	0.270	0.240	0.200	0.180
HCPL-354-06AE	SMD 124-4542● RL	0.250	0.198	0.173	0.150	0.135
ACPL-824-300E	SMD 133-9026●	0.430	0.350	0.310	0.270	0.250
ACPL-827-300E	SMD 133-9034●	0.280	0.200	0.182	0.158	0.146
ACPL-827-30BE	SMD 133-9036●	0.280	0.220	0.198	0.166	0.154
ACPL-827-30CE	SMD 133-9038●	0.280	0.220	0.198	0.166	0.154
ACPL-844-300E	SMD 133-9029●	0.870	0.680	0.600	0.520	0.470
ACPL-847-300E	SMD 133-9044●	0.680	0.550	0.470	0.410	0.380
ACPL-847-30GE	SMD 133-9045●	0.580	0.470	0.400	0.350	0.320

General Purpose



DIL-6

The 4N25 series are general purpose types containing a LED coupled phototransistor. Packaged in a 6-pin DIP and available in wide-lead spacing options.

- UL and CSA Approved
- Response time, t_r typ 3 µs

2500V Isolation

AV Input Current mA	CTR @10mA min.	Package	Mftrs. List No.	Order Code
80	20%	DIL-6	4N25-000E	124-4499
80	20%	DIL-6	4N25-060E	124-4500**
80	20%	DIL-6 (Lead Bend SMD)	4N25-300E	124-4501
80	20%	DIL-6 (Lead Bend SMD)	4N25-360E	124-4502**

** IEC/EN/DIN EN 60747-5-2 Approved

Mftrs. List No.	Order Code	1+	25+	100+	250+
		Price Each			
4N25-000E	124-4499●	0.270	0.220	0.197	0.166
4N25-060E	124-4500●	0.146	0.125	0.113	0.094
4N25-300E	SMD 124-4501●	0.290	0.250	0.220	0.183
4N25-360E	SMD 124-4502●	0.167	0.143	0.131	0.108

3550V Isolation

AV Input Current mA	CTR @10mA min.	Package	Mftrs. List No.	Order Code
10	100%	6-DIP	4N35-000E	163-4734
10	100%	6-DIP	4N35-300E**	163-4735
10	100%	6-DIP	4N35-W00E	163-4736

453871

Mftrs. List No.	Order Code	1+	25+	100+	250+
		Price Each			
4N35-000E	NEW 163-4734●	0.230	0.163	0.136	0.121
4N35-300E	NEW 163-4735●	0.270	0.187	0.155	0.139
4N35-W00E	NEW 163-4736●	0.270	0.187	0.155	0.139

High V_{CE}



- DIL Package with wide lead (0.4") options
- CSA approved, with IEC/EN/DIN option (CNY17-3-W60E)
- Good response time

Av Output Current mA	Av Input Current mA	CTR min,max	V_{ISO} V	t_F, t_R µs
150	60	100, 200	5000	5, 5

The CNY17 series contains a LED and phototransistor configuration.

453870

Pin config.	Mftrs. List No.	Order Code	1+	25+	100+	250+
			Price Each			
Standard	CNY17-3-000E	124-4519●	0.270	0.220	0.197	0.166
0.4" lead spacing	CNY17-3-W00E	124-4523●	0.290	0.250	0.220	0.183
0.4" lead spacing	CNY17-3-W60E	124-4524●	0.146	0.125	0.113	0.094

High Isolation Voltage

5000V_{iso}, High Density Mounting Type



DIP-4

The HCPL-817 Series, contains a light emitting Diode optically coupled to a phototransistor. It is packaged in a 4-pin DIP package and available in wide-lead spacing option and lead bend SMD option.

- Isolation Voltage: 5000Vrms
- Response time typ 4µs @ V_{CE}=2V, I_C=2mA, R_L=100Ω

Applications include:

- Signal transmission between circuits of different potentials and impedances
- I/O interfaces for computers
- Feedback circuit in power supplies

Rank Mark	CTR @ 5mA min.	CTR @ 5mA max.	IEC/EN/DIN EN 60747-5-2	DIP-4 0.4" (10.16mm) Spacing?	Mftrs. List No.	Order Code
000E	50	600			HCPL-817-000E	124-4544
00AE	80	160			HCPL-817-00AE	124-4545
00BE	130	260			HCPL-817-00BE	124-4546
00CE	200	400			HCPL-817-00CE	124-4547
00DE	300	600			HCPL-817-00DE	124-4548
00LE	50	100			HCPL-817-00LE	124-4549
060E	50	50			HCPL-817-060E	124-4550
06AE	80	160	✓		HCPL-817-06AE	124-4551
W00E	50	50			HCPL-817-W00E	124-4570
W0AE	80	160	✓	✓	HCPL-817-W0AE	124-4571
W0LE	50	100		✓	HCPL-817-W0LE	124-4575

453808

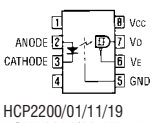
Mftrs. List No.	Order Code	1+	25+	100+	250+
		Price Each			
HCPL-817-000E	124-4544●	0.240	0.200	0.176	0.150
HCPL-817-00AE	124-4545●	0.270	0.220	0.197	0.166
HCPL-817-00BE	124-4546●	0.198	0.166	0.147	0.125
HCPL-817-00CE	124-4547●	0.210	0.180	0.157	0.133
HCPL-817-00DE	124-4548●	0.270	0.220	0.197	0.166
HCPL-817-00LE	124-4549●	0.198	0.166	0.147	0.125
HCPL-817-060E	124-4550●	0.198	0.166	0.147	0.125
HCPL-817-06AE	124-4551●	0.270	0.220	0.197	0.166
HCPL-817-W00E	124-4570●	0.210	0.180	0.157	0.133
HCPL-817-W0AE	124-4571●	0.270	0.220	0.197	0.166
HCPL-817-W0LE	124-4575●	0.106	0.093	0.083	0.074

Schmitt Trigger Output – Low Current

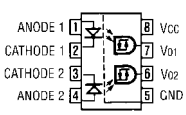
High Speed 5MBd Data-Rate



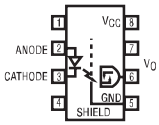
UL recognised



HCP2200/01/11/19
HCNW2201/11 (Wide) (Body versions)



HCPL2231
HCPL2232



HCPL2202/12

Supply voltage 4.5–20V

Note: HCPL2201/11 and HCNW2201/11 have pin 6 unconnected (no voltage enable). The HCNW201/11 are housed in wide body packages approved to **VDE 0884** and **BS415**.

Low input current, logic gates with Schmitt trigger output. Compatible with CMOS, LSTTL and TTL logic.

Channels	CMR (Vμs) (min.)	Output (ns) t_r	t_f	$i_{F(ON)}$	Mftrs. List No.	Order Code
Single	1000	55	15	5	HCPL-2200-000E	999-4920
Single	1000	55	15	1.6	HCPL-2200-300E	108-5035
Single	1000	30	7	5	HCPL-2201-000E	999-4939
Single	1000	30	7	1.6	HCPL-2201-300E	108-5036
Single	1000	30	7	5	HCPL-2202-000E	999-5234
Single	1000	30	7	1.6	HCPL-2202-300E	108-5038
Single	1000	30	7	10	HCNW-2201-000E	999-5242
Single	10000	30	7	1.6	HCNW2201-300E	108-5032
Single	2500	55	15	5	HCPL-2219-000E	999-5250
Single	5000	30	7	5	HCPL-2211-000E	999-4947
Single	5000	30	7	5	HCPL-2212	942-030
Single	5000	30	7	10	HCNW-2211-000E	999-5269
Single	1000	30	7	1.6	HCNW2211-000E	108-5033
Single	10000	30	7	1.6	HCNW2211-300E	108-5034
Dual	1000	30	7	5	HCPL-2231-000E	999-4955
Dual	5000	30	7	5	HCPL-2232	232-932

* Minimum CMR of 10kV/μs with V^{CM} = 1000V can be achieved with input current, I^F of 5mA

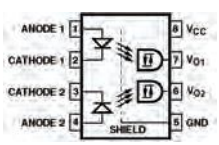
206228

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
Single Channel						
HCPL-2200-000E	999-4920●	1.95	1.66	1.51	1.26	1.12
HCPL-2200-300E	SMD 108-5035●	2.42	1.69	1.53	1.30	1.15
HCPL-2201-000E	999-4939●	2.17	1.87	1.60	1.26	1.21
HCPL-2201-300E	SMD 108-5036●	2.42	1.69	1.53	1.30	1.15
HCPL-2202-000E	999-5234●	2.79	2.43	2.09	1.40	1.08
HCPL-2202-300E	SMD 108-5038●	2.44	1.70	1.55	1.31	1.15
HCNW-2201-000E	999-5242●	2.02	1.74	1.64	1.42	1.28
HCNW2201-300E	SMD 108-5032●	2.35	1.66	1.49	1.26	1.12
HCPL-2219-000E	999-5250●	2.37	1.90	1.81	1.39	1.31
HCPL-2211-000E	999-4947●	2.34	2.06	1.91	1.42	1.29
HCPL-2212	942-030▲	2.31	1.99	1.83	1.41	1.14
HCNW-2211-000E	999-5269●	3.89	2.76	2.46	1.74	1.37
HCNW2211-000E	108-5033●	3.33	2.33	2.12	1.78	1.58
HCNW2211-300E	SMD 108-5034●	2.51	1.75	1.60	1.35	1.23
Dual Channel						
HCPL-2231-000E	999-4955●	5.39	4.64	3.90	3.21	3.12
HCPL-2232	232-932▲	7.54	6.43	5.47	3.81	3.06

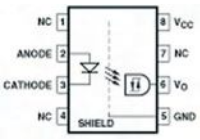
Optocoupler - Schmitt Trigger Output

High Speed 5MBd





HCPL-2212



HCPL-2232

High CMR optically coupled gates with Schmitt trigger output.
Compatible with CMOS, LSTTL and TTL logic.
CSA & **VDE** Approved, **BSI** Certified and **UL** Recognised

Channels	CMR (Vμs) (min.)	Isolation Test Voltage V rms	Output (ns) t_r	t_f	$i_{F(ON)}$	Supply Voltage	Order Code
Single	5000	2500	30	7	1.6	4.5 to 20V	912-9987
Double	5000	2500	30	7	1.8	4.5 to 20V	912-9812

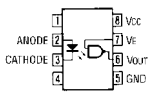
403179

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
Single Channel						
HCPL-2212-000E	912-9987●	2.65	2.27	2.07	1.82	1.68
Dual Channel						
HCPL-2232-000E	912-9812●	6.00	5.16	4.69	4.10	3.78

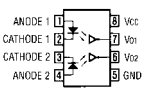
Logic Gate Output–

Single and Dual, High Speed 40MBd and 40MBd Data-Rate

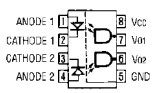




6N137/HCPL2601/2611
HCNW137/2601/2611

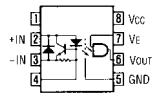


HCPL2630/
2631/4661

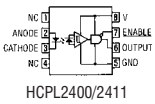


HCPL2430

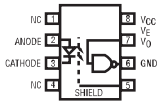
All **UL** recognised,
HCPL7601/11, HCNW137/2601/2611 are **VDE 0884** approved
HCNW137/2601/2611 are wide body versions



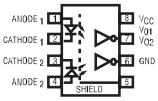
HCPL2602/2612



HCPL2400/2411



HCPL261A/261N



HCPL263A/263N

Withstand test voltage=2500Vrms (HCPL7601/11=3750V rms)
(HCNW137/2601/2611=5000V rms)

Channels	CMR (Vμs) (min.)	@ (VCM)	Input On-Current (mA)	Output Enable	Prop. Delay (ns) typ. t_{PHL} (ON)	t_{PLH}	Mftrs. List No.
10MBd Data-Rate (Typical), LSTTL/TTL Compatible							
Single	N/A	N/A	5	Yes	50	48	6N137-000E
Single	N/A	N/A	5	Yes	50	48	6N137-300E
Single	N/A	N/A	5	Yes	50	48	HCNW137-300E
Single	5000	50	5	Yes	50	48	HCPL-2601-000E
Single	5000	50	5	Yes	50	48	HCNW2601-300E
Single	5000	50	5	Yes	50	48	HCPL-2601-300E
Single	10000	1000	5	Yes	50	48	HCPL-2611-000E
Single	10000	1000	5	Yes	50	48	HCNW2611-000E
Single	5000	1000	5	Yes	50	48	HCPL-2611-300E
Single	10000	1000	5	Yes	50	48	HCNW-2611-000E
Dual	N/A	N/A	5	Yes	50	48	HCPL-2630-000E
Dual	N/A	N/A	5	Yes	50	48	HCPL-2630-300E
Dual	5000	50	5	Yes	50	48	HCPL-2631-000E
Dual	10000	1000	5	No	50	48	HCPL-4661-000E
10MBd Data-Rate (Typical), HCMOS/LSTTL/TTL Compatible							
Single	1000	50	3	Yes	53	52	HCPL-261A-000E
Single	1000*	1000	3	Yes	53	52	HCPL-261N-000E
Dual	1000	50	3	No	53	52	HCPL-263A-000E
Dual	1000*	1000	3	No	53	52	HCPL-263N-000E
10MBd Data-Rate (Typical), CMOS/TTL Compatible- Low current input							
Single	1000	50	2	No	57	55	HCPL-7601-000E
Single	10000	1000	2	No	57	55	HCPL-7611-000E
10MBd Data-Rate (Typical), High CMR Line Receiver							
Single	1000	50	5	Yes	50	48	HCPL-2602-000E
Single	3500	300	5	Yes	50	48	HCPL-2612-000E
Single	10000	1000	15	Yes	50	46	ACPL-M61U-000E
15MBd Data-Rate, High CMR							
Single	15000	1000	15	Yes	75	90	ACPL-M60L-000E
Single	15000	1000	15	Yes	50	46	ACPL-M61T-000E
40MBd Data-Rate (Typical), HCMOS/LSTTL/TTL Compatible							
Single	1000	50	4	3 State	33	30	HCPL-2400-000E
Single	1000	300	4	Output	33	30	HCPL-2411-000E
Dual	10	50	5		10	20	HCPL-2430-300E

* 15kV/μs with Vcm = 1kV can be acheived using HP application circuit

206203

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
10MBd, LSTTL/TTL						
Single						
6N137-000E	999-4866●	0.83	0.65	0.56	0.51	0.49
6N137-300E	SMD 108-5003●	1.12	0.80	0.72	0.61	0.53
HCNW137-300E	SMD 108-5004●	1.77	1.26	1.13	0.96	0.85
HCPL-2601-000E	999-4882●	1.14	0.89	0.82	0.67	0.63
HCNW2601-300E	SMD 108-5005●	1.88	1.33	1.21	1.02	0.91
HCPL-2601-300E	SMD 108-5008●	1.48	1.04	0.95	0.80	0.71
HCPL-2611-000E	999-5153●	1.82	1.54	1.37	1.06	0.85
HCNW2611-000E	108-5006●	2.14	1.50	1.36	1.14	1.02
HCPL-2611-300E	SMD 108-5010●	1.83	1.31	1.16	0.99	0.89
HCNW-2611-000E	999-5293●	2.15	1.77	1.48	1.04	1.00
Dual						
HCPL-2630-000E	999-4904●	2.47	2.21	2.01	1.67	1.25
HCPL-2630-300E	SMD 108-5014●	2.45	1.72	1.55	1.31	1.16
HCPL-2631-000E	999-4912●	2.73	2.41	2.13	1.63	1.36
HCPL-4661-000E	999-5307●	4.50	3.63	3.14	2.19	1.73
10MBd, HCMOS/LSTTL/TTL						
HCPL-261A-000E	999-5315●	1.95	1.69	1.47	0.93	0.79
HCPL-261N-000E	999-5323●	2.10	1.71	1.40	1.04	0.85
Dual						
HCPL-263A-000E	999-5331●	3.51	3.00	2.66	1.92	1.64
HCPL-263N-000E	999-5340●	5.00	3.67	3.21	2.33	2.02
10MBd, High CMR Line Receiver						
Single						
HCPL-7601-000E	999-5358●	2.45	1.95	1.70	1.25	1.15
HCPL-7601-300E	SMD 108-5016●	1.82	1.28	1.16	1.03	0.92
HCPL-7611-000E	999-5366●	2.30	1.91	1.60	1.33	1.20
10MBd, HCMOS/LSTTL - Low Current Input						
Single						
HCPL-2602-000E	999-4890●	4.53	3.79	3.41	2.50	2.20
HCPL-2612-000E	999-5374●	4.74	3.69	3.02	2.54	2.37
ACPL-M61U-000E	NEW 164-0553●	3.26	2.54	2.19	1.97	1.85
15MBd, High CMR						
ACPL-M60L-000E	NEW 164-0551●	1.33	1.03	0.90	0.81	0.76
ACPL-M61T-000E	NEW 164-0552●	2.51	1.95	1.69	1.51	1.42
40MBd, HCMOS/LSTTL/STTL/TTL						
Single						
HCPL-2400-000E	999-4874●	3.04	2.53	2.23	1.80	1.55
HCPL-2411-000E	999-5420●	3.70	2.90	2.39	2.02	1.97
Dual						
HCPL-2430-300E	SMD 108-5007●	6.47	4.53	4.12	3.46	3.08

Optocoupler - High Speed

High CMR



SMD - H = 3.65, W = 9.8,
D = 6.35mm



DIL - H = 3.56, W = 9.65,
D = 6.35mm

UL Recognised 3750 V_{RMS} for 1 minute, **CSA** and **IEC/EN/DIN EN 60747-5-2** Approved

RL Re-reeling available

Farnell

Avago Technologies Optocouplers - continued

Optocoupler - High Speed - continued

High CMR - continued

Guaranteed Temperature Range	Input Current (mA)	Common Mode Rejection (KV/µs)	Voltage Supply (Vdc)	Number of Channels	Speed	Package	Mftrs. List No.
TTL Compatible							
-40°C to +85°C	5mA	5	4.5 to 5.5	1	10Mbaud	DIP-8	HCNW137-000E
-40°C to +85°C	5mA	5	4.5 to 5.5	1	10Mbaud	DIP-8	HCNW2601-000E
-40°C to +85°C	5mA	5	4.5 to 5.5	1	10Mbaud	DIP-8	HCPL-0601-500E
-40°C to +85°C	5mA	5	4.5 to 5.5	2	10Mbaud	DIP-8	HCPL-2631-300E
-40°C to +85°C	5mA	10	4.5 to 5.5	2	10Mbaud	DIL	HCPL-4661-020E
-40°C to +85°C	5mA	10	4.5 to 5.5	2	10Mbaud	DIP-8	HCPL-4661-300E
0°C to +70°C	25mA	15	15 to 30	1	1Mbaud	DIL	HCPL-4504-000E
0°C to +70°C	15mA	15	15 to 30	1	1Mbaud	DIL	HCPL-2502-000E
-40°C to +85°C	50mA	10	15 to 30	1	1Mbaud	SO-8	HCPL-0453-500E
-40°C to +100°C	10mA	10	4.5 to 5.5	1	15Mbaud	SO	HCPL-0708-000E
-40°C to +100°C	10mA	10	4.5 to 5.5	2	15Mbaud	SO	HCPL-0738-000E
Low Power Consumption - <1 mW, High CTR - 3500%							
0°C to +70°C	40µA	10	1.6 to 18	1	—	DIL	HCPL-070A-000E
Low Input Current							
-40°C to +85°C	0.5mA	400	4.75 to 5.25	2	8Mbaud	DIP-8	HCPL-2300-300
High CMR Logic Gate							
-40°C to +85°C	1.8mA	10	4.5 to 20	1	5Mbaud	DIP	HCPL-2211-300E
-40°C to +85°C	1.8mA	10	4.5 to 20	2	5Mbaud	DIP-8	HCPL-2231-300E
-40°C to +85°C	1.8mA	1	4.5 to 20	2	5Mbaud	DIP	HCPL-2232-300E
0°C to +70°C	4mA	10	4.75 to 5.25	1	20Mbaud	DIP-8	HCPL-2400-300E
CMOS							
-40°C to 105°C	18mA	15	3.3 to 5	1	15Mbaud	8-SOIC	ACPL-071L-000E
-40°C to 105°C	18mA	15	3.3 to 5	2	15Mbaud	8-SOIC	ACPL-074L-000E
-40°C to 105°C	8mA	10	3.3 to 5	1	15Mbaud	5-SOIC	ACPL-M75L-000E

382834

Mftrs. List No.	Order Code		1+	25+	Price Each 100+	250+	500+
TTL Compatible							
HCNW137-000E	854-9745●		1.37	1.26	1.05	0.98	0.94
HCNW2601-000E	854-9753●		1.39	1.28	1.08	0.99	0.96
HCPL-0601-500E	SMD 854-9788●	RL	1.08	1.00	0.83	0.77	0.75
HCPL-2631-300E	SMD 854-9907●		2.38	2.15	1.82	1.68	1.65
HCPL-4661-020E	854-9982●		2.93	2.68	2.26	2.09	2.03
HCPL-4661-300E	SMD 854-9990●		2.35	2.14	1.82	1.67	1.62
HCPL-4504-000E	854-9966●		1.42	1.31	1.08	1.01	0.98
HCPL-2502-000E	854-9893●		1.19	1.10	0.93	0.85	0.83
HCPL-0453-500E	SMD 854-9770●	RL	1.26	1.13	0.96	0.89	0.87
HCPL-0708-000E	SMD 854-9818●		2.87	2.63	2.21	2.03	1.98
HCPL-0738-000E	SMD 854-9834●		6.16	5.61	4.73	4.38	4.23
Low Power Consumption - <1 mW, High CTR - 3500%							
HCPL-070A-000E	SMD 854-9826●		1.74	1.59	1.33	1.23	1.20
Low Input Current							
HCPL-2300-300	SMD 854-9877●		2.63	2.42	2.04	1.89	1.83
High CMR Logic Gate							
HCPL-2211-300E	SMD 854-9842●		2.46	2.23	1.87	1.73	1.68
HCPL-2231-300E	SMD 854-9850●		5.68	5.15	4.38	4.04	3.91
HCPL-2232-300E	SMD 854-9869●		5.46	4.97	4.20	3.88	3.77
HCPL-2400-300E	SMD 854-9885●		2.94	2.69	2.28	2.08	2.02
CMOS							
ACPL-071L-000E	NEW 164-0533●		1.97	1.53	1.33	1.18	1.11
ACPL-074L-000E	NEW 164-0534●		3.62	2.82	2.44	2.18	2.05
ACPL-M75L-000E	NEW 164-0554●		2.05	1.59	1.38	1.23	1.15

Optocoupler - Transistor Output

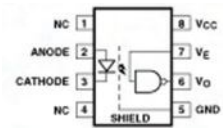
High Speed



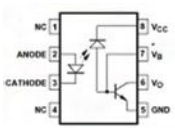
PDIP - H = 5.1, W = 11.15, D = 9.0mm



SO-8 - H = 3.175, W = 5.08, D = 3.937mm



8549796 & 8549800



8549770

UL Recognised, **CSA** and **IEC/EN/DIN EN 60747-5-2** Approved

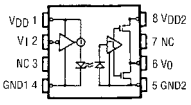
Guaranteed Temperature Range	Current Transfer Ratio - min (%)	Common Mode Rejection (KV/µs)	Speed	Package Style	Mftrs. List No.	Order Code
Single Channel - TTL Compatible						
0 to 70°C	19%	10	1Mbps	SO-8	HCPL-0453-500E	854-9770
Single Channel - LSTTL/TTL Compatible						
-40 to 85°C (AC and DC)		10	10Mbps	SO-8	HCPL-0611-500E	854-9796
Single Channel - HCMOS/LSTTL/TTL Compatible						
-40 to 85°C (AC and DC)		15	10Mbps	SO-8	HCPL-061N-000E	854-9800

382762

Mftrs. List No.	Order Code		1+	25+	Price Each 100+	250+	500+
HCPL-0453-500E	SMD 854-9770●	RL	1.26	1.13	0.96	0.89	0.87
HCPL-0611-500E	SMD 854-9796●	RL	1.26	1.14	0.97	0.91	0.87
HCPL-061N-000E	SMD 854-9800●		1.55	1.41	1.18	1.10	1.07

High Speed CMOS





The HCPL-77xx optocouplers utilise the latest CMOS IC technology to achieve outstanding performance with very low power consumption. They require only two bypass capacitors for complete CMOS capability. A CMOS logic input signal controls the LED driver IC which supplies current to the IC.

UL1577 and **VDE0884** approved.

Data Rate (NRZ) Mbd max.	Common Mode Transient Immunity	Withstand Test Voltage Vac/1 min	Minimum Pulse Width	Mftrs. List No.
25	10kV/µs	2500	40ns	HCPL-7720
25	10kV/µs	2500	40ns	HCPL-7721
25	20kV/µs	2500	80ns	HCPL-7710-300E
25	10kV/µs	1181	40ns	HCPL-7720-300E
25	10kV/µs	1181	40ns	HCPL-7721-300E

206267

Mftrs. List No.	Order Code	1+	25+	Price Each 100+	250+	500+
HCPL-7720	143-236▲	5.68	5.12	4.38	3.32	2.51
HCPL-7721	143-248▲	5.37	4.85	4.12	2.82	2.43
HCPL-7710-300E	SMD 108-5041●	3.93	2.75	2.51	2.12	1.87
HCPL-7720-300E	SMD 108-5042●	4.50	3.14	2.86	2.42	2.15
HCPL-7721-300E	SMD 108-5043●	3.73	2.62	2.38	2.01	1.79

Logic Gate Output

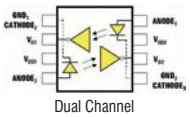
Multi-Channel and Bi-Directional - High Speed



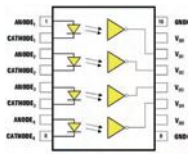
8-pin Package W = 4.8, D = 3.8, H = 1.37mm



16-pin Package W = 9.8, D = 3.8, H = 1.27mm



Dual Channel



Quad Channel

- Full duplex data transfer - ACSL 6210
- Multi-channel - ACS 6400
- Thin SO Package
- Wide supply voltage range, 3 to 5.5V
- High speed, 15MBd typical, 10MBd minimum
- 10kV/µs minimum Common Mode Rejection @ 1000V
- LSTTL/TTL compatible
- Patented stacked LED technology

No. Channels	Output Times (10 - 90%) Rise	Fall	Propagation Delay (Max.) t_{PLH}	t_{PHL}	Input-Output Withstand voltage	Order Code
2	35ns	12ns	100ns	100ns	2500V_{RMS}	913-0144
4	35ns	12ns	100ns	100ns	2500V_{RMS}	913-0152
3	35ns	12ns	100ns	100ns	2500V_{RMS}	122-3819
3	35ns	12ns	100ns	100ns	2500V_{RMS}	122-3820
4	35ns	12ns	100ns	100ns	2500V_{RMS}	122-3821
4	35ns	12ns	100ns	100ns	2500V_{RMS}	122-3822

454703

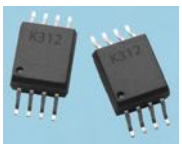
Mftrs. List No.	Order Code	1+	25+	Price Each 100+	250+	500+
ACSL-6210-00RE	SMD 913-0144●	3.48	3.01	2.72	2.39	2.20
ACSL-6300-00TE	SMD 122-3819●	4.53	3.51	2.89	2.52	2.34
ACSL-6310-00TE	SMD 122-3820●	4.58	3.56	2.91	2.54	2.36
ACSL-6400-00TE	SMD 913-0152●	5.68	4.88	4.44	3.87	3.58
ACSL-6410-00TE	SMD 122-3821●	6.16	4.78	3.92	3.42	3.16
ACSL-6420-00TE	SMD 122-3822●	6.41	4.98	4.08	3.56	3.28

IGBT Gate Driver Optocoupler

Single Channel



164-0542



164-0544

The ACPL-H312/K312 contains a GaAsP LED. The LED is optically coupled to an integrated circuit with a power output stage. These optocouplers are ideally suited for driving power IGBTs and MOSFETs used in motor control inverter applications.

Applications:
- IGBT/MOSFET gate drive
- Inverter for industrial motor
- Inverter for electrical home appliances
- Switching power supplies (SPS)

AV Input Current (mA)	CMR (kV/µs)	V_{cm} (V)	Switching Time Rise	Fall	Package	Mftrs. List No.	Order Code
16	15	1500	0.05µs	0.05µs	8-SOIC Stretched	ACPL-H312-000E	164-0542
16	15	1500	0.05µs	0.05µs	8-SOIC Stretched	ACPL-K312-000E	164-0544

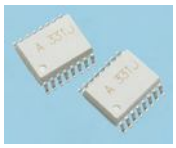
528167

RL Re-reeling available

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+
ACPL-H312-000E	164-0542●	1.68	1.31	1.13	1.01
ACPL-K312-000E	164-0544●	1.91	1.49	1.29	1.15

IGBT Gate Driver Optocoupler

Dual Channel



Applications:
- Isolated IGBT/Power MOSFET gate drive
- AC and brushless DC motor drives
- Industrial inverters and Uninterruptible Power Supply (UPS)

- Under Voltage Lock-Out Protection (UVLO) with Hysteresis
- Desaturation Detection
- Miller Clamping
- Open Collector Isolated fault feedback
- 'Soft' IGBT Turn-off
- Fault Reset by next LED turn-on (low to high) after fault mute period
- Available in SO-16 package
- Safety approvals: UL approved, 3750 VRMS for 1 minute, CSA approved, IEC/EN/DIN-EN 60747-5-2 approved VIORM = 891 VPEAK

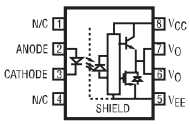
AV Input Current (mA)	CMR (kV/µs)	V_{cm} (V)	Switching Time Rise	Fall	Package	Mftrs. List No.	Order Code
12	15	1500	50ns	50ns	16-SOIC	ACPL-331J-000E	164-0540
12	15	1500	50ns	50ns	16-SOIC	ACPL-332J-000E	164-0541

528168

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+
ACPL-331J-000E	164-0540●	3.70	2.89	2.50	2.23
ACPL-332J-000E	164-0541●	4.36	3.39	2.94	2.63

IGBT Gate Drive





Pinout for HCLP-3120

- 1.0V maximum low level output voltage eliminates the need for negative gate drive
- Undervoltage lock-out protection (UVLO) with hysteresis
- Wide operating V_{cc} range: 15 to 30 volts
- Industrial temperature range: -40°C to 100°C
- **UL** recognised

Peak Output Current (min.)	CMR (5V/µs) (min.)	V_{CM}	Supply Current (max.)	Prop. Delay (µs) t_{PLH}	t_{PHL}	Package	Mftrs. List No.	Order Code
0.2A	10	1000	12	0.1	0.1	6-SOIC Stretched	ACPL-P302-000E	164-0555
0.2A	10	1000	12	0.1	0.1	6-SOIC Stretched	ACPL-W302-000E	164-0561
0.4A	10	1000	3	0.7	0.7	DIP-8	HCPL-0314-000E	999-5064
0.4A	15	1500	3	0.7	0.7	DIP-8	HCPL-J314-000E	999-5080
0.4A	10	1000	3	0.7	0.7	DIP-8	HCPL-3140-000E	999-5072
0.4A	10	1000	12	0.1	0.1	6-SOIC Stretched	ACPL-P314-000E	164-0556
0.4A	10	1000	12	0.1	0.1	6-SOIC Stretched	ACPL-W314-000E	164-0563
0.5A	15	1500	16	0.05	0.05	8-DIP	ACPL-T350-000E	164-0559
0.5A	15	1500	16	0.05	0.05	8-DIP	ACPL-T350-300E	164-0560
0.5A	10	1000	12	0.2	0.3	SMD-DIP-8 (Gull Wing)	HCPL-3140-300E	108-5047
0.5A	15	1500	5	0.1	0.1	DIP-8	HCPL-3150-000E	999-5447
1A	15	1500	16	0.1	0.1	8-DIP	ACNW3190-000E	164-0531
1A	15	1500	16	0.1	0.1	8-DIP	ACNW3190-300E	164-0532
2A	40	1500	16	0.1	0.1	8-DIP	ACNW3130-000E	164-0660
2A	15	1500	5	0.1	0.1	DIP-8	HCPL-3120-000E	999-5439
2A	15	1500	5	0.5	0.5	DIP-8	HCNW-3120-000E	999-5056
2A	15	1500	5	0.5	0.5	DIP-8	HCPL-J312-000E	999-5048
2A	25	1500	16	0.1	0.1	8-DIP	ACPL-312T-000E	164-0535
2A	25	1500	16	0.1	0.1	8-SOIC	ACPL-312T-300E	164-0536
2A	40	1500	16	0.1	0.1	8-DIP	ACPL-3130-000E	164-0538
2A	40	1500	16	0.1	0.1	8-DIP	ACPL-3130-300E	164-0539
2A	40	1500	16	0.1	0.1	8-DIP	ACPL-J313-000E	164-0543
2A	40	1500	16	0.1	0.1	8-DIP	ACNW3130-300E	164-0530

206485

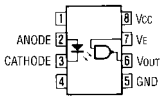
Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
ACPL-P302-000E	NEW 164-0555●	1.19	0.93	0.80	0.71	0.67
ACPL-W302-000E	NEW 164-0561●	1.23	0.96	0.84	0.75	0.69
HCPL-0314-000E	SMD 999-5064●	1.12	1.01	0.93	0.83	0.79
HCPL-J314-000E	999-5080●	0.88	0.81	0.71	0.65	0.62
HCPL-3140-000E	999-5072●	1.10	0.99	0.91	0.81	0.77
ACPL-P314-000E	NEW 164-0556●	1.49	1.16	1.00	0.90	0.85
ACPL-W314-000E	NEW 164-0563●	1.56	1.21	1.05	0.94	0.88
ACPL-T350-000E	NEW 164-0559●	1.49	1.16	1.00	0.90	0.85
ACPL-T350-300E	NEW 164-0560●	1.54	1.19	1.04	0.93	0.87
HCPL-3140-300E	SMD 108-5047●	1.55	1.09	0.98	0.84	0.75
HCPL-3150-000E	999-5447●	1.49	1.35	1.19	1.04	0.94
ACNW3190-000E	NEW 164-0531●	3.24	2.52	2.18	1.96	1.83
ACNW3190-300E	NEW 164-0532●	3.27	2.55	2.20	1.98	1.85
ACNW3130-000E	NEW 164-0660●	3.68	2.87	2.48	2.22	2.08
HCPL-3120-000E	999-5439●	1.93	1.68	1.44	1.22	1.07
HCNW-3120-000E	999-5056●	2.76	2.51	2.31	2.06	1.95

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
HCPL-J312-000E	999-5048●	1.82	1.65	1.51	1.37	1.29
ACPL-312T-000E	NEW 164-0535●	2.62	2.04	1.77	1.58	1.48
ACPL-312T-300E	NEW 164-0536●	2.66	2.07	1.79	1.60	1.50
ACPL-3130-000E	NEW 164-0538●	2.29	1.78	1.54	1.38	1.29
ACPL-3130-300E	NEW 164-0539●	2.34	1.82	1.57	1.41	1.32
ACPL-J313-000E	NEW 164-0543●	2.75	2.14	1.86	1.66	1.55
ACNW3130-300E	NEW 164-0530●	3.68	2.87	2.48	2.22	2.08

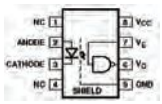
Optocoupler - Logic Gate Output

10MBd and 40MBd Data-Rate

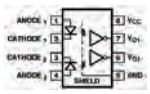




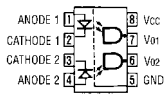
HCNW-2611



HCPL-261N



HCPL-263N



HCPL-2430

CSA and **IEC/EN/DIN EN 60747-5-2** Approved, **UL** Recognised

Channels	CMR (Vµs) (min.)	@ (VCM)	Input On-Current (mA)	Output Enable	Prop. Delay (ns) typ. t_{PHL} (ON)	t_{PLH}	Mftrs. List No.
10MBd Data-Rate (Typical), LSTTL/TTL Compatible							
Single	10000	1000	5	Yes	50	48	HCNW2611-300E
10MBd Data-Rate (Typical), HCMOS/LSTTL/TTL Compatible							
Single	1000*	1000	3	Yes	53	52	HCPL-261N-300E
Dual	1000*	1000	3	No	53	52	HCPL-263N-300E
40MBd Data-Rate (Typical), HCMOS/LSTTL/TTL Compatible							
Dual	1000	50	4		33	30	HCPL-2430-000E

403184

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
10MBd, LSTTL/TTL						
Single						
HCNW2611-300E	SMD 913-0020●	1.86	1.61	1.45	1.28	1.17
10MBd, HCMOS/LSTTL/TTL						
HCPL-261N-300E	SMD 913-0039●	1.54	1.33	1.19	1.06	0.97
Dual						
HCPL-263N-300E	SMD 913-0047●	2.85	2.44	2.22	2.03	1.84
40MBd, HCMOS/LSTTL/STTL/TTL						
Dual						
HCPL-2430-000E	912-9847●	6.90	5.93	5.39	4.69	4.33

Optocoupler - Gate Drive Output

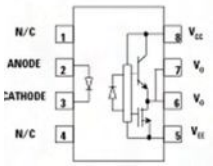
For IGBT's and MOSFET's



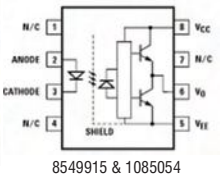
DIP - H = 3.56, W = 9.65, D = 6.35mm



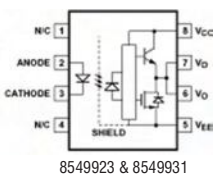
SMD - H = 3.65, W = 9.8, D = 6.35mm



8549940



8549915 & 1085054



8549923 & 8549931

UL Recognised 3750 V_{RMS} for 1 minute, **CSA** and **IEC/EN/DIN EN 60747-5-2** Approved

Guaranteed Temperature Range	Supply Current (mA)	Common Mode Rejection (KV/µs)	Voltage Supply (Vdc)	Package Style	Mftrs. List No.
Single Channel - 0.2A Output Current					
-40 to 100°C	3 mA	10	10 to 30V	DIP	HCPL-3020-000E
-40 to 100°C	3 mA	10	to 30V	DIP	HCPL-3020-300E
Single Channel - 0.5A Output Current					
-40 to 100°C	5 mA	15	15 to 30V	SMD	HCPL-3150-300E
Single Channel - 2.0A Output Current					
-40 to 100°C	5 mA	15	15 to 30V	SMD	HCPL-3120-300E
-40 to 100°C	6 mA	10	10 to 20V	SMD	HCPL-3180-300E
-40 to 100°C	6 mA	15	to	SMD	HCNW3120-300E
-40 to 100°C	6 mA	15	to	SMD	HCPL-J312-300E

RL Re-reeling available

Avago Technologies Optocouplers - continued

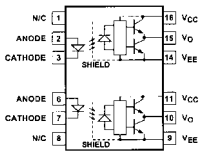
Optocoupler - Gate Drive Output - continued

For IGBT's and MOSFET's - continued

382803

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
HCPL-3020-000E	854-9915●	0.91	0.83	0.69	0.65	0.62
HCPL-3020-300E	SMD 108-5054●	1.22	0.87	0.80	0.67	0.59
HCPL-3120-300E	SMD 854-9923●	1.98	1.79	1.53	1.41	1.37
HCPL-3150-300E	SMD 854-9931●	1.71	1.55	1.33	1.22	1.18
HCPL-3180-300E	SMD 854-9940●	2.11	1.95	1.62	1.52	1.46
HCNW3120-300E	SMD 108-5046●	3.68	2.57	2.35	1.97	1.75
HCPL-J312-300E	SMD 108-5048●	2.67	1.85	1.68	1.43	1.28

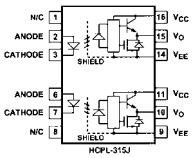
Dual Channel IGBT Gate Drive - Surface Mount



HCPL-314J



Small Outline 16 Pin Package



HCPL-315J

- Minimum peak output current: 0.4A HCPL-314J, 0.5A HCPL-315J
- Ultra high CMR: 10kV HCPL-314J, 15kV HCPL-315J @ V_{CM}=1.5kV
- Maximum propagation delay: 0.7 µs HCPL-314J, 0.5µs HCPL-315J max.
- Icc maximum: 3mA HCPL-314J, 5mA HCPL-315J
- Industrial temperature range: -40°C to +100°C
- Small outline 16 pin package

206652

Mftrs. List No.	Order Code	Price Each 1+	25+	50+	100+	250+
HCPL-314J-000E	999-4700●	2.95	2.11	1.96	1.59	1.52
HCPL-315J-000E	999-4718●	3.22	2.90	2.83	2.30	2.19

2.0Amp Gate Drive Optocoupler with Integrated (V_{CE}) Desaturation and Fault Status Feedback





HCPL-316J

The HCPL-316J is a highly integrated power control device that incorporates all the necessary components for a complete, isolated IGBT gate drive circuit with fault protection and feedback into one SO-16 package. TTL input logic levels allows direct interface with a microcontroller, and an optically isolated power output stage drives IGBTs with power ratings of up to 150A and 1200V.

- Drive IGBTs up to I_C=150A, V_{CE}=1200V
- Optically isolated, FAULT status feedback
- CMOS/TTL compatible
- 500ns maximum switching speeds
- 'Soft' IGBT turn-off
- Integrated fail-safe IGBT protection
- User configurable: Inverting, Non-inverting, Auto-shutdown
- Wide operating V_{CC} range; 15 to 30 volts
- -40°C to +100°C operating temperature range
- 15kV/µs minimum common mode rejection (CMR) @ V_{CM}=1500V

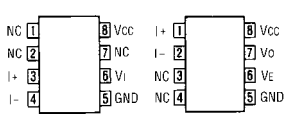
206653

Mftrs. List No.	Order Code	Price Each 1+	25+	50+	100+	250+
HCPL-316J-000E	999-4726●	5.98	4.12	3.93	3.19	3.03

20mA Current Loop



UL recognised.



HCPL4100 HCPL4200

HCPL4100: Optically coupled 20mA current loop transmitter. Optocoupler to operate as transmitter in 20mA current loop system. Internal shielding.

Supply voltage	4.5 to 20V	Data rate @ 400m line length	20K Baud
Common mode transient immunity	10KV/µs typ.	Output V_0 Withstand test voltage	27V max. 3KV dc

HCPL4200: Optically coupled 20mA current loop receiver. Optocoupler to operate as receiver in 20mA current loop system. Internal shielding.

Supply voltage	4.5 to 20V	Data rate @ 1400m line length	20K Baud
Common mode transient immunity	10KV/µs typ.	Input hysteresis current Withstand test voltage	0.8mA typ 3KV dc

206207

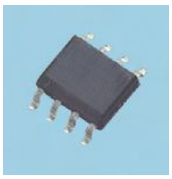
	Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
Transmitter	HCPL-4100-000E	912-9820●	4.49	3.87	3.50	3.06	2.83
Transmitter	HCPL-4100-300E	SMD 108-5030●	5.57	3.91	3.54	3.00	2.65
Receiver	HCPL-4200-000E	912-9839●	5.03	4.33	3.92	3.43	3.16
Receiver	HCPL-4200-300E	SMD 854-9958●	3.33	3.05	2.56	2.38	2.36

Optocoupler - Analog

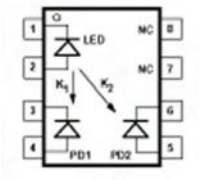
High Linearity and 20mA Current Loop



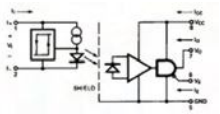
DIL - H = 5.1, W = 11.3, D = 9.0mm



SMD - H = 4, W = 11.5, D = 9mm



Analog Couplers



Current Loop Receiver

UL Recognised and **CSA** Approved

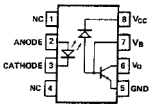
Operating Temperature Range	Transfer Gain - min (%)	Common Mode Rejection (KV/µs)	Bandwidth	Package Style	Mftrs. List No.
Single Channel - THT Analog Optocoupler					
-55 to 100°C	15%		1.5MHz	DIL	HCNR200-000E
-55 to 100°C	5%		1.5MHz	DIL	HCNR201-000E
Single Channel - Surface Mount Optocoupler					
-55 to 100°C	15%		1.5MHz	SMD	HCNR200-300E
-55 to 100°C	5%		1.5MHz	SMD	HCNR201-300E
Single Channel - 20mA Current Loop Receiver					
-40 to 85°C		1000V/µs	@ 1400 meters line length	SMD	HCPL-4200-300E

382781

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
HCNR200-000E	854-9702●	2.40	2.17	1.83	1.69	1.66
HCNR200-300E	SMD 854-9710●	2.18	1.97	1.65	1.53	1.49
HCNR201-000E	854-9729●	3.14	2.88	2.45	2.25	2.18
HCNR201-300E	SMD 854-9737●	3.16	2.89	2.46	2.26	2.19
HCPL-4200-300E	SMD 854-9958●	3.33	3.05	2.56	2.38	2.36

Wideband Analogue/Video





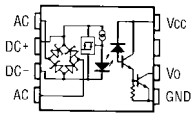
- Wide bandwidth 17MHz (typ)
- Low temperature coefficient -0.3%/°C
- Withstand proof voltage 2500V ac 1 minute
- Provides isolation for analogue signals, ideal for video isolation
- high voltage gain 2.0 (typ)
- High linearity at low drive currents

206292

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
HCPL-4562	492-024▲	1.23	1.17	1.05	0.90	0.81
HCPL-4562-300E	SMD 108-5044●	1.82	1.29	1.16	0.99	0.88

AC/DC to Logic Interfacing





UL recognised

Optocouplers for voltage and current threshold detection, 5 – 240V ac/dc voltage sensing. **HCPL3760** is an upgraded version of HCPL3700, having low input current.

Input threshold current (typ.):		Output Current (max.)	30mA
HCPL3700	2.5mA (on), 1.3mA (off)	Withstand test voltage	3000V dc
HCPL3760	1.2mA (on), 0.6mA (off)	Typ. data rate	4KHz

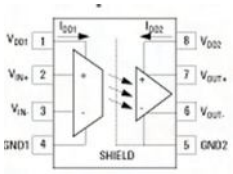
206204

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
HCPL-3700-000E	912-9863●	3.12	2.70	2.47	2.13	1.98
HCPL-3760-000E	912-9871●	4.34	3.75	3.39	2.96	2.73
HCPL-3700-300E	SMD 108-5018●	3.21	2.26	2.06	1.72	1.53
HCPL-3760-300E	SMD 108-5019●	4.56	3.17	2.90	2.45	2.16

Optocoupler - Isolation Amplifier

High CMR Capability





UL Recognised 3750 V_{RMS} for 1 minute, **CSA** and **IEC/EN/DIN EN 60747-5-2** Approved

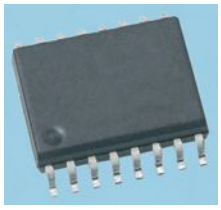
Operating Temperature Range	Gain Tolerance	Common Mode Rejection (KV/µs)	Voltage Supply (Vdc)	Bandwidth	Mftrs. List No.
-40 to 85°C	±3 %	15	4.5 to 5.5V	100kHz	HCPL-7800-000E
-40 to 85°C	±1 %	15	4.5 to 5.5V	100kHz	HCPL-7800A-000E
-40 to 100°C	±5 %	15	4.5 to 5.5V	100kHz	HCPL-7840-000E
-40 to 85°C	±5 %	15	4.5 to 5.5V	100kHz	HCPL-7800-300E
-40 to 85°C	±5 %	15	4.5 to 5.5V dc	100kHz	HCPL-7510-000E
-40 to 85°C	±5 %	15	4.5 to 5.5V dc	100kHz	HCPL-7510-300E
-40 to 85°C	±5 %	15	4.5 to 5.5V dc	100kHz	HCPL-7520-000E
-40 to 85°C	±5 %	15	4.5 to 5.5V	100kHz	HCPL-7800A-300E
-40 to 100°C	±5 %	15	4.5 to 5.5V	100kHz	HCPL-7840-300E
-40 to 85°C	±5 %	15	to	100kHz	HCPL-7520-300E

382828

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+
HCPL-7800-000E	855-0018●	6.60	6.02	5.07	4.70
HCPL-7800A-000E	855-0026●	8.57	7.80	6.58	6.10
HCPL-7840-000E	855-0034●	4.17	3.81	3.21	2.97
HCPL-7800-300E	SMD 108-5051●	8.00	5.62	5.10	4.29
HCPL-7510-000E	108-5055●	3.92	2.74	2.51	2.12
HCPL-7510-300E	SMD 108-5056●	4.41	3.08	2.82	2.39
HCPL-7520-000E	108-5057●	3.58	2.52	2.29	1.93
HCPL-7800A-300E	SMD 108-5058●	11.60	8.13	7.39	6.24
HCPL-7840-300E	SMD 108-5059●	5.02	3.50	3.18	2.69
HCPL-7520-300E	SMD 111-3924●	4.01	2.82	2.56	2.16

Optically Isolated Amplifier

Short Circuit and Overload Protected



H = 3.5, W = 10.312, D = 7.493mm

This isolation amplifier is designed for current sensing in electronic motor drives. In a typical implementation, motor currents flow through an external resistor and the resulting analogue voltage drop is sensed by the device. A larger analogue output voltage is created on the other side of the HCPL-788J's optical barrier. The output voltage is proportional to the motor drive current and can be connected directly to a single supply A to D converter. Since the common mode voltage swings several hundred volts in tens of nanoseconds in modern electronic motor drives, the device was designed to ignore very high common mode transient slew rates.

- Output voltage directly compatible with A/D converters
- Fast short circuit detection (3 µs)
- Transient fault protection
- 1µs / °C offset change against temperature
- 25 kV / µs isolation transient immunity
- Operating temperature -40°C to +85°C
- **CSA**, **IEC/EN/DIN EN 60747-5-2** Approved, **UL** Recognised

414766

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
HCPL-788J-000E	SMD 999-4734●	5.30	4.78	4.23	3.57	3.04

Surface Mount, SOIC-8

High Speed



Surface mount optocouplers in SOIC-8 package, compatible with standard surface mount processes. The electrical parameters are identical to the standard product. UL recognised.

Overall dimensions: H=5.8, W=5.08, D=3.2

Type Single Channel	Standard DIP Equivalent	Mftrs. List No.
Darlington output, low input current, high CTR	6N138	HCPL-0700-000E
Darlington output, low input current, high CTR	6N139	HCPL-0701-000E
Transistor	6N135	HCPL-0500-000E
Transistor	6N136	HCPL-0501-000E
Transistor, high CMR	HCPL-4504	HCPL-0454-000E
Transistor, high CMR	HCPL-4503	HCPL-0453-000E
Logic Gate, high CMR, logic gate	6N137	HCPL-0600-000E
Logic Gate, high CMR, logic gate	6N137	HCPL-0601-000E
Logic Gate, high CMR, logic gate	HCPL-2601	HCPL-0601-000E
Logic Gate, high CMR, logic gate	HCPL-2611	HCPL-0611-000E
Logic Gate CMOS	HCPL - 7710	HCPL-0710-000E
Logic Gate CMOS	HCPL - 7220	HCPL-0720-000E
Logic Gate CMOS	HCPL - 7220	HCPL-063A-000E
High Speed CMOS	HCPL - 7721	HCPL-0721-000E
Logic Gate, high CMR, HCMOS compatible, logic gate	HCPL-261A	HCPL-061A-000E
Very High CMR,IPM and gate drive interface	HCPL-4506	HCPL-0466-000E
Logic Gate, logic gate	HCPL-2201	HCPL-0201-000E
Very High CMR, logic gate	HCPL-2211	HCPL-0211-000E
Dual Channel		
Darlington output, low input current, high CTR	HCPL-4731	HCPL-073A-000E
Transistor	HCPL-2530	HCPL-0530-000E
Transistor	HCPL-2531	HCPL-0531-000E
Transistor	HCPL-4534	HCPL-0534-000E
Logic Gate, high CMR, logic gate	HCPL-2630	HCPL-0630-000E
Logic Gate, high CMR, logic gate	HCPL-2631	HCPL-0631-000E
High Speed, high CMR, logic gate	HCPL-4661	HCPL-0661-000E
Logic Gate, high CMR, HCMOS compatible, logic gate	HCPL-263A	HCPL-063A-000E
High Speed, high CMR, HCMOS compatible, logic gate	HCPL-263N	HCPL-063N-000E
Transistor, high CMR, HCMOS compatible, logic gate	HCPL-263N	HCPL-0501-000E
Low input current, high Darlington	HCPL-2730	HCPL-0730-000E
Low input current, high Darlington	HCPL-2731	HCPL-0731-000E

206278

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
Single Channel						
HCPL-0700-000E	SMD 999-5196●	1.26	1.10	0.97	0.69	0.62
HCPL-0701-000E	SMD 999-5200●	1.37	1.17	1.00	0.77	0.69
HCPL-0500-000E	SMD 999-5226●	1.29	1.13	0.98	0.77	0.52
HCPL-0501-000E	SMD 999-4688●	1.19	1.04	0.89	0.75	0.63
HCPL-0454-000E	SMD 999-5285●	2.13	1.86	1.61	1.22	1.04
HCPL-0453-000E	SMD 999-4670●	1.93	1.69	1.46	0.98	0.77
HCPL-0600-000E	SMD 999-4696●	1.66	1.43	1.22	0.87	0.77
HCPL-0601-000E	SMD 999-5102●	1.93	1.66	1.44	1.20	0.88
HCPL-0601-000E	SMD 999-5102●	1.93	1.66	1.44	1.20	0.88
HCPL-0611-000E	SMD 999-5382●	2.23	1.81	1.60	1.11	0.87
HCPL-0710-000E	SMD 934-6880●	6.24	5.46	4.96	4.26	3.93
HCPL-0720-000E	SMD 934-6899●	6.20	5.47	4.94	4.23	3.92
HCPL-063A-000E	SMD 999-5412●	5.05	4.23	3.62	2.58	2.00
HCPL-0721-000E	SMD 912-9804●	4.74	4.09	3.72	3.23	3.00
HCPL-061A-000E	SMD 999-5390●	1.99	1.64	1.41	1.08	0.88
HCPL-0466-000E	SMD 913-0012●	1.96	1.68	1.54	1.36	1.26
HCPL-0201-000E	SMD 999-5404●	2.08	1.74	1.45	1.17	1.01
HCPL-0211-000E	SMD 912-9995●	2.41	2.05	1.87	1.63	1.51
Dual Channel						
HCPL-073A-000E	SMD 913-0004●	3.49	3.02	2.73	2.40	2.21
HCPL-0530-000E	SMD 999-5161●	2.73	2.34	2.00	1.71	1.55
HCPL-0531-000E	SMD 999-5170●	2.87	2.50	2.09	1.77	1.60
HCPL-0534-000E	SMD 999-5188●	3.92	3.33	2.82	2.18	1.80
HCPL-0630-000E	SMD 999-5099●	3.38	2.82	2.37	1.80	1.44
HCPL-0631-000E	SMD 999-5110●	4.18	3.37	2.76	2.05	1.79
HCPL-0661-000E	SMD 913-0055●	3.75	3.20	2.93	2.56	2.37
HCPL-063A-000E	SMD 999-5412●	5.05	4.23	3.62	2.58	2.00
HCPL-063N-000E	SMD 913-0063●	4.06	3.48	3.16	2.76	2.56
HCPL-0501-000E	SMD 999-4688●	1.19	1.04	0.89	0.75	0.63
HCPL-0730-000E	SMD 999-5277●	2.95	2.46	2.23	1.83	1.65
HCPL-0731-000E	SMD 999-5129●	3.15	2.76	2.31	2.02	1.83

Optocoupler - CMOS

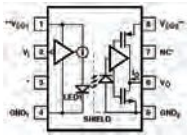
High Speed



SO8



DIL



Package Style	Length	Width	Depth	Lead Pitch	Row Pitch
SO-8	3.175mm	5.08mm	3.937mm	1.27mm	5.994mm
8 Pin DIP (300Mil.)	3.56mm	9.65mm	7.62mm	2.54mm	7.62mm

These High Speed optocouplers utilize the latest CMOS IC technology to combine outstanding speed performance with an exceptionally low power consumption of 150mW.
No external interface circuitry is required because the device allows CMOS logic to be connected directly to the input and output. The only external components required for proper operation are two bypass capacitors. (0.01µF to 0.1µF)

+5V CMOS

Package Style	Data Rate MBd	CMR (Min.) kV/µs	Current Input µA	Current Output mA	Voltage Input V	Voltage Output V	Isolation V	Prop. Delay (Max.) ns	Order Code
SO-8		10	10	10	6.0	6.5	3750	20	934-6880
SO-8		10	10	10	6.0	6.5	3750	40	934-6899
SO-8	50 MBd	10	10	10	5.5	6.5	560	22	913-0209
8 Pin DIP (300Mil.)		10	10	10	6.0	6.5	3750	20	934-6902
8 Pin DIP (300Mil.)		10	10	10	6.0	6.5	3750	40	934-6910
8 Pin DIP (300Mil.)		10	10	10	6.0	6.5	3750	22	934-6929

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
HCPL-0710-000E	SMD 934-6880●	6.24	5.46	4.96	4.26	3.93
HCPL-0720-000E	SMD 934-6899●	6.20	5.47	4.94	4.23	3.92
HCPL-0723-000E	SMD 913-0209●	5.28	4.53	4.14	3.60	3.33
HCPL-7710-000E	934-6902●	4.96	4.37	3.95	3.40	3.13
HCPL-7720-000E	934-6910●	5.74	5.04	4.57	3.92	3.61
HCPL-7723-000E	934-6929●	6.05	5.30	4.80	4.13	3.81

RL Re-reeling available

Avago Technologies Optocouplers - continued

Optocoupler - CMOS - continued

High Speed - continued

+3.3V and +5V CMOS

Package Style	Data Rate MBd	CMR (Min.) kV/µs	Current Input µA	Current Output mA	Voltage Input V	Voltage Output V	Isolation V	Prop. Delay (Max.) ns	Order Code
8 Pin DIP (300Mil.)	25MBd	10	10	10	5.5	6.5	3000	40	160-2608
8 Pin DIP (300Mil.)	25MBd	10	10	10	5.5	6.5	3000	40	160-2609

403146

Mftrs. List No.	Order Code	Price Each 1+	25+	50+	100+	250+
ACPL-772L-000E	NEW SMD 160-2608●	4.54	3.17	2.89	2.56	2.45
ACPL-772L-300E	NEW SMD 160-2609●	4.57	3.20	2.91	2.58	2.46

Avago AC Input Optocouplers


DIP-4 (300mm)


DIP-4 (400mm)


DIL-8 (000E option)


DIL-14 (000E option)

- Fast response time (typ 5µs @ V_{CE}=2V, I_C=2mA, R_L=100Ω)
- CSA, UL 1577 and IEC/EN/DIN EN 60747-5-2 Approved

The HCPL-814 is an AC-input single channel, high-density optocoupler which is packaged in a 4-pin DIP package. Wide lead spacing option available.
The ACPL-824 is an AC-input dual channel full-pitch phototransistor optocoupler which contains four light emitting diode optically coupled to two separate phototransistor. Wide body (10.16mm 0.4") The ACPL-844 is the 4 Channel version in a 14 pin DIP package.
Also available in wide-lead spacing(10.16mm, 0.4") option and lead bend SMD option with input-output isolation voltage at 5000 Vrms.

No. Channels	Case Style	CTR Range (%)	Input Current, max. (mA)	Mftrs. List No.
Single Channel				
1	DIP-4 (300mm)	20 to 300	50	HCPL-814-000E
1	DIP-4 (300mm)	20 to 300	50	HCPL-814-060E
1	DIP-4 (300mm)	20 to 300	50	HCPL-814-300E
1	DIP-4 (300mm)	20 to 300	50	HCPL-814-360E
1	DIP-4 (400mm)	20 to 300	50	HCPL-814-W00E
1	DIP-4 (400mm)	20 to 300	50	HCPL-814-W60E
1	DIP-4 (300mm)	50 to 150	50	HCPL-814-00AE
1	DIP-4 (300mm)	50 to 150	50	HCPL-814-06AE
1	DIP-4 (300mm)	50 to 150	50	HCPL-814-30AE
1	DIP-4 (300mm)	50 to 150	50	HCPL-814-36AE
1	DIP-4 (400mm)	50 to 150	50	HCPL-814-W0AE
1	DIP-4 (400mm)	50 to 150	50	HCPL-814-W6AE
Dual Channel				
2	DIL-8	20 to 300	50	ACPL-824-000E
2	DIL-8 (Lead Bend)	20 to 300	50	ACPL-824-300E
2	DIL-8 (10.16mm)	20 to 300	50	ACPL-824-W00E
Quad Channel				
4	DIL-16 (Lead Bend)	20 to 300	50	ACPL-844-300E
4	DIL-16 (10.16mm)	20 to 300	50	ACPL-844-W00E
4	DIL-16	20 to 300	50	ACPL-844-000E

461068

Mftrs. List No.	Order Code	Price Each 1+	25+	100+
Single Channel				
HCPL-814-000E	NEW 160-4629●	0.280	0.192	0.149
HCPL-814-060E	NEW 160-4631●	0.310	0.210	0.168
HCPL-814-300E	NEW 160-4633●	0.310	0.210	0.168
HCPL-814-360E	NEW 160-4635●	0.310	0.210	0.168
HCPL-814-W00E	NEW 160-4638●	0.310	0.210	0.168
HCPL-814-W60E	NEW 160-4640●	0.310	0.210	0.168
HCPL-814-00AE	NEW 160-4630●	0.310	0.210	0.168
HCPL-814-06AE	NEW 160-4632●	0.310	0.210	0.168
HCPL-814-30AE	NEW 160-4634●	0.310	0.210	0.168
HCPL-814-36AE	NEW 160-4637●	0.310	0.210	0.168
HCPL-814-W0AE	NEW 160-4639●	0.310	0.210	0.168
HCPL-814-W6AE	NEW 160-4641●	0.310	0.210	0.168
Dual Channel				
ACPL-824-000E	133-9025●	0.430	0.350	0.310
ACPL-824-300E	SMD 133-9026●	0.430	0.350	0.310
ACPL-824-W00E	133-9027●	0.330	0.270	0.240
Quad Channel				
ACPL-844-000E	133-9028●	0.870	0.680	0.600
ACPL-844-300E	SMD 133-9029●	0.870	0.680	0.600
ACPL-844-W00E	133-9030●	0.650	0.520	0.450

Avago DC Input Optocouplers


DIL-8 (000E option)


DIL-14 (000E option)

- Fast response time (typ 5µs @ V_{CE}=2V, I_C=2mA, R_L=100Ω)
- CSA, UL 1577 and IEC/EN/DIN EN 60747-5-2 Approved

Avago ACPL-827 is a DC-input dual channel full-pitch phototransistor optocoupler which contains two light emitting diode optically coupled to two separate transistor. It is packaged in a 8-pin DIP package.
The ACPL-847 series is the 4 channel version, 16-pin DIP package.
Also available in wide-lead spacing(10.16mm, 0.4") option and lead bend SMD option with input-output isolation voltage at 5000 Vrms.

No. Channels	CTR Range %	Case Style	Input Current, max. mA	Mftrs List No.
2	50 to 600	DIL-8	50	ACPL-827-000E
2	50 to 600	DIL-8 (Lead Bend)	50	ACPL-827-300E
2	50 to 600	DIL-8 (10.16mm)	50	ACPL-827-W00E
2	130 to 260	DIL-8	50	ACPL-827-00BE
2	130 to 260	DIL-8 (Lead Bend)	50	ACPL-827-30BE
2	130 to 260	DIL-8 (10.16mm)	50	ACPL-827-W0BE
2	200 to 400	DIL-8	50	ACPL-827-00CE
2	200 to 400	DIL-8 (Lead Bend)	50	ACPL-827-30CE
2	200 to 400	DIL-8 (10.16mm)	50	ACPL-827-W0CE
4	50 to 600	DIL-16	50	ACPL-847-000E
4	50 to 600	DIL-16 (Lead Bend)	50	ACPL-847-300E
4	50 to 600	DIL-16 (10.16mm)	50	ACPL-847-W00E
4	130 to 400	DIL-16	50	ACPL-847-00GE
4	130 to 400	DIL-16 (Lead Bend)	50	ACPL-847-30GE
4	130 to 400	DIL-16 (10.16mm)	50	ACPL-847-W0GE

461073

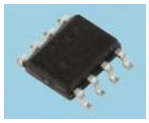
Mftrs. List No.	Order Code	Price Each 1+	25+	100+
Dual Channel (8 pin DIL)				
ACPL-827-000E	133-9031●	0.360	0.280	0.250
ACPL-827-00BE	133-9032●	0.280	0.220	0.198
ACPL-827-00CE	133-9033●	0.370	0.300	0.270
ACPL-827-300E	SMD 133-9034●	0.280	0.200	0.182
ACPL-827-30BE	SMD 133-9036●	0.280	0.220	0.198
ACPL-827-30CE	SMD 133-9038●	0.280	0.220	0.198
ACPL-827-W00E	133-9039●	0.360	0.280	0.250
ACPL-827-W0BE	133-9040●	0.370	0.300	0.270
ACPL-827-W0CE	133-9041●	0.370	0.300	0.270
Quad Channel (16 pin DIL)				
ACPL-847-000E	133-9042●	0.680	0.550	0.470
ACPL-847-00GE	133-9043●	0.720	0.580	0.500
ACPL-847-300E	SMD 133-9044●	0.680	0.550	0.470
ACPL-847-30GE	SMD 133-9045●	0.580	0.470	0.400
ACPL-847-W00E	133-9046●	0.520	0.410	0.360
ACPL-847-W0GE	133-9048●	0.720	0.580	0.500

Avago Technologies 3.3 Volt Optocoupler

3.3 Volt Digital Optocouplers

Single and Dual Channels, DIP and SO8 Packages




SO-8


DIP-4

- The worlds first 3.3 volt optocouplers
- Excellent performance in isolation, CMR drive current and propogation delay
- Data rates of 100KBd to 15MBd
- JEDEC specification for 3.3V LVTTL/LVCMOS logic
- CMR up to 25kv/µs
- Safety approvals **VDE, CSA (pending)** and **UL** Recognised

5 Volt Equivalents	3.3 Volt Versions	Description	Channels	Package	Order Code
Single Channel - DIP Versions					
6N135 6N136	HCPL-250L-000E	1MBd TTL isolator -High input drive.	1	DIP	912-9880
6N137 HCPL-2601	HCPL-260L-000E	15MBd logic gate isolator - High speed, high CMR.	1	DIP	999-4971
6N138 6N139	HCPL-270L-000E	High gain 0.5mA isolator - Low Input I_f	1	DIP	999-4980
Single Channel - SO8 Versions					
HCPL-0500 HCPL-0501	HCPL-050L-000E	1MBd TTL isolator - High input drive.	1	SO-8	999-4998
HCPL-0600 HCPL-0601	HCPL-060L-000E	15MBd logic gate isolator - High speed, high CMR.	1	SO-8	912-9898
HCPL-0700 HCPL-0701	HCPL-070L-000E	High gain 0.5mA isolator - Low Input I_f	1	SO-8	999-5005
Daul Channel - DIP Versions					
HCPL-2630 HCPL-2631	HCPL-263L-000E	15MBd logic gate isolator - High speed, high CMR.	2	DIP	999-5021
HCPL-2730 HCPL-2731	HCPL-273L-000E	High gain 0.5mA isolator - Low Input I_f	2	DIP	999-5030
Dual Channel - SO8 Versions					
HCPL-0530 HCPL-0531	HCPL-053L-000E	1MBd TTL isolator - High input drive.	2	SO-8	912-9901
HCPL-0630 HCPL-0631	HCPL-063L-000E	15MBd logic gate isolator - High speed, high CMR.	2	SO-8	912-9910

RL Re-reeling available

5 Volt Equivalents	3.3 Volt Versions	Description	Channels	Package	Order Code
Dual Channel - SO8 Versions					
HCPL-0730 HCPL-0731	HCPL-073L-000E	High gain 0.5mA isolator - Low Input I_f	2	SO-8	912-9928
Single Channel - High Speed					
	ACPL-072L-000E	High Speed	1	SO-8	124-4506
Dual Channel - High Speed					
	ACPL-K63L-000E	High Speed	1	SO-8 Stretched	124-4508

229072

Mftrs. List No.	Order Code	Price Each 1+	25+	50+	100+	250+
Single Channel - DIP Version and Lead-Bend DIP (300E suffix)						
HCPL-250L-000E	912-9880●	0.96	0.83	0.76	0.67	0.61
HCPL-260L-000E	999-4971●	1.22	1.12	0.94	0.73	0.67
HCPL-260L-300E	SMD 108-5052●	1.51	1.06	0.97	0.81	0.72
HCPL-270L-000E	999-4980●	0.68	0.62	0.55	0.40	0.37
Single Channel - SO8 Version						
HCPL-050L-000E	SMD 999-4998●	1.26	1.13	0.95	0.75	0.68
HCPL-060L-000E	SMD 912-9898●	1.57	1.35	1.22	1.07	0.99
HCPL-070L-000E	SMD 999-5005●	1.28	1.16	0.98	0.77	0.70
Dual Channel - DIP Version and Lead-Bend DIP (300E suffix)						
HCPL-263L-300E	SMD 108-5053●	2.83	1.99	1.80	1.52	1.36
HCPL-263L-000E	999-5021●	2.85	2.65	2.31	1.69	1.51
HCPL-273L-000E	999-5030●	2.44	2.29	1.84	1.45	1.29
Dual Channel - SO-8 Version						
HCPL-053L-000E	SMD 912-9901●	2.98	2.55	2.33	2.03	1.86
HCPL-063L-000E	SMD 912-9910●	3.67	3.15	2.87	2.51	2.33
HCPL-073L-000E	SMD 912-9928●	3.33	2.83	2.59	2.28	2.08
Dual Channel - High Speed, SO-8/Stretched SO-8						
ACPL-072L-000E	SMD 124-4506●	4.84	3.39	3.08	2.59	2.48
ACPL-K63L-000E	SMD 124-4508●	3.96	2.79	2.52	2.13	2.03

Optocouplers

Phototransistor Output

With or Without Base Connection



DIP-4-stackable



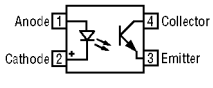
DIP-6



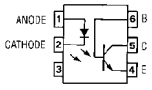
DIP-8



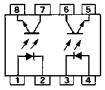
SOP-4L



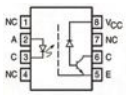
1328379, 1328381
1328382, 1328387



132-8375, 132-8377,
132-8378



1328385,
1328386



1328386

- The DIP-4 stackable, enables end to end stacking conserving 2.54mm pin spacing across multiple IC's
- Approved to **DIN EN 60747-5-2 (VDE)**, **UL** Recognised

Isolation Voltage	Forward Voltage (typ)	Forward Voltage (max)	Time Tr (µS)	Time Tf (µS)	Coupling Capacitance (typ)	Seperate Base?	Channels	CTR (min)	CTR (max)	Order Code
With base connection										
5300V ac	1.3V	1.5V	—	—	<0.5pF	✓	1	100%	—	132-8375
600V ac	1.25V	1.6V	3	3.7	0.2pF	✓	1	100%	200%	132-8377
600V ac	1.25V	1.6V	7.0	6.7	0.3pF	✓	1	50%	50	132-8378
Without base connection										
5300V ac	1.4V	1.7V	23	7	—	—	1	—	—	132-8376
Stackable range										
5000V ac	1.25V	1.6V	3.0	4.7	0.3pF	—	1	50%	600%	132-8379
5000V ac	1.25V	1.6V	3.0	4.7	0.3pF	—	1	100%	200%	132-8381
5000V ac	1.25V	1.6V	3.0	4.7	0.3pF	—	1	200%	400%	132-8382
Stackable range - AC input										
5000V ac	1.25V	1.6V	3.0	4.7	—	—	4	20%	300%	132-8383
Dual channel										
5000V ac	1.25V	1.6V	3.0	4.7	0.3pF	—	2	50%	100%	132-8385
GaAs high speed, with photo-diode and transistor										
5300V ac	1.6V	1.9V	—	—	—	—	1	19%	30%	132-8386
High speed, low profile										
5000V ac	1.25V	1.6V	3.0	4.7	—		1	50%	150%	132-8387

457833

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+
With base connection					
4N35	132-8375●	0.280	0.184	0.132	0.117
CNY75GB	132-8377●	0.188	0.140	0.123	0.112
CQY80NG	132-8378●	0.173	0.132	0.115	0.105
Without base connection					
6N137	132-8376●	0.930	0.590	0.420	0.380
Stackable range					
K817P	132-8379●	0.200	0.152	0.136	0.121
K817P3	132-8381●	0.200	0.156	0.139	0.125
K817P9	132-8382●	0.173	0.132	0.115	0.105
Stackable range - AC input					
K844P	132-8383●	1.070	0.800	0.710	0.650

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+
Dual channel					
MCT6H	132-8385●	0.340	0.260	0.220	0.199
GaAs high speed, with photo-diode and transistor					
SFH6345	132-8386●	1.490	1.070	0.860	0.610
High speed, low profile					
TCLT1005	SMD 132-8387●	0.330	0.250	0.220	0.195

Optically Coupled Isolator

Phototransistor Output



- 10 kV electrical isolation
- Phototransistor output
- Opaque plastic housing
- CTR = 50 (Min) and 125 (Max)
- V_{CE} (Max) = 30V

Dia. = 6.35, L = 13.97 (Body), L = 12.71mm (leads)

497604

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+
OPI1264B	149-7964●	2.47	1.37	1.26	1.21

Opto-Couplers

Transistor Output

496938

Mftr.	Description	Mftrs. List No.	Order Code		Price Each 1+
AV	Mini-flat	HCPL-354-000E	SMD 124-4538●	RL	0.300
AV	Mini-flat, Rank Mark A	HCPL-354-00AE	SMD 124-4539●	RL	0.330
AV	Mini-flat, IEC/EN/DIN	HCPL-354-060E	SMD 124-4540●	RL	0.330
AV	Mini-flat, IEC/EN/DIN, Rank Mark A	HCPL-354-06AE	SMD 124-4542●	RL	0.250
AV	8 Pin DIP	HCPL-J314-300E	SMD 124-4583●		1.670
SHARP	4 Pin DIP	PC123X2YFZ0F	124-3875●		0.148
SHARP	Mini-flat, 4 Pin	PC367NTJ000F	SMD 124-3876●	RL	0.490
SHARP	10Mb/s Mini-flat, 8 Pin	PC410S0NIP0F	SMD 124-3877●	RL	1.050
SHARP	25Mb/s Mini-flat, 8 Pin	PC412S0NIP0F	SMD 124-3878●	RL	1.970
SHARP	10Mb/s Mini-flat, 8 Pin, 2 Chn.	PC4D10SNIP0F	SMD 124-3880●	RL	2.590
SHARP	DIP 8 Pin	PC923L0NIP0F	SMD 124-3882●	RL	1.300
TOSH	Mini-flat DIP, 11-7A8	4N25(SHORT)	122-5849●		0.420
TOSH	Mini-flat, 11-4C2, CTR 10%	TLP112	SMD 122-5846●		1.540
TOSH	Mini-flat, 11-4C2, CTR 20%	TLP112A	SMD 122-5847●		1.540
TOSH	Mini-flat, 11-4C2, CTR 20%	TLP114A	SMD 122-5850●		2.500
TOSH	Mini-flat, 11-4C1, CTR 100-600%	TLP181(GB)	SMD 122-5851●		0.280
TOSH	Mini-flat, 11-4C1, CTR 100-300%	TLP181(GR)	SMD 122-5852●		0.290
TOSH	Mini-flat, MSFOP6	TLP260J	SMD 122-5864●		0.960
TOSH	DIP 8 Pin, 11-10C4	TLP2601	122-5853●		1.930
TOSH	4 Pin High Pitch, Mini-flat	TLP281	SMD 122-5848●		0.410
TOSH	4 Pin 11-5B2, CTR 50-600%	TLP421	SMD 122-5854●		0.200
TOSH	4 Pin 11-5B2, CTR 100-600%	TLP421(GB)	122-5855●		0.280
TOSH	4 Pin 11-5B2, CTR 100-300%	TLP421(GR)	122-5857●		0.200
TOSH	16 Pin 11-20A3, 4 Chn.	TLP504A-2	122-5834●		1.950
TOSH	8 Pin 11-10C4, 2 Chn.	TLP521-2(GB)	122-5835●		0.580
TOSH	4 Pin 11-5B2, 1 Chn. CTR 100-600%	TLP521-1(GB)	122-5859●		0.280
TOSH	4 Pin 11-5B2, 1 Chn. CTR 50-150%	TLP521-1(Y)	122-5860●		0.260
TOSH	16 Pin 11-20A3, 4 Chn. CTR 50-600%	TLP521-4(A)	122-5842●		1.350
TOSH	16 Pin 11-20A3, 4 Chn. CTR 100-600%	TLP521-4(GB)	122-5843●		2.280
TOSH	6 Pin 11-7A8, CTR 100-200%	TLP535(CNY17-3)	122-5861●		0.540
TOSH	6 Pin 11-7A8, CTR 160-320%	TLP535(CNY17-4)	122-5862●		0.590
TOSH	8 Pin 11-10C4, 2 Chn. CTR 50-600%	TLP620-2	122-5825●		1.090
TOSH	4 Pin 11-5B2, 1 Chn. CTR 100-600%	TLP620(GB)	122-5863●		0.940
TOSH	8 Pin 11-10C4, 2 Chn. CTR 100-600%	TLP620-2(GB)	122-5826●		1.210
TOSH	16 Pin 11-20A3, 2 Chn. CTR 100-600%	TLP620-4(GB)	122-5838●		2.140
TOSH	8 Pin 11-10C4, 2 Chn. CTR 50-600%	TLP621-2	122-5828●		0.710
TOSH	4 Pin 11-5B2, 1 Chn. CTR 100-600%	TLP621(GB)	122-5814●		0.640
TOSH	8 Pin 11-10C4, 2 Chn. CTR 100-600%	TLP621-2(GB)	122-5827●		0.730
TOSH	16 Pin 11-20A3, 2 Chn. CTR 100-600%	TLP621-4(GB)	122-5839●		1.660
TOSH	4 Pin 11-5B2, 1 Chn. CTR 100-1200%	TLP624	122-5815●		0.690
TOSH	8 Pin 11-10C4, 2 Chn. CTR 100-1200%	TLP624-2	122-5816●		1.080
TOSH	4 Pin 11-5B2, 1 Chn. CTR 1000-4000%	TLP627	122-5817●		0.670
TOSH	8 Pin 11-10C4, 2 Chn. CTR 1000-4000%	TLP627-2	122-5829●		1.870
TOSH	16 Pin 11-20A3, 4 Chn. CTR 1000-4000%	TLP627-4	122-5840●		2.860
TOSH	8 Pin 11-10C4, 2 Chn. CTR 19-30%	TLP2531	122-5833●		2.380
AV	6 Pin DIP, 1 Chn. IEC/EN/DIN, CTR 20% Min	4N25-360E	SMD 124-4502●		0.167
AV	6 Pin DIP, 1 Chn. CTR 20% Min	4N25-300E	SMD 124-4501●		0.290
AV	6 Pin DIP, 1 Chn. CTR 20% Min	4N25-000E	124-4499●		0.270
AV	6 Pin DIP, 1 Chn. IEC/EN/DIN, CTR 20% Min	4N25-060E	124-4500●		0.146
AV	8 Pin 1 Chn. CTR 19-50%	ACPL-K453-000E	SMD 124-4507●		1.690
AV	8 Pin 1 Chn. CTR 19-50%	ACPL-M43T-000E	SMD 124-4509●		3.340
AV	6 Pin 1 Chn. CTR 40% Min.	CNY17-3-000E	124-4519●		0.270
AV	6 Pin 1 Chn. IEC/EN/DIN. CTR 40% Min.	CNY17-3-060E	124-4520●		0.290
AV	6 Pin 1 Chn. IEC/EN/DIN. CTR 40% Min.	CNY17-3-360E	SMD 124-4522●		0.290
AV	6 Pin 1 Chn. 0.4" Lead Space. CTR 40% Min.	CNY17-3-W00E	124-4523●		0.290
AV	6 Pin 1 Chn. 0.4" Lead Space. IEC/EN/DIN. CTR 40% Min.	CNY17-3-W60E	124-4524●		0.146
FAIRC	4 Pin DIP 1 Chn. CTR 130-260%	FOD817B	122-6330●		0.170

RL Re-reeling available

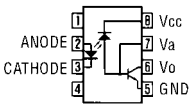
Optocouplers - continued

Transistor Output

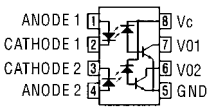
High Speed, 1Mb/s Data Rate

FAIRCHILD SEMICONDUCTOR





Single



Dual

All parts are **UL** recognised

Isolation Voltage (pk) (V)	Current Transfer Ratio Ratio @ (min.) @ I_F = 1.6mA	I_{cc} (max) (mA)	Switching Time (µs) typ. t_{PHL}	t_{PLH}	Mftrs. List No.	Order Code
Single Channel - Transistor Output						
2500	7%	200	0.45	0.5	6N135	102-1342
2500	19%	200	0.45	0.3	6N136	102-1195
2500	12%	200	0.45	0.3	HCPL-2503	102-1244
Dual Channel - Transistor Output						
2500	7%	400	0.45	0.5	HCPL-2530	102-1246
2500	19%	400	0.45	0.3	HCPL-2531	102-1247

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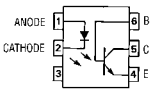
Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
Single Channel - Transistor Output						
6N135	102-1342●	0.92	0.59	0.42	0.31	0.25
6N136	102-1195●	0.69	0.49	0.38	0.28	0.25
HCPL-2503	102-1244●	0.48	0.42	0.36	0.30	0.24
Dual Channel - Transistor Output						
HCPL-2530	102-1246●	1.46	0.99	0.71	0.66	0.61
HCPL-2531	102-1247●	1.46	0.99	0.71	0.66	0.61

For **IC Sockets** see page 749

Transistor Output

FAIRCHILD SEMICONDUCTOR





Transistor



ac Input

All parts are **UL** recognised. Items ending in either 'V-M' or '.300' are also **VDE** approved.

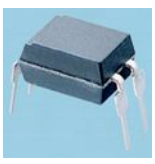
Isolation Voltage (pk)	Curr. Trsfr. Ratio @ I_F = 10ma min	Breakdown Voltage (min) $V_{(BR)}$ CEO	Switching Time (µs) typ. t_r	t_f	Mftrs. List No.
5300	40%	70	2	11	CNY17-1TV-M
5300	100%	70	3	14	CNY17-3TV-M
7500	20%	30	2.8	4.5	4N25-M
7500	20%	30	2.8	4.5	4N26-M
7500	50%	30	2.8	4.5	H11A1-M
7500	63%	70	1.6	2.3	CNY17-2-M
7500	100%	30	7.5	5.7	4N35-M
7500	100%	70	1.6	2.3	CNY17-3-M
7500	100%	30	7.5	5.7	4N36-M
7500	100%	30	7.5	5.7	4N37-M

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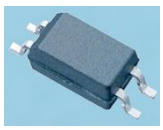
Order Multiple=5 Mftrs. List No.	Order Code	Price Each 5+	25+	100+	250+	500+
Transistor Output						
4N25-M	102-1349●	0.340	0.320	0.230	0.159	– –
4N26-M	102-1350●	0.220	0.185	0.169	0.113	0.107
4N35-M	102-1351●	0.350	0.320	0.230	0.159	0.120
4N36-M	102-1352●	0.250	0.198	0.181	0.123	0.113
4N37-M	102-1353●	0.230	0.200	0.154	0.108	0.081
CNY17-2-M	102-1355●	0.460	0.320	0.230	0.159	0.120
CNY17-3-M	102-1356●	0.460	0.320	0.230	0.159	0.120
H11A1-M	102-1358●	0.200	0.189	0.143	0.095	0.091
10mm Lead Bend Versions						
CNY17-1TV-M	102-1204●	0.240	0.220	0.171	0.098	0.096
FOD060L	122-8309●	0.830	0.720	0.690	0.680	0.660
Order Multiple=5		**5+**	**25+**	**100+**	**250+**	**500+**
SO-8 (SMD)						
CNY17-3TV-M	102-1216●	0.420	0.350	0.290	0.164	0.144

High Operating Temperature Phototransistor Output

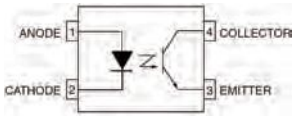
FAIRCHILD SEMICONDUCTOR



DIP-B



SMDIP-B



The FOD817 Series consists of a gallium arsenide infrared emitting diode driving a silicon phototransistor in a 4-pin dual in-line package.

- -55°C to 110°C operating temperature
- **C-UL** and **UL** approved
- Parts marked **VDE**=VDE approved
- Compact 4-pin package

Isolation Voltage (Vrms)	Curr. Trsfr. Ratio @ I_F =10mA min	max	Breakdown $V_{(BR)}$ CEO min	Switching Time (µs) typ. t_r	t_f	Mftrs. List No.	Lead Spacing	
DIP-B Package								
5000	63%	125%	70	4	3	FOD617B300	0.3"	VDE
5000	100%	200%	70	4	3	FOD617C	0.3"	
5000	100%	200%	70	4	3	FOD617C300	0.3"	VDE
SMDIP-B Package								
5000	40%	80%	70	4	3	FOD617AS		
5000	40%	80%	70	4	3	FOD617A3S		VDE
5000	63%	125%	70	4	3	FOD617BSD		
5000	63%	125%	70	4	3	FOD617B3S		VDE
5000	100%	200%	70	4	3	FOD617CS		
5000	100%	200%	70	4	3	FOD617CSD		

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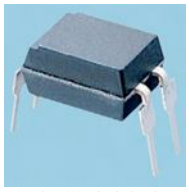
Mftrs. List No.	Order Code	Price Each 5+	25+	100+	250+	500+
DIP-B Package						
FOD617B300	149-5338●	0.166	0.116	0.089	0.082	0.081
FOD617C	149-5345●	0.220	0.154	0.119	0.108	0.101
FOD617C300	149-5346●	0.166	0.116	0.089	0.082	0.081
SMDIP-B Package						
FOD617AS	SMD 149-5334●	0.157	0.110	0.085	0.077	0.071
FOD617A3S	SMD 149-5332●	0.157	0.110	0.085	0.077	0.071
FOD617BSD	SMD 149-5342●	0.197	0.138	0.106	0.096	0.090
FOD617B3S	SMD 149-5340●	0.157	0.110	0.085	0.077	0.071
FOD617CS	SMD 149-5350●	0.157	0.110	0.085	0.077	0.071
FOD617CSD	SMD 149-5351●	0.197	0.138	0.106	0.096	0.090

Transistor Output

SHARP



H=3.5, W=4.58, D=7.62 (Widebody)



H=3.5, W=4.58, D=6.5

Designed for use in home appliances, tooling machines, computers and audio visual, measurement and telecommunication (terminal) equipment.
Approved by **BSI (BS EN60065, BS EN60950), CSA, DEMKO, FIMKO, NEMKO** and **SEMKO**
UL Recognised

Isolation Voltage 5kV
Current, If (max) 1A
Voltage, Vf (max) 1.4V dc
Time (rise / fall) 18µs / 18µs

Channels (pk.)	Case Style	Current Transfer Ratio	Current Ic (min)	Current Ic (max)	Mftrs. List No.	Order Code
Single	DIL	50 - 100%			PC123Y22FZ0F	970-7492
Single	DIP	50 - 100%			PC123Y23J00F	970-7506
Single	DIP	50%	2.5mA	7.5mA	PC123X1YSZ0F	161-8439
Single	DIP	50%	5mA	12.5mA	PC123X2YSZ0F	161-8440
Single	DIP	50%	10mA	20mA	PC123X5YSZ0F	161-8442
Widebody	DIP	50%	2.5mA	7.5mA	PC123X1YFZ0F	161-8443
Widebody	DIP	50%	10mA	20mA	PC123X5YFZ0F	161-8444
Single (SMD)	DIP	50%	2.5mA	7.5mA	PC123X1YIP0F	161-8445
Single (SMD)	DIP	50%	5mA	12mA	PC123X2YIP0F	161-8446
Single (SMD)	DIP	50%	10mA	20mA	PC123X5YIP0F	161-8447
Widebody (SMD)	DIP	50%	2.5mA	7.5mA	PC123X1YUP0F	161-8448
Widebody (SMD)	DIP	50%	5mA	12mA	PC123X2YUP0F	161-8449
Widebody (SMD)	DIP	50%	10mA	20mA	PC123X5YUP0F	161-8450

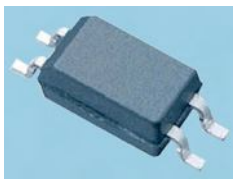
411985

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
PC123Y22FZ0F	970-7492●	0.320	0.280	0.260	0.240	0.220
PC123Y23J00F	SMD 970-7506● RL	0.175	0.136	0.110	0.094	0.087
PC123X1YSZ0F	NEW 161-8439●	0.220	0.192	0.174	0.156	0.141
PC123X2YSZ0F	NEW 161-8440●	0.220	0.192	0.174	0.156	0.141
PC123X5YSZ0F	NEW 161-8442●	0.220	0.192	0.174	0.156	0.141
PC123X1YFZ0F	NEW 161-8443●	0.220	0.192	0.174	0.156	0.141
PC123X5YFZ0F	NEW 161-8444●	0.220	0.192	0.174	0.156	0.141
PC123X1YIP0F	NEW 161-8445● RL	0.250	0.220	0.195	0.176	0.158
PC123X2YIP0F	NEW 161-8446● RL	0.250	0.220	0.195	0.176	0.158
PC123X5YIP0F	NEW 161-8447● RL	0.250	0.220	0.195	0.176	0.158
PC123X1YUP0F	NEW 161-8448● RL	0.280	0.250	0.230	0.200	0.182
PC123X2YUP0F	NEW 161-8449● RL	0.280	0.250	0.230	0.200	0.182
PC123X5YUP0F	NEW 161-8450● RL	0.280	0.250	0.230	0.200	0.182

Transistor Output

Mini-flat, half pitch package

SHARP



Input Current	50mA
Power Dissipation	170mW
Voltage (Vceo)	80V
Current, Ic (min / max)	0.2mA / 4mA
Time (rise / fall)	18µs / 18µs
No. of Pins	4
Operating Temperature	-30°C to +100°C

H=2.0, W=5.3, D=2.6mm

IR LED coupled to a phototransistor in a half pitch mini-flat package.
The small size makes these devices suitable for high product integration on a PCB.

The input-output isolation is 2.5kV rms.
UL flammability rating UL 94V-0
VDE Approved and **UL** Recognised.

411988

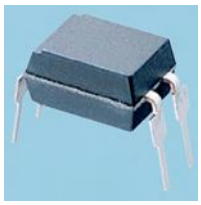
RL Re-reeling available

CTR (min - max)	Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+
120% - 250%	PC3H7DJ0000F	SMD 970-7611● RL	0.460	0.320	0.250	0.210
20% - 400%	PC3H7J00000F	SMD 970-7603● RL	0.410	0.290	0.220	0.181
20% - 400%	PC3H7AJ0000F	NEW 161-8454● RL	0.390	0.350	0.320	0.290
20% - 400%	PC3H7BJ0000F	NEW 161-8455● RL	0.390	0.350	0.320	0.290
20% - 400%	PC3H7CJ0000F	NEW 161-8456● RL	0.390	0.350	0.320	0.290
AC Input						
20% - 400%	PC3H4J00000F	NEW 161-8451● RL	0.410	0.360	0.330	0.300
20% - 400%	PC3H4AJ0000F	NEW 161-8452● RL	0.410	0.360	0.330	0.300

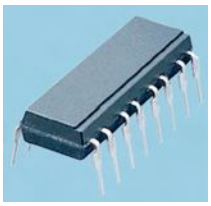
Transistor Output

SHARP

Single and Quad DIL Packages



H=3.5, W=6.5, D=4.58mm



H=3.5, W=19.82, D=6.5mm

General purpose opto-isolators. The input to output isolation is 5kV.
Available with AC input option and single or quad channel.
UL Recognised.

Current Transfer Ratio	Characteristics	Time (rise / fall)	Output Current (max) (I_C)	Output Voltage (max) (V_{CEO})	Mftrs. List No.	Order Code
4 Pins						
20 - 300%	AC Input	18 / 18µs	3mA	80V	PC814XJ0000F	970-7662
50 - 150%	AC Input	18 / 18µs	3mA	80V	PC814X1J000F	970-7670
50 - 600%	General Purpose	18 / 18µs	30mA	80V	PC817XJ0000F	970-7689
80 - 160%	General Purpose	18 / 18µs	8mA	80V	PC817X1J000F	970-7697
130 - 260%	General Purpose	18 / 18µs	13mA	80V	PC817X2J000F	970-7700
200 - 400%	General Purpose	18 / 18µs	20mA	80V	PC817X3J000F	970-7719
300 - 600%	General Purpose	18 / 18µs	30mA	80V	PC817X4J000F	970-7727
600 (min)	Phototransistor Output	300 / 250µs	75mA	35V	PC815XJ0000F	161-8457
16 Pins						
20 - 300%	AC Input	18 / 18µs	3mA	80V	PC844XJ0000F	161-8458
20 (min)	AC Input	18 / 18µs	3mA	80V	PC844X1J000F	161-8459
50 - 600%	General Purpose	18 / 18µs	30mA	80V	PC847XJ0000F	970-7735
600 (min)	Phototransistor Output	300 / 250µs	75mA	35V	PC845XJ0000F	161-8460

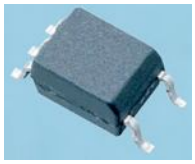
411990

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
4 Pins						
PC814XJ0000F	970-7662●	0.500	0.290	0.200	0.169	0.146
PC814X1J000F	970-7670●	0.540	0.310	0.220	0.181	0.156
PC817XJ0000F	970-7689●	0.390	0.230	0.160	0.133	0.114
PC817X1J000F	970-7697●	0.430	0.250	0.174	0.145	0.125
PC817X2J000F	970-7700●	0.430	0.250	0.174	0.145	0.125
PC817X3J000F	970-7719●	0.430	0.250	0.174	0.145	0.125
PC817X4J000F	970-7727●	0.430	0.250	0.174	0.145	0.125
PC815XJ0000F	NEW 161-8457●	0.480	0.440	0.390	0.350	0.320
16 Pins						
PC844XJ0000F	NEW 161-8458●	1.480	1.350	1.200	1.090	0.990
PC844X1J000F	NEW 161-8459●	1.540	1.390	1.240	1.120	1.020
PC847XJ0000F	970-7735●	1.210	0.920	0.770	0.660	0.620
PC845XJ0000F	NEW 161-8460●	1.930	1.740	1.560	1.410	1.270

OPIC Transistor Output

SHARP

Single channel - Mini-flat package



H=2.6, W=5.3, D=3.6mm

OPIC is a trademark of the SHARP Corporation. An OPIC consists of a light-detecting element and signal processing circuit integrated onto a single chip.
Applications include photocopiers, power supplies, inverters and programmable controllers.
These devices have a high isolation between input and output of 3.75kV.
Special high V_{CEO} version available(9707646)
They are **UL** Recognised

Package	Output	Time Rise	Time Fall	Output Current (I_C) (max)	Output Voltage (max)	Mftrs. List No.
5 pin	TTL & LSTTL compatible	0.5µs	0.5µs	5.0mA	15V dc (V_{CC})	PC400TJ0000F
5 pin	10 Mb/s response time	10ns	20ns	20mA	7V dc (V_{CC})	PC410LENIP0F
4 pin	Darlington	300µs	100µs	50mA	350V (V_{CEO})	PC452TEJ000F
5 pin	1Mb/s response time	0.8µs	0.8µs	25mA	30V dc (V_{CC})	PC457L0NIP0F

411989

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
Transistor Output						
PC400TJ0000F	SMD 970-7620● RL	1.30	1.19	1.12	1.03	0.92
PC410LENIP0F	SMD 970-7638● RL	1.04	0.97	0.87	0.80	0.74
PC452TEJ000F	SMD 970-7646● RL	0.63	0.59	0.56	0.47	0.44
PC457L0NIP0F	SMD 970-7654● RL	1.46	0.99	0.71	0.65	0.61

£ € 40,000 PRICES REDUCED

Darlington Output Optocouplers

TT electronics OPTEK Technology

New



4 Pin



6 Pin



8 Pin

The OPIA series optocouplers are designed for applications that use an analog output (Phototransistor or Photodarlington) in a dual-in-line or surface mount package.

No of Channels 1 Operating temperature -30°C to +100°C

Case Style	Input Current	Isolation Voltage	Output Voltage (max)	Mftrs. List No.	Order Code
Dual In-Line Package					
4-DIP	20mA	5000V rms	300V	OPIA412DTU	167-8715
4-DIP	20mA	5000V rms	35V	OPIA411DTU	167-8729
6-DIP	20mA	5000V rms	300V	OPIA601DTU	167-8718
6-DIP	20mA	5000V rms	30V	OPIA602DTU	167-8730
8-DIP	1.6mA	2500V rms	400mV	OPIA800DTU	167-8736
8-DIP	1.6mA	2500V rms	400mV	OPIA801DTU	167-8737
Surface Mount Package					
4-SMD	20mA	5000V rms	300V	OPIA412ATU	167-8716
4-SMD	20mA	5000V rms	35V	OPIA411ATU	167-8728
4-SOP	20mA	3750V rms	35V	OPIA403BTU	167-8739
4-SOP	10mA	3750V rms	300V	OPIA401BTU	167-8741
4-SSOP	5mA	2500V rms	40V	OPIA406CTU	167-8745
4-SSOP	5mA	2500V rms	40V	OPIA408CTU	167-8748
4-SSOP	10mA	2500V rms	300V	OPIA409CTU	167-8749
6-SMD	20mA	5000V rms	300V	OPIA601ATU	167-8717
6-SMD	20mA	5000V rms	30V	OPIA602ATU	167-8731

528113

Case Style	Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
Dual In-Line Package							
4-DIP	OPIA412DTU	167-8715●	0.45	0.40	0.25	0.24	0.23
4-DIP	OPIA411DTU	167-8729●	0.45	0.40	0.25	0.24	0.23
6-DIP	OPIA601DTU	167-8718●	0.59	0.53	0.33	0.32	0.31
6-DIP	OPIA602DTU	167-8730●	0.45	0.40	0.25	0.24	0.23
8-DIP	OPIA800DTU	167-8736●	0.72	0.64	0.41	0.39	0.37
8-DIP	OPIA801DTU	167-8737●	0.72	0.64	0.41	0.39	0.37
Surface Mount Package							
4-SMD	OPIA412ATU	167-8716●	0.45	0.40	0.25	0.24	0.23
4-SMD	OPIA411ATU	167-8728●	0.45	0.40	0.25	0.24	0.23
4-SOP	OPIA403BTU	167-8739●	0.45	0.40	0.25	0.24	0.23
4-SOP	OPIA401BTU	167-8741●	0.59	0.53	0.33	0.32	0.31
4-SSOP	OPIA406CTU	167-8745●	0.57	0.50	0.33	0.31	0.30
4-SSOP	OPIA408CTU	167-8748●	0.73	0.65	0.42	0.40	0.38
4-SSOP	OPIA409CTU	167-8749●	0.86	0.77	0.49	0.47	0.45
6-SMD	OPIA601ATU	167-8717●	0.59	0.53	0.33	0.32	0.31
6-SMD	OPIA602ATU	167-8731●	0.47	0.41	0.26	0.25	0.24

Transistor/Darlington Output

SHARP

Single channel - Mini-flat package



H=2.6, W=5.3, D=4.4mm

High input-output isolation voltage of 3.75kV rms make these devices suitable for a large range of consumer applications including programmable controllers and high density mounting PCB's.
UL flammability rating 94V-0
UL Recognised

Current Transfer Ratio	CTR Test Conditions Current (I_F)	Voltage (V_{CE})	Time Rise / Fall	Output Current (I_C) (max)	Output Voltage (V_{CEO})	Mftrs. List No.
AC Input						
20 - 400%	±1 mA	5V	18µs / 18µs	4mA	80V dc	PC354NTJ000F
50 - 150%	±1 mA	5V	18µs / 18µs	1.5mA	80V dc	PC354N1TJ00F
50 - 600%	±5 mA	80V	18µs / 18µs	30mA	80V	PC357N9TJ00F
50 - 600%	±5 mA	80V	18µs / 18µs	30mA	80V	PC357N7TJ00F
DC Input						
600% Min.	1 mA	2V	300µs / 250µs	80mA	35V dc	PC355NTJ000F ★
50 - 600%	5 mA	5V	18µs / 18µs	30mA	80V dc	PC357NTJ000F
80 - 160%	5 mA	5V	18µs / 18µs	8mA	80V dc	PC357N1TJ00F
130 - 260%	5 mA	5V	18µs / 18µs	13mA	80V dc	PC357N2TJ00F
200 - 400%	5 mA	5V	18µs / 18µs	20mA	80V dc	PC357N3TJ00F
300 - 600%	5 mA	5V	18µs / 18µs	30mA	80V dc	PC357N4TJ00F
50 - 600%	5 mA	5V	18µs / 18µs	30mA	35V dc	PC357N14J00F

★ Darlington output

411987

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
AC Input						
PC354NTJ000F	SMD 970-7514● RL	0.490	0.340	0.260	0.220	0.187
PC354N1TJ00F	SMD 970-7522● RL	0.430	0.310	0.260	0.230	0.220
PC357N9TJ00F	NEW SMD 161-8500● RL	0.390	0.350	0.320	0.290	0.260
PC357N7TJ00F	NEW SMD 161-8501● RL	0.240	0.210	0.186	0.167	0.150
DC Input						
PC355NTJ000F	SMD 970-7530● RL	0.680	0.510	0.410	0.310	0.270
PC357NTJ000F	SMD 970-7549● RL	0.240	0.181	0.149	0.127	0.119
PC357N1TJ00F	SMD 970-7557● RL	0.470	0.370	0.290	0.240	0.210
PC357N2TJ00F	SMD 970-7565● RL	0.470	0.370	0.290	0.240	0.210
PC357N3TJ00F	SMD 970-7573● RL	0.165	0.124	0.103	0.088	0.082
PC357N4TJ00F	SMD 970-7581● RL	0.470	0.370	0.290	0.240	0.210
PC357N14J00F	SMD 970-7590● RL	0.320	0.250	0.196	0.167	0.157

RL Re-reeling available

Farnell

Optocouplers - continued

Darlington Transistor Output

TT electronics OPTEK Technology


4 Pin


6 Pin


8 Pin

New

The OPIA series optocouplers are designed for applications that use an analog output (Phototransistor or Photodarlington) in a dual-in-line or surface mount package.

Case Style	Input Current	Isolation Voltage	Output Voltage (max)	Mftrs. List No.	Order Code
Dual In-Line Package					
4-DIP	20mA	5000V rms	60V	OPIA400DTU	167-8709
4-DIP	20mA	5000V rms	60V	OPIA410DTU	167-8714
4-DIP	10mA	5000V rms	350V	OPIA413DTU	167-8722
6-DIP	20mA	5000V rms	60V	OPIA600DTU	167-8710
6-DIP	20mA	5000V rms	60V	OPIA604DTU	167-8719
6-DIP	20mA	5000V rms	60V	OPIA605DTU	167-8724
6-DIP	10mA	5000V rms	350V	OPIA603DTU	167-8727
6-DIP	25mA	3750V rms	400mV	OPIA500DTU	167-8743
8-DIP	1.6mA	5000V rms	400mV	OPIA803DTU	167-8732
8-DIP	1.6mA	2500V rms	400mV	OPIA802DTU	167-8733
Surface Mount Package					
4-SMD	20mA	5000V rms	60V	OPIA400ATU	167-8708
4-SMD	20mA	5000V rms	60V	OPIA410ATU	167-8713
4-SMD	10mA	5000V rms	350V	OPIA413ATU	167-8721
4-SOP	20mA	3750V rms	60V	OPIA402BTU	167-8738
4-SOP	10mA	3750V rms	60V	OPIA404BTU	167-8740
4-SOP	10mA	3750V rms	80V	OPIA414BTU	167-8750
4-SSOP	5mA	2500V rms	80V	OPIA405CTU	167-8744
4-SSOP	5mA	2500V rms	80V	OPIA407CTU	167-8746
5-SOP	16mA	3750V rms	400mV	OPIA500BTU	167-8742
6-SMD	20mA	5000V rms	60V	OPIA600ATU	167-8712
6-SMD	20mA	5000V rms	60V	OPIA604ATU	167-8720
6-SMD	20mA	5000V rms	60V	OPIA605ATU	167-8725
6-SMD	10mA	5000V rms	350V	OPIA603ATU	167-8726

528431

Case Style	Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
Dual In-Line Package							
4-DIP	OPIA400DTU	**167-8709●**	0.184	0.161	0.138	0.115	0.092
4-DIP	OPIA410DTU	**167-8714●**	0.330	0.290	0.250	0.210	0.171
4-DIP	OPIA413DTU	**167-8722●**	0.770	0.690	0.440	0.410	0.400
6-DIP	OPIA600DTU	**167-8710●**	0.250	0.220	0.185	0.155	0.125
6-DIP	OPIA604DTU	**167-8719●**	0.480	0.440	0.270	0.260	0.250
6-DIP	OPIA605DTU	**167-8724●**	0.320	0.280	0.240	0.200	0.160
6-DIP	OPIA603DTU	**167-8727●**	0.880	0.780	0.500	0.470	0.460
6-DIP	OPIA500DTU	**167-8743●**	0.930	0.820	0.530	0.500	0.480
8-DIP	OPIA803DTU	**167-8732●**	0.720	0.640	0.410	0.390	0.370
8-DIP	OPIA802DTU	**167-8733●**	0.720	0.640	0.410	0.390	0.370
Surface Mount Package							
4-SMD	OPIA400ATU	**167-8708●**	0.184	0.161	0.138	0.115	0.092
4-SMD	OPIA410ATU	**167-8713●**	0.330	0.290	0.250	0.210	0.171
4-SMD	OPIA413ATU	**167-8721●**	0.770	0.690	0.440	0.410	0.400
4-SOP	OPIA402BTU	**167-8738●**	0.420	0.370	0.320	0.270	0.220
4-SOP	OPIA404BTU	**167-8740●**	0.250	0.220	0.185	0.155	0.125
4-SOP	OPIA414BTU	**167-8750●**	0.890	0.790	0.510	0.480	0.470
4-SSOP	OPIA405CTU	**167-8744●**	0.260	0.230	0.197	0.167	0.137
4-SSOP	OPIA407CTU	**167-8746●**	0.420	0.370	0.320	0.270	0.220
5-SOP	OPIA500BTU	**167-8742●**	0.930	0.820	0.530	0.500	0.480
6-SMD	OPIA600ATU	**167-8712●**	0.250	0.220	0.185	0.155	0.125
6-SMD	OPIA604ATU	**167-8720●**	0.480	0.440	0.270	0.260	0.250
6-SMD	OPIA605ATU	**167-8725●**	0.320	0.280	0.240	0.200	0.160
6-SMD	OPIA603ATU	**167-8726●**	0.880	0.780	0.500	0.470	0.460

Photocoupler

Transistor Output

SHARP

New


161-8461, 161-8462, 161-8463


124-3884

Operating Temperature -40°C to +100°C

Length	Height	Width	Pitch (lead)
6.5mm	3.5mm	9.66mm	2.54mm

- 8 pin DIP package
- Double transfer mold package (ideal for flow soldering)
- Built-in direct drive circuit for MOSFET / IGBT drive
- High speed response
- Wide operating supply voltage range
- High noise immunity due to high instantaneous common mode rejection voltage
- High isolation voltage between input and output

Input Current	Current (If) (max)	Power Dissipation	Voltage, Vf (max)	Isolation Voltage	Pitch (row)	Mftrs. List No.	Order Code
25mA	25mA	295mW	1.8V	5kV	7.62mm	PC925L0NSZ0F	124-3884
25mA	1A	295mW	1.8V	5kV	10mm	PC925L0NIP0F	161-8461
25mA	1A	295mW	1.8V	5kV	10mm	PC925L0YIP0F	161-8462
25mA	1A	295mW	1.8V	5kV	12mm	PC925L0NUP0F	161-8463

520333

Mftrs. List No.	Order Code		Price Each 1+	25+	100+	250+
PC925L0NSZ0F	**124-3884●**		1.11	0.77	0.66	0.60
PC925L0NIP0F	SMD **161-8461●**	RL	1.70	1.53	1.38	1.24
PC925L0YIP0F	SMD **161-8462●**	RL	1.90	1.72	1.54	1.39
PC925L0NUP0F	SMD **161-8463●**	RL	2.13	1.91	1.73	1.55

RL Re-reeling available

Opto Couplers

Darlington Output

TOSHIBA



- High speed
- TTL Compatible
- High isolation voltage 2500V rms
- **UL** Recognised

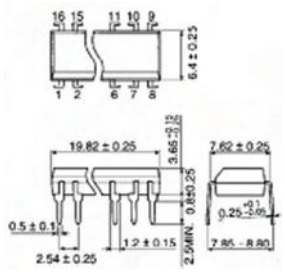
496758

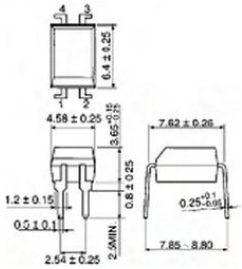
Current Transfer Ratio Min/Typ (%)	Channels	Mftrs. List No.	Order Code	Price Each 1+	25+	100+
19 / 24	1	6N136	**122-5818●**	1.17	0.86	0.69
Typ. 1000	1	6N137	**122-5821●**	0.93	0.59	0.47
300 / 600	1	6N138	**122-5822●**	1.36	1.01	0.74
400 / 800	1	6N139	**122-5823●**	1.36	1.02	0.82
500 / 2000	1	TLP523	**122-5824●**	0.75	0.61	0.53
500 / 2000	2	TLP523-2	**122-5830●**	1.54	1.30	1.10
500 / 2000	4	TLP523-4	**122-5841●**	2.95	2.46	2.11

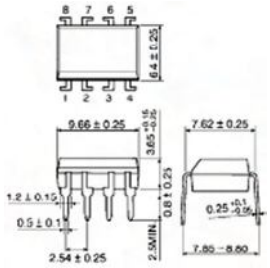
GaAs IRLED Optocouplers

5 kV Isolation Voltage.

TOSHIBA


16-pin, 11-20A3


4-pin, 11-5B2


8-pin, 11-10C4

Encapulated packages consisting of a Gallium Arsenide (GaAs) IR LED coupled to a photo-transistor, with Darlington options.The Darlington option has an additional base-emitter resistor and flywheel diode to optimize the switching speed and offer superior temperature characteristics.

V_{CE}max V	CTR Min.	CTR Max.	Current @ CTR (mA)	Output Type	I_F Max. (mA)	Mftrs List No.
Single Channel - 11-5B2 Package						
55	100	600	5	Phototransistor	60	TLP621(GB)
55	100	1200	1	Phototransistor	60	TLP624
300	1000	4000 Typ	1	Darlington	60	TLP627
Dual Channel - 11-10C4 Package						
55	50	600	5	Phototransistor	50	TLP620-2
55	50	600	5	Phototransistor	50	TLP620-2(GB)
55	50	600	5	Phototransistor	50	TLP621-2
55	100	600	5	Phototransistor	50	TLP621-2(GB)
55	100	1200	1	Phototransistor	60	TLP624-2
300	1000	4000 Typ.	1	Phototransistor	50	TLP627-2
Quad Channel - 11-20A3 Package						
55	100	600	5	Phototransistor	50	TLP620-4(GB)
55	100	600	5	Phototransistor	50	TLP621-4(GB)
300	1000	4000 Typ	1	Darlington	50	TLP627-4

441293

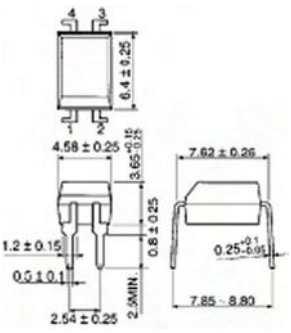
Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
TLP621(GB)	**122-5814●**	0.64	0.53	0.45	0.40	0.36
TLP624	**122-5815●**	0.69	0.57	0.48	0.43	0.38
TLP624-2	**122-5816●**	1.08	0.91	0.78	0.68	0.61
TLP627	**122-5817●**	0.67	0.56	0.47	0.42	0.37
TLP620-2	**122-5825●**	1.09	0.92	0.79	0.67	0.61
TLP620-2(GB)	**122-5826●**	1.21	1.02	0.88	0.76	0.68
TLP621-2(GB)	**122-5827●**	0.73	0.60	0.52	0.45	0.41
TLP621-2	**122-5828●**	0.71	0.59	0.50	0.44	0.39
TLP627-2	**122-5829●**	1.87	1.57	1.34	1.17	1.04
TLP620-4(GB)	**122-5838●**	2.14	1.78	1.54	1.34	1.19
TLP621-4(GB)	**122-5839●**	1.66	1.39	1.18	1.03	0.93
TLP627-4	**122-5840●**	2.86	2.39	2.04	1.79	1.59

Over 480,000 products online QGO

GaAs IRLED & Photo IC, Optocouplers

TOSHIBA

2.5 kV Isolation Voltage.



4-pin, 11-5B2

Encapulated packages consisting of a Gallium Arsenide (GaAs) IR LED coupled to a one chip photo diode-transistor.

- High speed t_{pHL} and t_{pLH} = 0.5 µs (typ.) (R_L = 1.9 kΩ
- TTL compatable
- UL recognized

Applications include:

- Digital Logic Isolation
- Line Recievers
- Switchmode supplies
- Transistor Inverters

V_{out}max V	CTR Min.	CTR Typ.	Current @ CTR (mA)	I_F Max. (mA)	Mftrs List No.
Single Channel - 11-5B2 Package					
15	19	24	16	25	6N136

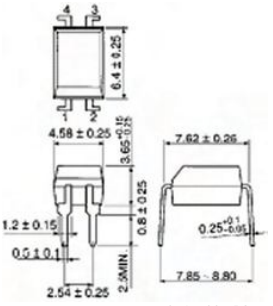
441299

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
6N136	**122-5818●**	1.17	0.86	0.69	0.46	0.38

GaAs IRLED Photo Logic Optocouplers

TOSHIBA

2.5 kV Isolation Voltage.



4-pin, 11-5B2

Encapulated packages consisting of a Gallium Arsenide (GaAs) IR LED coupled to a one chip photo diode activated NAND gate. Easy incorporated into logic systems where the opto couplers output can be de-selected by applying an active high signal into the the NAND input (pin 7).

- Guaranteed performance over temperature 0 °C to 70 °CΩ
- TTL / LSTTL compatable: 5V Supply
- Fan out: upto 8
- UL recognized: UL1577, file no. E67349

Applications include:

- Digital Logic Isolation
- Tele-Communication
- Analogue Data Equipment Control

CTR Typ.	Fanout	T_{pHL} / T_{pLH} Min.	I_F Max. (mA)	Mftrs List No.
1000	8	0.025 / 0.025	20	6N137

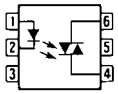
441300

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+
6N137	**122-5821●**	0.93	0.59	0.47	0.42

GaAs IRLED Optocouplers

VISHAY





- K302X series has high common mode mode rejection
- High input sensitivity (on IL410)
- Zero Crossing (on IL410)

Encapulated 6-pin packages consisting of a Gallium Arsenide (GaAs) LED coupled to a photo-triac, these devices offer good efficency and low trigger currents. applications include:

—Solid state relays
—Industrial Controls
—Office Equipment
—Consumer applications

$V_{O/P}$max V	P_{diss} mW	V_{ISO} V	I_F Trigger mA	dV/dt V/µs	Mftrs List No.
250	350	3750	15	10	K3010P
250	350	3750	10	10	K3011P
250	350	3750	5	10	K3012P
400	350	3750	30	10	K3020P
400	350	3750	15	10	K3021P
400	350	3750	10	10	K3022P
400	350	3750	5	10	K3023P
600	100	5300	2	10000	IL410

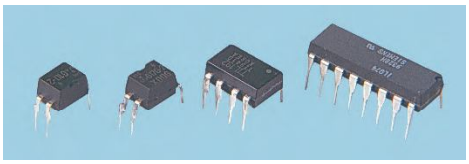
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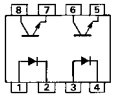
Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
IL410	**104-5434●**	1.130	1.090	1.040	1.000	0.960
K3010P	**104-5435●**	0.310	0.250	0.200	0.174	0.152
K3011P	**104-5436●**	0.390	0.320	0.290	0.198	0.168
K3012P	**104-5437●**	0.300	0.270	0.250	0.152	0.146
K3020P	**104-5438●**	0.390	0.320	0.290	0.198	0.168
K3021P	**104-5439●**	0.400	0.330	0.300	0.200	0.157
K3022P	**104-5440●**	0.390	0.350	0.310	0.198	0.162
K3023P	**104-5442●**	0.400	0.330	0.300	0.200	0.164

Transistor Output

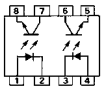
VISHAY TOSHIBA

Single, Dual or Quad - Without Base Connection





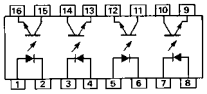
SFH615A-2/ SFH618A-4 SFH617A



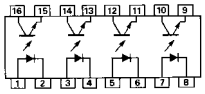
ILD74/CNY74-2H



SFH620A-2 SFH628A-3



ILQ74/CNY74-4H



TLP521-4(A,F)

Channels (pk.)	Isolation Voltage	Curr. Trsfr. Ratio (min) @ I_F	Breakdown $V_{(BR)}$ CEO min	Mftr.	Mftrs. List No.
Transistor Output					
Single	5300 rms	63% @ 5mA	70V	VISHAY	SFH610A-2
Dual	2500 rms	20% @ 5mA	55V	TOSHIBA	TLP521-2(A.F)
Quad	5000 rms	50% @ 5mA	55V	TOSHIBA	TLP620-4(F)
Quad	2500 rms	20% @ 5mA	55V	TOSHIBA	TLP521-4(A.F)
Quad	5000 rms	100% @ 5mA	55V	TOSHIBA	TLP621-4(F)
Single	2500 rms	50% @ 5mA	55V	TOSHIBA	TLP521-1(A,F,T)
Single	5000 rms	50% @ 5mA	55V	TOSHIBA	TLP621(F,T)
Single	5300 rms	63% @ 5mA	70V	VISHAY	SFH615A-2
Single	5300 rms	63% @ 5mA	70V	VISHAY	SFH617A-2X006
Single	5300 rms	160% @ 5mA	55V	VISHAY	SFH618A-4
Dual	5000 rms	50% @ 5mA	70V	VISHAY	CNY74-2H
Dual	5300 rms	12.5% @ 5mA	20V	VISHAY	ILD74
Quad	5000 rms	50% @ 5mA	70V	VISHAY	CNY74-4H
Quad	5300 rms	12.5% @ 5mA	20V	VISHAY	ILQ74
AC Input,Transistor Output					
Single	5300	63% @ 10mA	70V	VISHAY	SFH620A-2
Single	5300	100% @ 1mA	55V	VISHAY	SFH628A-3

206200

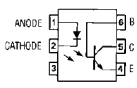
Mftrs. List No.	Mftr.	Order Code	Price Each 1+	25+	100+	500+
Transistor Output						
SFH610A-2	VISHAY	**104-5381●**	0.85	0.63	0.47	0.34
TLP521-2(A.F)	TOSHIBA	**114-1124●**	1.40	0.69	0.66	0.53
TLP620-4(F)	TOSHIBA	**114-1125●**	2.07	1.41	1.13	1.09
TLP521-4(A.F)	TOSHIBA	**114-1126●**	1.22	1.03	0.91	– –
TLP621-4(F)	TOSHIBA	**114-1127●**	2.20	1.61	1.30	1.07
TLP521-1(A,F,T)	TOSHIBA	**114-1130●**	0.32	0.27	0.26	0.25
TLP621(F,T)	TOSHIBA	**114-1133●**	0.51	0.39	0.28	0.21
SFH615A-2	VISHAY	**104-5382●**	0.63	0.46	0.34	0.25
SFH617A-2X006	VISHAY	**104-5383●**	0.97	0.94	0.82	0.46
SFH618A-4	VISHAY	**104-5394●**	0.88	0.86	0.78	0.43
CNY74-2H	VISHAY	**104-5431●**	1.03	0.62	0.49	0.30
ILD74	VISHAY	**104-5423●**	1.53	1.05	0.84	0.55
CNY74-4H	VISHAY	**104-5432●**	1.97	1.18	1.02	0.71
ILQ74	VISHAY	**104-5424●**	2.70	2.28	1.74	0.84
AC Input, Transistor Output						
SFH620A-2	VISHAY	**104-5384●**	0.77	0.55	0.40	0.30
SFH628A-3	VISHAY	**104-5443●**	0.76	0.62	0.50	0.31

Transistor Output



Standard 0.3" row spacing

0.4" row spacing



Transistor



ac Input

Note: CNY17F-3 and CNY17F-3 OPT16 have pin 6 unconnected, giving high base-noise immunity.

All CNY17 Series (QT and Infineon), CNW Series, H11A1Z and MCT2201Z are approved to **VDE0884**.

Infineon CNY17 Series and CNW Series are approved to **IEC65, IEC950, BS6301, BSEN60065, BSEN60950, EN41003**.

All types except 232-658 are **UL** recognised. QT types are approved to **CSA**.

■ 0.4" row spacing

Isolation Voltage (pk)	Curr. Trsfr. Ratio @ I_F =10mA (min)	Breakdown $V_{(BR)}$ CEO min	Swithcing Time (µs) typ. t_r	t_f	Mftr.	Mftrs. List No.
Transistor Output						
2500 rms	100% -	30	3	3	TOSHIBA	4N35(SHORT,F)▲
3750 rms	40% - 80%	32	7	6.7	VISHAY	CNY17-1
3750 rms	63% - 125%	32	7	6.7	VISHAY	CNY17-2
3750 rms	100% - 200%	32	7	6.7	VISHAY	CNY17-3
5300 rms	100% - 200%	70	2	2	VISHAY	CNY17F-3X001
5300 rms	100% - 200%	70	2	2	VISHAY	CNY17F-3X016
600 rms	63% - 125%	90	2.5	2.7	VISHAY	CNY75A

RL Re-reeling available

Farnell

Optocouplers - continued

Transistor Output - continued

Isolation Voltage (pk)	Curr. Trsfr. Ratio @ I_F =10mA (min)	Breakdown $V_{(BR)}$ CEO min	Swithcing Time (µs) typ. t_r	t_f	Mftr.	Mftrs. List No.
3750 rms	100% - 200%	90	3	3.7	VISHAY	CNY75B
3750 rms	160% - 320%	90	4.2	4.7	VISHAY	CNY75C
3750 rms	40% - 80%	32	7	6.7	VISHAY	TCDT1101G▲
3750 rms	63% - 125%	32	7	6.7	VISHAY	TCDT1102G▲
3750 rms	100% -	70	15	15	VISHAY●	TCDT1110
3750 rms	100% -	70	15	15	VISHAY●	TCDT1110G▲
3750 rms	40% -	90	3	3.7	VISHAY	TCDT1120
3750 rms	40% -	90	3	3.7	VISHAY	TCDT1120G▲
3750 rms	63% - 125%	90	3	3.7	VISHAY	TCDT1122G▲
3750 rms	160% - 320%	90	4	4.7	VISHAY	TCDT1124
High Voltage Transistor Output						
5300 dc	63% - 125%	300	2.5	5.5	VISHAY	SFH640-2
AC Input Transistor Output						
5000 rms	50%	55	2	3	TOSHIBA	TLP630(F)
CMOS Compatible Input, Transistor Output (CTR @ I_F=1mA)						
5656 dc	*160%@ V_{CE}=5V		-	-	VISHAY	SFH608-4

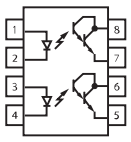
▲ The 'G' suffix denotes a row spacing of 10.16mm (spacing on others=9.0mm)
● t_{off} t_{on} time
* = I_F @ 1mA

206195

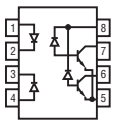
Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
4N35(SHORT,F)	**120-1939●**	0.490	0.370	0.260	0.210	– –
CNY17-1	**104-5399●**	0.390	0.350	0.310	0.200	0.147
CNY17-2	**104-5400●**	0.460	0.410	0.310	0.200	0.147
CNY17-3	**104-5401●**	0.350	0.270	0.230	0.181	0.147
CNY17F-3X001	**104-5391●**	0.980	0.890	0.750	0.420	– –
CNY17F-3X016	**104-5392●**	0.990	0.870	0.720	0.380	– –
CNY75A	**104-5402●**	0.210	0.115	0.111	0.086	0.081
CNY75B	**104-5403●**	0.220	0.187	0.162	0.140	0.125
CNY75C	**104-5405●**	0.230	0.144	0.112	0.091	0.089
TCDT1101G	**104-5407●**	0.300	0.187	0.165	0.111	0.103
TCDT1102G	**104-5409●**	0.220	0.156	0.124	0.090	0.087
TCDT1110	**104-5410●**	0.290	0.210	0.166	0.144	0.123
TCDT1110G	**104-5411●**	0.290	0.210	0.165	0.111	0.100
TCDT1120	**104-5412●**	0.290	0.210	0.154	0.111	0.094
TCDT1120G	**104-5413●**	0.220	0.183	0.156	0.141	0.119
TCDT1122G	**104-5414●**	0.210	0.117	0.109	0.093	0.090
TCDT1124	**104-5415●**	0.370	0.192	0.181	0.135	0.114
High Voltage Transistor Output						
SFH640-2	**104-5396●**	0.720	0.610	0.530	0.310	– –
AC Input, Transistor Output						
TLP630(F)	**114-1134●**	1.430	1.350	1.120	0.760	– –
CMOS Compatible Input, Transistor Output						
SFH608-4	**104-5393●**	0.420	0.340	0.290	0.250	– –

Single and Dual, Transistor Output and Logic Output, High Speed

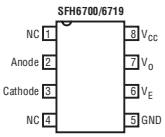




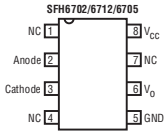
Pin out (a)



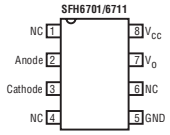
Pin out (b)



Pin out (c)



Pin out (d)



Pin out (e)

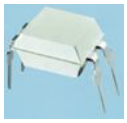
Isolation ac Test Voltage (V_{rms})	Curr. Trsfr. Ratio min (%)	@ I_F (mA)	Switching Time (µs) t_{PHL}	typ. t_{PLH}	Mftrs. List No.	Order Code
Transistor Output - High Speed						
5300	19	16	0.5	0.3	SFH6136	104-5422
2500	—	—	115	125	SFH6701	104-5389
2500	—	—	115	125	SFH6712	104-5390

Channels	Pin Out	CMR (min.) (V/us)	@ (VCM)	Input On-Current (mA)	Prop. Delay (ns) t_{PHL}	typ. t_{PLH}	Mftrs. List No.	Order Code
Logic Output - High Speed - 5Mbit/sec								
Single	e	1000	50	5	115	125	SFH6701	104-5389
Single	d	2500	400	5	115	125	SFH6712	104-5390
Single	d			25	0.5	0.3	SFH6136	104-5422

206551

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
Transistor Output						
SFH6136	**104-5422●**	1.31	1.08	0.88	0.50	0.40
Logic Output						
SFH6701	**104-5389●**	1.80	1.36	1.23	0.98	0.89
SFH6712	**104-5390●**	2.89	2.03	1.67	1.17	1.00

Transistor Output
High Temperature



- Extra low coupling capacitance - typically 0.2pF
- High Common Mode Rejection
- Rated isolation = 600V $_{RMS}$
- Internal creepage distance >4mm
- Approved by **CSA**, **BSI**, **DIN** & **FIMKO**

$V_{I/P}$ I_F = 50mA (Typ.)	(Max.)	CTR (Min.)	(Typ.)	(Max.)	V_{CEO} (Min.)	V_{ECO} (Min.)	Mftrs List No.
1.25V	1.6V	50	—	600	70V	7V	TCET1100
1.25V	1.6V	50	—	600	70V	7V	TCET1100G
1.25V	1.6V	13	30	—	70V	7V	TCET1101
1.25V	1.6V	22	45	—	70V	7V	TCET1102
1.25V	1.6V	34	70	—	70V	7V	TCET1103

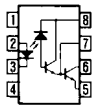
459172

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
TCET1100	**132-8389●**	0.200	0.156	0.139	0.125	0.119
TCET1100G	**132-8390●**	0.156	0.117	0.104	0.094	0.091
TCET1101	**132-8391●**	0.156	0.117	0.104	0.094	0.091
TCET1102	**132-8392●**	0.156	0.117	0.104	0.094	0.091
TCET1103	**132-8393●**	0.156	0.117	0.104	0.094	0.091

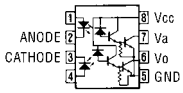
Darlington Output
Low Input Current, High Gain



All parts are **UL** recognised



6N138
6N139



HCPL-2730
HCPL-2731

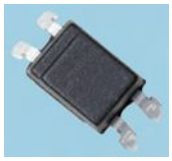
Voltage V_{OL} 0.4V
Withstand test voltage 2500V ac

Channels	Current Transfer Ratio (min.) @ I_F = 1.6mA	V_{cc} max.	Mftrs. List No.	Order Code
Dual	300%	30	6N138	102-1344
Dual	500%	30	6N139	102-1341
Dual	300%	30	HCPL-2730	102-1257
Dual	500%	30	HCPL-2731	102-1258

229064

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
Single						
6N138	**102-1344●**	0.72	0.51	0.39	0.29	0.26
6N139	**102-1341●**	0.72	0.51	0.39	0.29	0.26
Dual						
HCPL-2730	**102-1257●**	1.46	0.99	0.71	0.66	0.61
HCPL-2731	**102-1258●**	1.24	0.85	0.61	0.57	0.52

Photodarlington Optically Coupled Isolators



4-pin



6-pin



8-pin



16-pin

Case Style	No. of Channels	Input Current	Voltage Isolation	Output (max)	Mftrs. List No.	Order Code
Dual In-LIne Package Package						
4-DIP	1	50mA	5300V rms	300V	IS7000X	168-3254
4-DIP	1	20mA	5300V rms	35V	ISP815X	168-3289
4-DIP	1	20mA	5300V rms	35V	TIL197	168-3368
6-DIP	1	50mA	5300V rms	30V	4N32	168-3373
6-DIP	1	50mA	5300V rms	30V	4N33	168-3375
6-DIP	1	10mA	5300V rms	30V	H11B1	168-3377
6-DIP	1	10mA	5300V rms	80V	H11G2	168-3379
6-DIP	1	10mA	5300V rms	55V	IS4N46X	168-3231
6-DIP	1	10mA	5300V rms	200V	IS660X	168-3249
6-DIP	1	10mA	5300V rms	300V	IS661X	168-3252
8-DIP	2	20mA	5300V rms	35V	TIL198	168-3369
8-DIP	2	20mA	5300V rms	35V	ISP825X	168-3295
16-DIP	4	20mA	5300V rms	35V	TIL199	168-3370
16-DIP	4	20mA	5300V rms	35V	ISP845X	168-3302
Surface Mount Package						
4-SMDIP	1	50mA	5300V rms	300V	IS7000XSM	168-3255
4-SMDIP	1	20mA	5300V rms	35V	ISP815XSM	168-3290
6-SMDIP	1	50mA	5300V rms	30V	4N32FSM	168-3384
6-SMDIP	1	50mA	5300V rms	30V	4N33FSM	168-3385

RL Re-reeling available

Case	No. of	Input	Voltage		Mftrs.	Order
Surface Mount Package						
6-SMDIP	1	10mA	5300V rms	55V	IS4N46XSM	168-3232
6-SMDIP	1	10mA	5300V rms	200V	IS660XSM	168-3250
6-SMDIP	1	10mA	5300V rms	300V	IS661XSM	168-3253
8-SMDIP	2	20mA	5300V rms	35V	ISP825XSM	168-3296
16-SMDIP	4	20mA	5300V rms	35V	ISP845XSM	168-3303

528492

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
Dual In-LIne Package Package						
IS7000X	**168-3254●**	0.660	0.520	0.410	0.360	0.310
ISP815X	**168-3289●**	0.340	0.270	0.219	0.190	0.165
TIL197	**168-3368●**	0.350	0.270	0.219	0.190	0.165
4N32	**168-3373●**	0.590	0.460	0.370	0.320	0.280
4N33	**168-3375●**	0.590	0.460	0.370	0.320	0.280
H11B1	**168-3377●**	0.590	0.460	0.370	0.320	0.280
H11G2	**168-3379●**	0.740	0.570	0.480	0.400	0.340
IS4N46X	**168-3231●**	0.800	0.630	0.500	0.430	0.380
IS660X	**168-3249●**	0.800	0.630	0.500	0.430	0.380
IS661X	**168-3252●**	0.800	0.630	0.500	0.430	0.380
TIL198	**168-3369●**	0.740	0.580	0.460	0.400	0.350
ISP825X	**168-3295●**	0.670	0.530	0.440	0.370	0.320
TIL199	**168-3370●**	1.480	1.160	0.930	0.800	0.700
ISP845X	**168-3302●**	1.330	1.040	0.850	0.720	0.630
Surface Mount Package						
IS7000XSM	**168-3255●**	0.670	0.520	0.420	0.360	0.320
ISP815XSM	**168-3290●**	0.360	0.280	0.225	0.196	0.170
4N32FSM	**168-3384●**	0.510	0.400	0.320	0.280	0.241
4N33FSM	**168-3385●**	0.510	0.400	0.320	0.280	0.241
IS4N46XSM	**168-3232●**	0.810	0.630	0.510	0.440	0.380
IS660XSM	**168-3250●**	0.810	0.630	0.510	0.440	0.380
IS661XSM	**168-3253●**	0.810	0.630	0.510	0.440	0.380
ISP825XSM	**168-3296●**	0.750	0.590	0.470	0.410	0.350
ISP845XSM	**168-3303●**	1.490	1.160	0.930	0.810	0.700

Darlington Output Optocouplers

New

NEC

No of Channels 1
Operating Temperature -55°C to +100°C

Case Style	Input Current	Isolation Voltage	Output Voltage (max)	Mftrs. List No.	Order Code
Dual In-Line Package					
4-DIP	10mA	5000V rms	350V	PS2533-1-A	168-2850
4-DIP	10mA	5000V rms	40V	PS2562-1-A	168-2855
Surface Mount Package					
4-SMDIP	10mA	5000V rms	350V	PS2533L-1-E3-A	168-2851
4-SMDIP	10mA	5000V rms	40V	PS2562L-1-E3-A	168-2856

528852

Case Style	Mftrs. List No.	Order Code	Price Each 1+	10+	25+	100+	250+
Dual In-Line Package							
4-DIP	PS2533-1-A	**168-2850●**	0.72	0.61	0.52	0.45	0.39
4-DIP	PS2562-1-A	**168-2855●**	0.68	0.55	0.49	0.42	0.37
Surface Mount Package							
4-SMDIP	PS2533L-1-E3-A	**168-2851●** RL	0.69	0.58	0.49	0.43	0.37
4-SMDIP	PS2562L-1-E3-A	**168-2856●** RL	0.66	0.56	0.47	0.41	0.36

Darlington Transistor Output

New

NEC

Case Style	No. of Channels	Output Type	Input Current	Isolation Voltage	Output Voltage (max)	Order Code
Dual In-Line Package						
4-DIP	1	Transistor	10mA	5000V rms	70V	168-2852
4-DIP	1	Phototransistor	10mA	5000V rms	70V	168-2857
8-DIP	1	Transistor	16mA	5000V rms	35V	168-2887
8-DIP	1	Transistor	16mA	5000V rms	35V	168-2889
Surface Mount Package						
4-SMDIP	1	Transistor	10mA	5000V rms	70V	168-2853
4-SMDIP	1	Phototransistor	10mA	5000V rms	70V	168-2858
4-SOP	1	Phototransistor	5mA	3750V rms	70V	168-2859
4-SOP	1	Phototransistor	5mA	3750V rms	70V	168-2860
4-SSOP	1	Phototransistor	5mA	2500V rms	80V	168-2861
4-SSOP	1	Phototransistor	5mA	2500V rms	80V	168-2863
4-SSOP	1	Phototransistor	5mA	2500V rms	40V	168-2865
4-SSOP	1	Phototransistor	5mA	2500V rms	40V	168-2868
5-SOIC	1	Transistor	16mA	3750V rms	35V	168-2886
8-SMDIP	1	Transistor	16mA	5000V rms	35V	168-2888
8-SMDIP	1	Transistor	16mA	5000V rms	35V	168-2890
8-SSOP	1	Transistor	16mA	2500V rms	7V	168-2892
8-SSOP	2	Transistor	16mA	2500V rms	7V	168-2893
12-SSOP	4	Phototransistor	1mA	1500V rms	70V	168-2871
16-SSOP	4	Phototransistor	5mA	2500V rms	80V	168-2862
16-SSOP	4	Phototransistor	5mA	2500V rms	80V	168-2864
16-SSOP	4	Phototransistor	5mA	2500V rms	40V	168-2867
16-SSOP	4	Phototransistor	5mA	2500V rms	40V	168-2869
4.6 X 2.5 X 2.1mm	1	Phototransistor	1mA	2500V rms	40V	168-2872
4.6 X 2.5 X 2.1mm	1	Phototransistor	1mA	2500V rms	40V	168-2873

528853

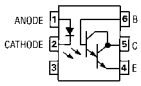
Mftrs. List No.	Order Code	Price Each 1+	10+	25+	100+	250+
Dual In-Line Package						
PS2561A-1-A	**168-2852●**	0.194	0.163	0.143	0.122	0.102
PS2581AL1-A	**168-2857●**	0.210	0.184	0.153	0.133	0.112
PS8501L1-A	**168-2887●**	1.610	1.360	1.140	0.990	0.860
PS8502L1-A	**168-2889●**	1.610	1.360	1.140	0.990	0.860

Mftrs. List No.	Order Code	Price Each 1+	10+	25+	100+	250+
Surface Mount Package						
PS2561AL-1-E3-A	**168-2853●** RL	0.184	0.153	0.133	0.112	0.102
PS2581AL2-E3-A	**168-2858●** RL	0.210	0.184	0.153	0.133	0.112
PS2701A-1-F3-A	**168-2859●** RL	0.210	0.173	0.153	0.133	0.112
PS2705A-1-F3-A	**168-2860●** RL	0.300	0.250	0.210	0.184	0.163
PS2801C-1-F3-A	**168-2861●** RL	0.300	0.250	0.210	0.184	0.163
PS2805C-1-F3-A	**168-2863●** RL	0.430	0.360	0.310	0.270	0.220
PS2811-1-F3-A	**168-2865●** RL	0.370	0.310	0.260	0.220	0.194
PS2815-1-F3-A	**168-2868●** RL	0.410	0.350	0.290	0.260	0.210
PS8101-F3-A	**168-2886●** RL	1.060	0.890	0.760	0.650	0.560
PS8501L2-E3-A	**168-2888●** RL	1.610	1.360	1.140	0.990	0.860
PS8502L2-E3-A	**168-2890●** RL	1.610	1.360	1.140	0.990	0.860
PS8821-1-F3-A	**168-2892●** RL	1.870	1.570	1.330	1.140	0.990
PS8821-2-F3-A	**168-2893●** RL	3.190	2.680	2.260	1.960	1.700
PS2841-4A-F3-A	**168-2871●** RL	2.230	1.890	1.590	1.380	1.190
PS2801C-4-F3-A	**168-2862●** RL	1.080	0.910	0.770	0.660	0.580
PS2805C-4-F3-A	**168-2864●** RL	1.580	1.340	1.120	0.970	0.850
PS2811-4-F3-A	**168-2867●** RL	1.100	0.930	0.780	0.670	0.580
PS2815-4-F3-A	**168-2869●** RL	1.370	1.150	0.970	0.850	0.730
PS2911-1-F3-A	**168-2872●** RL	0.710	0.600	0.520	0.500	0.440
PS2915-1-F3-A	**168-2873●** RL	1.050	0.890	0.760	0.650	0.560

Darlington Output



Darlington





High Voltage Darlington

Note: TIL188-1 is similar to TIL187-1 but has pin 6 unconnected, giving high base-noise immunity.

QT types are approved to **CSA**.

Isolation Voltage (pk) (*dc)	Curr. Trsfr. Ratio @ I_F =10mA (min)	Breakdown $V_{(BR)}$ CEO min	Switching Time (µs) typ. t_r	t_f	Mftr.	Mftrs. List No.
Darlington Output						
5300	500%	30	5	100	FCH	4N32.300
1500	500%	30	0.06	5	QT	4N33-M

206197

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
4N33-M	**102-1145●**	0.260	0.250	0.193	0.115	0.091
4N32.300	**102-1167●**	0.240	0.210	0.171	0.107	0.097

Optocoupler - DIP Package

TT electronics OPTEK Technology

New



Case Style	8-DIP
No. of Channels	1
Output Type	Transistor
Input Current	10mA
Isolation Voltage	5000V rms
Output Voltage (max)	600mV
Operating Temperature	0°C to +85°C

528636

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
OPID804DTU	**167-8734●**	0.77	0.69	0.44	0.41	0.40

Schmitt Trigger Optically Coupled Isolators

Microprocessor Compatible

ISOCOM COMPONENTS

SMD New



Case Style	No. of Channels	Input Current	Voltage Isolation	Output (max)	Mftrs. List No.	Order Code
Dual In-Line Package						
6-DIP	1	10mA	5300V rms	15V	H11L1	168-3200
6-DIP	1	10mA	5300V rms	15V	H11L2	168-3203
6-DIP	1	10mA	5300V rms	15V	H11L3	168-3205
Surface Mount Package						
6-SMDIP	1	10mA	5300V rms	15V	H11L1SM	168-3201
6-SMDIP	1	10mA	5300V rms	15V	H11L2SM	168-3204
6-SMDIP	1	10mA	5300V rms	15V	H11L3SM	168-3206

RL Re-reeling available

Farnell

Optocouplers - continued

Schmitt Trigger Optically Coupled Isolators - continued

Microprocessor Compatible - continued

528641

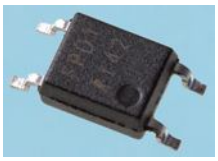
Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
Dual In-LIne Package Package						
H11L1	168-3200●	0.81	0.73	0.63	0.55	0.48
H11L2	168-3203●	1.16	0.91	0.73	0.63	0.55
H11L3	168-3205●	1.16	0.91	0.73	0.63	0.55
Surface Mount Package						
H11L1SM	168-3201●	1.28	1.00	0.80	0.70	0.60
H11L2SM	168-3204●	1.28	1.00	0.80	0.70	0.60
H11L3SM	168-3206●	1.28	1.00	0.80	0.70	0.60

Photodarlington Optically Coupled Isolators

Mini-Flat

ISOCOM COMPONENTS

New



Mini-Flat



6-pin

Case Style	No. of Channels	Input Current	Voltage Isolation	Output (max)	Mftrs. List No.	Order Code
4-Mini Flat	1	20mA	3750V rms	35V	IS126	168-3219
4-Mini Flat	1	10mA	3750V rms	300V	IS127	168-3220
4-Mini Flat	1	20mA	3750V rms	35V	IS181A	168-3221
4-Mini Flat	1	20mA	3750V rms	35V	IS181B	168-3222
4-Mini Flat	1	20mA	3750V rms	35V	IS181C	168-3223
4-Mini Flat	1	20mA	3750V rms	35V	IS181D	168-3224
4-Mini Flat	1	20mA	3750V rms	35V	IS357	168-3225
4-Mini Flat	1	20mA	3750V rms	35V	IS357A	168-3227
4-Mini Flat	1	20mA	3750V rms	35V	IS357B	168-3228
4-Mini Flat	1	20mA	3750V rms	35V	IS357C	168-3229
4-Mini Flat	1	20mA	3750V rms	35V	IS357D	168-3230
6-DIP	1	10mA	5300V rms	100V	H11G1	168-3382

528638

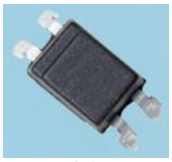
Mftrs. List No.	Order Code	Price Each 5+	25+	100+	250+	500+
IS126	168-3219● RL	0.320	0.250	0.200	0.174	0.151
IS127	168-3220● RL	0.600	0.470	0.380	0.330	0.280
IS181A	168-3221● RL	0.250	0.195	0.156	0.136	0.118
IS181B	168-3222● RL	0.250	0.195	0.156	0.136	0.118
IS181C	168-3223● RL	0.250	0.195	0.156	0.136	0.118
IS181D	168-3224● RL	0.250	0.195	0.156	0.136	0.118
IS357	168-3225● RL	0.250	0.195	0.156	0.136	0.118
IS357A	168-3227● RL	0.260	0.195	0.162	0.143	0.124
IS357B	168-3228● RL	0.260	0.195	0.162	0.143	0.124
IS357C	168-3229● RL	0.260	0.195	0.162	0.143	0.124
IS357D	168-3230● RL	0.260	0.195	0.162	0.143	0.124
H11G1	168-3382●	0.790	0.620	0.500	0.430	0.370

Photodarlington Optically Coupled Isolators

ISOCOM COMPONENTS

New

SMD



4-pin



6-pin

Case Style	No. of Channels	Input Current	Voltage Isolation	Output (max)	Mftrs. List No.	Order Code
Dual In-LIne Package Package						
4-DIP	1	10mA	5300V rms	55V	ISP521-1X	168-3267
4-DIP	1	10mA	5300V rms	55V	ISP621-1X	168-3280
4-DIP	1	20mA	5300V rms	35V	ISP817X	168-3291
4-DIP	1	50mA	5300V rms	70V	SFH615A-2X	168-3348
4-DIP	1	50mA	5300V rms	70V	SFH615A-3X	168-3349
4-DIP	1	50mA	5300V rms	70V	SFH615A-4X	168-3350
4-DIP	1	50mA	5300V rms	70V	SFH617A-2X	168-3351
4-DIP	1	50mA	5300V rms	70V	SFH617A-3X	168-3352
4-DIP	1	50mA	5300V rms	70V	SFH617A-4X	168-3353
4-DIP	1	5mA	5300V rms		SFH618A-1X	168-3355
4-DIP	1	5mA	5300V rms	55V	SFH618A-2X	168-3356
4-DIP	1	5mA	5300V rms	55V	SFH618A-3X	168-3357
4-DIP	1	5mA	5300V rms	55V	SFH618A-4X	168-3358
4-DIP	1	20mA	5300V rms	35V	TIL191	168-3363
6-DIP	1	60mA	5300V rms	70V	CNY17-4X	168-3176
6-DIP	1	60mA	5300V rms	70V	CNY17F-1X	168-3178
6-DIP	1	60mA	5300V rms	70V	CNY17F-2X	168-3180
6-DIP	1	60mA	5300V rms	70V	CNY17F-3X	168-3182
6-DIP	1	60mA	5300V rms	70V	CNY17F-4X	168-3185
6-DIP	1	10mA	5300V rms	30V	MOC8101X	168-3343
6-DIP	1	10mA	5300V rms	30V	MOC8102X	168-3344
6-DIP	1	10mA	5300V rms	30V	MOC8103X	168-3345
6-DIP	1	10mA	5300V rms	30V	MOC8104X	168-3346
6-DIP	1				MOC8106X	168-3347
6-DIP	1	10mA	5300V rms	30V	TIL119	168-3362
6-DIP	1	40mA	5300V rms	30V	MCT210	168-3374
6-DIP	1	10mA	5300V rms	300V	H11D1	168-3376
6-DIP	1	50mA	5300V rms	70V	IS201	168-3381
6-DIP	1	10mA	5300V rms	300V	H11D1X	168-3386
6-DIP	1	10mA	5300V rms	30V	4N25X	168-3163
6-DIP	1	10mA	5300V rms	30V	4N26X	168-3165
6-DIP	1	10mA	5300V rms	30V	4N35X	168-3167
6-DIP	1	60mA	5300V rms	70V	CNY17-1X	168-3169
6-DIP	1	60mA	5300V rms	70V	CNY17-2X	168-3171
6-DIP	1	60mA	5300V rms	70V	CNY17-3X	168-3174
6-DIP	1	10mA	5300V rms	70V	H11AV1X	168-3195
6-DIP	1	10mA	5300V rms	70V	H11AV2X	168-3198
6-DIP	1	16mA	5300V rms	30V	TIL111	168-3361
Surface Mount Package						
4-SMDIP	1	10mA	5300V rms	55V	ISP521-1XSM	168-3268
4-SMDIP	1	10mA	5300V rms	55V	ISP621-1XSM	168-3281
4-SMDIP	1	20mA	5300V rms	35V	ISP817XSM	168-3292
6-SMDIP	1	60mA	5300V rms	70V	CNY17-1XSM	168-3170
6-SMDIP	1	60mA	5300V rms	70V	CNY17-3XSM	168-3175
6-SMDIP	1	60mA	5300V rms	70V	CNY17-4XSM	168-3177
6-SMDIP	1	60mA	5300V rms	70V	CNY17F-1XSM	168-3179
6-SMDIP	1	60mA	5300V rms	70V	CNY17F-2XSM	168-3181
6-SMDIP	1	60mA	5300V rms	70V	CNY17F-3XSM	168-3183
6-SMDIP	1	60mA	5300V rms	70V	CNY17F-4XSM	168-3186
6-SMDIP	1	10mA	5300V rms	30V	4N26SM	168-3383
6-SMDIP	1	10mA	5300V rms	30V	4N25XSM	168-3164
6-SMDIP	1	10mA	5300V rms	30V	4N26XSM	168-3166
6-SMDIP	1	10mA	5300V rms	30V	4N35XSM	168-3168
6-SMDIP	1	60mA	5300V rms	70V	CNY17-2XSM	168-3173
6-SMDIP	1	10mA	5300V rms	70V	H11AV1XSM	168-3197
6-SMDIP	1	10mA	5300V rms	70V	H11AV2XSM	168-3199

528492

Mftrs. List No.	Order Code	Price Each 5+	25+	100+	250+	500+
Dual In-LIne Package Package						
ISP521-1X	168-3267●	0.190	0.148	0.119	0.103	0.090
ISP621-1X	168-3280●	0.190	0.148	0.119	0.103	0.090
ISP817X	168-3291●	0.190	0.148	0.119	0.103	0.090
SFH615A-2X	168-3348●	0.190	0.148	0.119	0.103	0.090
SFH615A-3X	168-3349●	0.190	0.148	0.119	0.103	0.090
SFH615A-4X	168-3350●	0.200	0.156	0.125	0.109	0.094
SFH617A-2X	168-3351●	0.220	0.172	0.138	0.120	0.104
SFH617A-3X	168-3352●	0.220	0.172	0.138	0.120	0.104
SFH617A-4X	168-3353●	0.230	0.180	0.144	0.125	0.108
SFH618A-1X	168-3355●	0.300	0.234	0.188	0.163	0.142
SFH618A-2X	168-3356●	0.300	0.234	0.188	0.163	0.142
SFH618A-3X	168-3357●	0.320	0.250	0.200	0.174	0.151
SFH618A-4X	168-3358●	0.320	0.250	0.200	0.174	0.151
TIL191	168-3363●	0.190	0.148	0.119	0.103	0.090
CNY17-4X	168-3176●	0.360	0.290	0.228	0.200	0.171
CNY17F-1X	168-3178●	0.260	0.203	0.163	0.141	0.123
CNY17F-2X	168-3180●	0.260	0.203	0.163	0.141	0.123
CNY17F-3X	168-3182●	0.260	0.203	0.163	0.141	0.123
CNY17F-4X	168-3185●	0.260	0.203	0.163	0.141	0.123
MOC8101X	168-3343●	0.250	0.195	0.156	0.136	0.118
MOC8102X	168-3344●	0.250	0.195	0.156	0.136	0.118
MOC8103X	168-3345●	0.250	0.195	0.156	0.136	0.118
MOC8104X	168-3346●	0.250	0.195	0.156	0.136	0.118
MOC8106X	168-3347●	0.250	0.195	0.156	0.136	0.118
TIL119	168-3362●	0.510	0.400	0.320	0.280	0.241
MCT210	168-3374●	0.250	0.195	0.156	0.136	0.118
H11D1	168-3376●	0.720	0.560	0.450	0.390	0.340
IS201	168-3381●	0.740	0.570	0.480	0.400	0.340
H11D1X	168-3386●	0.720	0.560	0.450	0.390	0.340
4N25X	168-3163●	0.238	0.181	0.152	0.133	0.114
4N26X	168-3165●	0.260	0.203	0.163	0.141	0.123
4N35X	168-3167●	0.400	0.310	0.260	0.219	0.190
CNY17-1X	168-3169●	0.310	0.250	0.249	0.216	0.186
CNY17-2X	168-3171●	0.310	0.250	0.200	0.171	0.152
CNY17-3X	168-3174●	0.260	0.203	0.163	0.141	0.123
H11AV1X	168-3195●	0.260	0.203	0.163	0.141	0.123
H11AV2X	168-3198●	0.260	0.203	0.163	0.141	0.123
TIL111	168-3361●	0.250	0.195	0.156	0.136	0.118
Surface Mount Package						
ISP521-1XSM	168-3268●	0.200	0.156	0.125	0.109	0.094
ISP621-1XSM	168-3281●	0.200	0.156	0.125	0.109	0.094
ISP817XSM	168-3292●	0.200	0.156	0.125	0.109	0.094
CNY17-1XSM	168-3170●	0.270	0.211	0.169	0.147	0.127
CNY17-3XSM	168-3175●	0.270	0.211	0.169	0.147	0.127
CNY17-4XSM	168-3177●	0.270	0.211	0.169	0.147	0.127
CNY17F-1XSM	168-3179●	0.270	0.211	0.169	0.147	0.127
CNY17F-2XSM	168-3181●	0.270	0.211	0.169	0.147	0.127
CNY17F-3XSM	168-3183●	0.270	0.211	0.169	0.147	0.127
CNY17F-4XSM	168-3186●	0.270	0.211	0.169	0.147	0.127
4N26SM	168-3383●	0.260	0.203	0.163	0.141	0.123
4N25XSM	168-3164●	0.270	0.211	0.169	0.147	0.127
4N26XSM	168-3166●	0.270	0.211	0.169	0.147	0.127
4N35XSM	168-3168●	0.270	0.211	0.169	0.147	0.127
CNY17-2XSM	168-3173●	0.270	0.211	0.169	0.147	0.127
H11AV1XSM	168-3197●	0.270	0.211	0.169	0.147	0.127
H11AV2XSM	168-3199●	0.270	0.211	0.169	0.147	0.127

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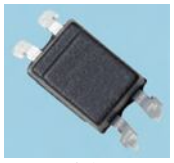
Photodarlington Optically Coupled Isolators

AC Input

ISOCOM COMPONENTS

New

SMD


4-pin


6-pin


8-pin


16-pin

Case Style	No. of Channels	Input Current	Voltage Isolation	Voltage Output (max)	Mftrs. List No.	Order Code
Dual In-LIne Package Package						
4-DIP	1	10mA	5300V rms	55V	ISP620-1X	168-3273
4-DIP	1	20mA	5300V rms	35V	ISP814X	168-3286
4-DIP	1	50mA	5300V rms	70V	SFH620A-2X	168-3359
4-DIP	1	50mA	5300V rms	70V	SFH620A-3X	168-3360
6-DIP	1	10mA	5300V rms	30V	H11AA2X	168-3189
6-DIP	1	10mA	5300V rms	30V	H11AA3X	168-3191
6-DIP	1	10mA	5300V rms	30V	H11AA1X	168-3187
6-DIP	1	10mA	5300V rms	30V	H11AA4X	168-3193
8-DIP	2	10mA	5300V rms	55V	ISP620-2X	168-3276
16-DIP	4	10mA	5300V rms	55V	ISP620-4X	168-3278
16-DIP	4	20mA	5300V rms	35V	TIL196	168-3367
16-DIP	4	20mA	5300V rms	35V	ISP844X	168-3300
Surface Mount Package						
4-SMDIP	1	10mA	5300V rms	55V	ISP620-1XSM	168-3274
4-SMDIP	1	20mA	5300V rms	35V	ISP814XSM	168-3288
6-SMDIP	1	10mA	5300V rms	30V	H11AA2XSM	168-3190
6-SMDIP	1	10mA	5300V rms	30V	H11AA1XSM	168-3188
6-SMDIP	1	10mA	5300V rms	30V	H11AA3XSM	168-3192
6-SMDIP	1	10mA	5300V rms	30V	H11AA4XSM	168-3194
8-SMDIP	2	10mA	5300V rms	55V	ISP620-2XSM	168-3277
16-SMDIP	4	10mA	5300V rms	55V	ISP620-4XSM	168-3279
16-SMDIP	4	20mA	5300V rms	35V	ISP844XSM	168-3301

528644

Mftrs. List No.	Order Code	Price Each 5+	25+	100+	250+	500+
Dual In-LIne Package Package						
ISP620-1X	168-3273●	0.300	0.234	0.188	0.163	0.142
ISP814X	168-3286●	0.340	0.270	0.188	0.163	0.142
SFH620A-2X	168-3359●	0.360	0.280	0.225	0.196	0.170
SFH620A-3X	168-3360●	0.360	0.280	0.225	0.196	0.170
H11AA2X	168-3189●	0.480	0.380	0.300	0.260	0.226
H11AA3X	168-3191●	0.480	0.380	0.300	0.260	0.226
H11AA1X	168-3187●	0.480	0.370	0.300	0.260	0.228
H11AA4X	168-3193●	0.480	0.380	0.300	0.260	0.226
ISP620-2X	168-3276●	0.640	0.500	0.400	0.350	0.300
ISP620-4X	168-3278●	1.280	1.000	0.800	0.700	0.600
TIL196	168-3367●	1.280	1.000	0.800	0.700	0.600
ISP844X	168-3300●	1.360	1.060	0.860	0.730	0.640
Surface Mount Package						
ISP620-1XSM	168-3274●	0.310	0.242	0.194	0.168	0.146
ISP814XSM	168-3288●	0.310	0.242	0.194	0.168	0.146
H11AA2XSM	168-3190●	0.500	0.390	0.310	0.270	0.236
H11AA1XSM	168-3188●	0.500	0.390	0.310	0.270	0.236
H11AA3XSM	168-3192●	0.500	0.390	0.310	0.270	0.236
H11AA4XSM	168-3194●	0.500	0.390	0.310	0.270	0.236
ISP620-2XSM	168-3277●	0.650	0.510	0.410	0.350	0.310
ISP620-4XSM	168-3279●	1.290	1.010	0.810	0.700	0.610
ISP844XSM	168-3301●	1.290	1.010	0.810	0.700	0.610

Photodarlington Optically Coupled Isolators

Dual

ISOCOM COMPONENTS

SMD

New


8-pin

Case Style	No. of Channels	Input Current	Voltage Isolation	Voltage Output (max)	Mftrs. List No.	Order Code
Dual In-LIne Package Package						
8-DIP	2	20mA	5300V rms	35V	ISP824X	168-3293
8-DIP	2	20mA	5300V rms	35V	ISP827X	168-3297
8-DIP	2	20mA	5300V rms	30V	MCT6X	168-3311
8-DIP	2	20mA	5300V rms	35V	TIL192	168-3364
8-DIP	2	10mA	5300V rms	55V	TLP521-2	168-3371
8-DIP	2	50mA	5300V rms	50V	ISD1X	168-3207
8-DIP	2	50mA	5300V rms	70V	ISD2X	168-3209
8-DIP	2	50mA	5300V rms	70V	ISD5X	168-3211
8-DIP	2	50mA	5300V rms	50V	ISD74X	168-3213
8-DIP	2	50mA	5300V rms	70V	ISD201X	168-3258
8-DIP	2	50mA	5300V rms	70V	ISD203X	168-3260
8-DIP	2	10mA	5300V rms	80V	ISP321-2X	168-3262
8-DIP	2	10mA	5300V rms	55V	ISP621-2X	168-3282
Surface Mount Package						
8-SMDIP	2	20mA	5300V rms	35V	ISP824XSM	168-3294
8-SMDIP	2	20mA	5300V rms	30V	MCT6XSM	168-3312
8-SMDIP	2	50mA	5300V rms	50V	ISD1XSM	168-3208
8-SMDIP	2	50mA	5300V rms		ISD2XSM	168-3210
8-SMDIP	2	50mA	5300V rms	70V	ISD5XSM	168-3212
8-SMDIP	2	50mA	5300V rms	70V	ISD201XSM	168-3259
8-SMDIP	2	50mA	5300V rms	70V	ISD203XSM	168-3261
8-SMDIP	2	10mA	5300V rms	80V	ISP321-2XSM	168-3264
8-SMDIP	2	10mA	5300V rms	55V	ISP521-2XSM	168-3270
8-SMDIP	2	10mA	5300V rms	55V	ISP621-2XSM	168-3283
8-SMDIP	2	20mA	5300V rms	35V	ISP827XSM	168-3298

528637

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
Dual In-LIne Package Package						
ISP824X	168-3293●	0.670	0.530	0.440	0.370	0.320
ISP827X	168-3297●	0.460	0.360	0.290	0.250	0.217
MCT6X	168-3311●	0.560	0.440	0.350	0.300	0.260
TIL192	168-3364●	0.460	0.360	0.290	0.250	0.217
TLP521-2	168-3371●	0.460	0.360	0.290	0.250	0.217
ISD1X	168-3207●	0.560	0.440	0.350	0.300	0.260
ISD2X	168-3209●	0.560	0.440	0.350	0.300	0.260
ISD5X	168-3211●	0.560	0.440	0.350	0.300	0.260
ISD74X	168-3213●	0.560	0.440	0.350	0.300	0.260
ISD201X	168-3258●	0.640	0.500	0.400	0.350	0.300
ISD203X	168-3260●	0.640	0.500	0.400	0.350	0.300
ISP321-2X	168-3262●	0.450	0.350	0.280	0.245	0.212
ISP621-2X	168-3282●	0.450	0.350	0.280	0.245	0.212
Surface Mount Package						
ISP824XSM	168-3294●	0.650	0.510	0.410	0.350	0.310
MCT6XSM	168-3312●	0.570	0.450	0.360	0.310	0.270
ISD1XSM	168-3208●	0.570	0.450	0.360	0.310	0.270
ISD2XSM	168-3210●	0.570	0.450	0.360	0.310	0.270
ISD5XSM	168-3212●	0.570	0.450	0.360	0.310	0.270
ISD201XSM	168-3259●	0.650	0.510	0.410	0.350	0.310
ISD203XSM	168-3261●	0.650	0.510	0.410	0.350	0.310
ISP321-2XSM	168-3264●	0.460	0.360	0.290	0.250	0.217
ISP521-2XSM	168-3270●	0.460	0.360	0.290	0.250	0.217
ISP621-2XSM	168-3283●	0.460	0.360	0.290	0.250	0.217
ISP827XSM	168-3298●	0.470	0.370	0.290	0.260	0.222

Photodarlington Optically Coupled Isolators

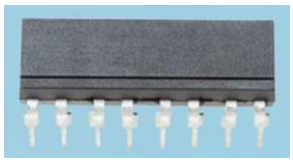
Quad

ISOCOM COMPONENTS

New

SMD


8-pin


16-pin

Case Style	No. of Channels	Input Current	Voltage Isolation	Voltage Output (max)	Mftrs. List No.	Order Code
Dual In-LIne Package Package						
8-DIP	2	10mA	5300V rms	55V	ISP521-2X	168-3269
16-DIP	4	10mA	5300V rms	55V	ISP621-4X	168-3284
16-DIP	4	20mA	5300V rms	35V	TIL193	168-3365
16-DIP	4		5000V rms	35V	IS849X	168-3256
16-DIP	4	10mA	5300V rms	80V	ISP321-4X	168-3265
16-DIP	4	50mA	5300V rms	50V	ISQ1X	168-3215
16-DIP	4	50mA	5300V rms		ISQ2X	168-3216
16-DIP	4	50mA	5300V rms	70V	ISQ5X	168-3217
16-DIP	4	50mA	5300V rms	50V	ISQ74X	168-3218
16-DIP	4	10mA	5300V rms	55V	ISP521-4X	168-3271
16-DIP	4	20mA	5300V rms	35V	ISP847X	168-3304
16-DIP	4	50mA	5300V rms	70V	ISQ201X	168-3307
16-DIP	4	50mA	5300V rms	70V	ISQ203X	168-3309
16-DIP	4	10mA	5300V rms	55V	TLP521-4	168-3372
Surface Mount Package						
16-SMDIP	4	10mA	5300V rms	80V	ISP321-4XSM	168-3266
16-SMDIP	4	10mA	5300V rms	55V	ISP621-4XSM	168-3285
16-SMDIP	4		5000V rms	35V	IS849XSM	168-3257
16-SMDIP	4	10mA	5300V rms	55V	ISP521-4XSM	168-3272
16-SMDIP	4	20mA	5300V rms	35V	ISP847XSM	168-3306
16-SMDIP	4	50mA	5300V rms	70V	ISQ201XSM	168-3308
16-SMDIP	4	50mA	5300V rms	70V	ISQ203XSM	168-3310

528640

Mftrs. List No.	Order Code	Price Each 5+	25+	100+	250+	500+
Dual In-LIne Package Package						
ISP521-2X	168-3269●	0.450	0.350	0.280	0.245	0.212
ISP621-4X	168-3284●	0.880	0.690	0.550	0.480	0.420
TIL193	168-3365●	0.910	0.710	0.570	0.490	0.430
IS849X	168-3256●	0.560	0.440	0.350	0.300	0.260
ISP321-4X	168-3265●	0.880	0.690	0.550	0.480	0.420
ISQ1X	168-3215●	1.120	0.880	0.700	0.610	0.530
ISQ2X	168-3216●	1.120	0.880	0.700	0.610	0.530
ISQ5X	168-3217●	1.120	0.880	0.700	0.610	0.530
ISQ74X	168-3218●	1.120	0.880	0.700	0.610	0.530
ISP521-4X	168-3271●	0.880	0.690	0.550	0.480	0.420
ISP847X	168-3304●	1.110	0.860	0.710	0.600	0.520
ISQ201X	168-3307●	1.600	1.250	1.000	0.870	0.750
ISQ203X	168-3309●	1.600	1.250	1.000	0.870	0.750
TLP521-4	168-3372●	0.910	0.710	0.570	0.490	0.430

RL Re-reeling available

Farnell

Optocouplers - continued

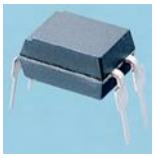
Photodarlington Optically Coupled Isolators - continued

Quad - continued

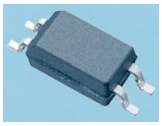
Mftrs. List No.	Order Code	Price Each 5+	25+	100+	250+	500+
Surface Mount Package						
ISP321-4XSM	**168-3266●**	0.900	0.700	0.560	0.490	0.420
ISP621-4XSM	**168-3285●**	0.900	0.700	0.560	0.490	0.420
IS849XSM	**168-3257●**	0.570	0.450	0.360	0.310	0.270
ISP521-4XSM	**168-3272●**	0.900	0.700	0.560	0.490	0.420
ISP847XSM	**168-3306●**	0.910	0.710	0.570	0.490	0.430
ISQ201XSM	**168-3308●**	1.700	1.330	1.060	0.920	0.800
ISQ203XSM	**168-3310●**	1.700	1.330	1.060	0.920	0.800

High Operating Temperature Darlington Output

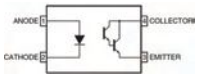
FAIRCHILD SEMICONDUCTOR



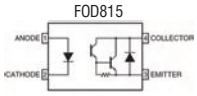
DIP-B



SMDIP-B



FOD815



FOD852

The FOD815 and FOD852 consist of gallium arsenide infrared emitting diode driving a silicon photodarlington output. The FOD852 has an integral base-emitter resistor.

- **C-UL** and **UL** recognised
- Compact 4-pin package
- Parts marked **VDE**=VDE approved

Isolation Voltage (Vrms)	Curr. Trsfr. Ratio @ I_F =1mA (min)	Breakdown $V_{(BR)}$ CEO min	Switching Time (µs) typ. t_r	t_f	Temp Range (°C)	Mftrs. List No.	Lead Spacing
DIP-B Package							
5000	600%	35	60	53	-30 to 105	FOD815	0.3"
DIP-B Package, With Integral Base-Emitter Resistor							
5000	1000%	300	100	20	30 to 100	FOD852	0.3"
5000	1000%	300	100	20	30 to 100	FOD852W	0.4"
SMDIP-B Package, With Integral Base-Emitter Resistor							
5000	1000%	300	100	20	30 to 100	FOD852S	
5000	1000%	300	100	20	30 to 100	FOD8523S	VDE
5000	1000%	300	100	20	30 to 100	FOD8523SD	VDE

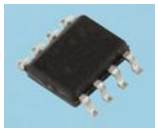
490643

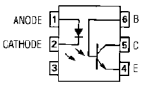
Mftrs. List No.	Order Code	Price Each 5+	25+	100+	250+	500+
DIP-B Package						
FOD815	**149-5362●**	0.280	0.193	0.148	0.135	0.126
DIP-B Package, With Integral Base-Emitter Resistor						
FOD852	**149-5371●**	0.510	0.390	0.280	0.210	0.165
FOD852W	**149-5377●**	0.510	0.390	0.280	0.210	0.165
SMDIP-B Package, With Integral Base-Emitter Resistor						
FOD852S	SMD **149-5376●**	0.510	0.390	0.280	0.210	0.165
FOD8523S	SMD **149-5374●**	0.510	0.390	0.280	0.210	0.165
FOD8523SD	SMD **149-5375●**	0.510	0.390	0.290	0.174	0.171

Transistor Output

FAIRCHILD SEMICONDUCTOR







Optocouplers with high efficiency and very low degradation AlGaAs infra-red emitter coupled to high speed phototransistor. MCT5200/1 have guaranteed minimum values for $CTR_{CE(SAT)}$ and CTR_{CB} over 0°C-70°C. MCT5210/1 have high values of $CTR_{CE(SAT)}$ with low LED input current.MOCD207R2M and MCT6 are dual channel optocouplers.

Isolation Voltage (pk)	$CTR_{CE\ (typ.)}$ @ I_F	$CTR_{CE\ (SAT)}$ (min) @ I_F	Breakdown $V_{(BR)}$CEO (min)	Mftrs. List No.	Order Code
2500	150% @ 10mA	100% @ 10mA	70V	MOCD207R2M	108-6672
5300	20 % min @ 60mA	—	85V	MCT6	108-6679

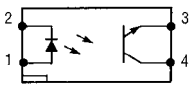
206237

Mftrs. List No.	Order Code	Price Each 1+	25+	100+
MOCD207R2M	SMD **108-6672●** RL	0.70	0.50	0.38
MCT6	**108-6679●**	0.68	0.43	0.31

Transistor Output

10kV Isolation





◆ OPI Series, L=14.0, Dia=6.6 Pin spacing=2.54

◆ **Note:** OPI110A and OPI110C have detector connections reversed, i.e. pin 4 is emitter.

OPI1264D is **ATEX (BAS01ATEX1278U)** approved.

Isolation Voltage (pk)	Curr. Trsfr. Ratio (min.) @ I_F	Breakdown $V_{(BR)}$	Mftr.	Mftrs. List No.	Order Code
10000Vdc	25% @ 10mA	30V	OPTEK	OPI1264A	326-630
10000Vdc	100% @ 10mA	30V	OPTEK	OPI1264C	232-520
10000Vdc	100% @ 1mA	30V	Bedford	OPI1264D	121-0712
10000Vdc	25% @ 10mA	30V	OPTEK	OPI110A	232-531
10000Vdc	100% @ 10mA	30V	OPTEK	OPI110C	232-543

206199

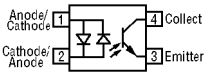
Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+
OPI1264A	**326-630●**	2.74	1.37	1.26	1.21
OPI1264C	**232-520●**	2.79	1.39	1.28	1.23
OPI1264D	**121-0712●**	4.28	3.60	3.20	2.06
OPI110A	**232-531●**	2.44	2.13	1.77	1.50
OPI110C	**232-543●**	2.24	2.08	1.67	1.34

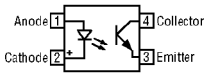
Surface Mount, DIL 4

VISHAY



SFH6286-2/SFH6206-2





SFH6165-2

Surface mount lead form versions of the most popular 4 pin optocouplers. The design of the lead bend ensures that the creepage and clearance of ≥8mm is not comprised. Approved to **IEC65, IEC950, BS6401, BSEN60065, BSEN60950, EN41003. UL** recognised.

SMD

Isolation Voltage (pk) (AC_{RMS})	Curr. Trsfr Ratio % (min-max)	Breakdown $V_{(BR)}$ CEO min	Mftrs. List No.	Order Code
Transistor Output				
5300	63 - 125 @ I_F=10mA	70	SFH6156-2T	104-5527
AC Input, Transistor Output				
5300	100 - 320 @ I_F=1mA	55	SFH6286-2T	104-5528
5300	63 - 125 @ I_F=10mA	70	SFH6206-2T	104-5529

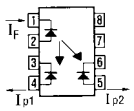
206450

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
Transistor Output						
SFH6156-2T	SMD **104-5527●** RL	0.570	0.460	0.380	0.230	0.180
AC Input, Transistor Output						
SFH6286-2T	SMD **104-5528●** RL	0.630	0.570	0.510	0.310	0.250
SFH6206-2T	SMD **104-5529●** RL	0.490	0.480	0.390	0.300	0.196

Linear - IL300

VISHAY





$K_1 = IP1/IF$ $K_2 = IP2/IF$
$K_3 = K2/K1$

- Couples ac and dc signals
- 0.01% servo linearity
- Wide bandwidth, >200kHz
- High gain stability, ±0.005%/°C
- Withstand test voltage 7500V ac (pk) (1 sec)

A unique optocoupler using two separate isolated photodiodes with matched characteristics, one of which is used as a feedback element. The combination of the linear photodiodes and the feedback concept enables construction of simple but accurate linear isolating circuits. Applications include switch mode power supply feedback and isolation of process control transducers. Approved to **IEC65, IEC950, BS6301, BSEN60065, BSEN60950, EN41003**.

IL300 has transfer gain (K3) of between 0.56 (min.) and 1.65 (max.).

IL300F offers a narrower selection band for K3 of between 0.95 (min.) and 1.056 (max.).

206258

Mftrs. List No.	Order Code	Price Each 1+	100+	250+	500+
IL300	**104-5385●**	3.25	2.82	1.99	1.27
IL300-F	**104-5395●**	9.28	6.91	5.23	4.09

High Speed Logic Gate Output

10Mb Data Rate

FAIRCHILD SEMICONDUCTOR

CMR (Vµs) (min.)	@ (VCM)	Input On-Current (mA)	Output Enable	Prop. Delay (ns) typ. t_{PHL}	t_{PLH}	Package	Mftrs. List No.
Single Output							
50kV/µs	1000	20	No	60	60	SO-8	FOD0708
kV/µs10	1000	50	Yes	20	20	SO-8	HCPL0611
10000V/µs	—	5	Yes	45	45	DIP	6N137
10000V/µs	400	5	Yes	45	45	DIL-8	HCPL-2611
5000V/µs	50	50	Yes	20	20	SO-8	HCPL0600

228640

RL Re-reeling available

Farnell

Mftrs. List No.	Order Code	1+	25+	100+	250+	500+
Single						
6N137	**102-1197●**	0.92	0.59	0.42	0.31	0.25
FOD0708	SMD **120-8102●** RL	2.76	1.93	1.46	1.34	1.30
HCPL-2611	**102-1251●**	1.34	0.91	0.65	0.61	0.56
HCPL0611	SMD **122-8311●**	2.32	1.64	1.40	1.22	1.17
HCPL0600	SMD **108-6675●** RL	1.69	1.15	0.83	0.77	0.71

Channels	Isolation Voltage (V)	CMR (V/µs)	Prop. Delay (ns) T_{PHL}	Prop. Delay (ns) T_{PLH}	Package Style	Mftrs. List No.
Single	3750	N/A	20	20	SO-8	HCPL0600

423753

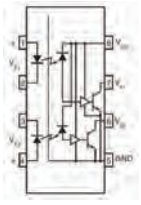
Mftrs. List No.	Order Code	1+	25+	100+	250+	500+
Logic Gate						
HCPL0600	SMD **108-6675●** RL	1.69	1.15	0.83	0.77	0.71

Dual Channel High Speed-10 MBit/s Logic Gate Optocouplers

FAIRCHILD SEMICONDUCTOR







- 850 nm AlGaAS LED
- Very high speed-10 MBit/s
- Temp Range -40°C to +85°C
- Logic gate output
- Wired OR-open collector
- U.L. recognized (File # E90700)

Channels	CMR (Vµs) (min.)	@ (VCM)	Input On-Current (mA)	Prop. Delay (ns) typ. t_{PHL} (ON)	t_{PLH}	Case Style	Mftrs. List No.	Lead Spacing	
Dual	5000	50	5	20	20	DIL-8	HCPL-2631	0.3"	
Dual	5000	50	15	20	20	DIP-B	HCPL2631W	0.4"	
Dual	5000	50	15	20	20	DIP-B	HCPL2631V	0.3"	VDE0884
Dual	5000	50	15	20	20	DIP-B	HCPL2631WV	0.4"	VDE0884
Dual	5000	50	6.3	20	20	SMDIP-B	HCPL2631S		
Dual	5000	50	6.3	20	20	SMDIP-B	HCPL2631SD		
Dual	5000	50	6.3	20	20	SMDIP-B	HCPL2631SDV		VDE0884
Dual	5000	50	6.3	20	20	SMDIP-B	HCPL2631SV		VDE0884
Dual	25000	10000	6.3	4	16	SOIC-W	HCPL062N		

495181

Mftrs. List No.	Order Code	1+	25+	100+	250+	500+
HCPL062N	SMD **149-5378●**	3.85	2.68	2.06	1.92	1.79
HCPL-2630	**102-1252●**	2.33	2.12	1.75	0.99	0.85
HCPL-2631	**102-1255●**	1.57	1.06	0.76	0.73	0.71
HCPL2631S	SMD **149-5382●**	1.89	1.33	1.01	0.94	0.88
HCPL2631SD	SMD **149-5383●**	1.94	1.35	1.04	0.96	0.90
HCPL2631SDV	SMD **149-5384●**	2.17	1.50	1.15	1.08	1.02
HCPL2631SV	SMD **149-5385●**	2.17	1.50	1.15	1.08	1.02
HCPL2631V	**149-5386●**	2.17	1.50	1.15	1.08	1.02
HCPL2631W	**149-5387●**	2.17	1.50	1.15	1.08	1.02
HCPL2631WV	**149-5388●**	2.17	1.50	1.15	1.08	1.02

Transistor - Digital Output

6 pin DIL - AC input

SHARP



An AC input optocoupler featuring a digital output with normally OFF operation. The output of this device is TTL and LSTTL compatible with a input/output isolation of 5.0kV rms.
UL Recognised.

H=3.5, W=7.12, D=6.5mm

Input Voltage (V_F) typ / max	Characteristics	Time Rise/Fall	Output Current (I_{CC}) max	Output Voltage (V_{CC}) min / max	Mftrs. List No.
1.1 / 1.4V	AC Input	0.5 / 0.5µs	5.0mA	3 / 15V dc	PC900V0NSZXF

411991

Mftrs. List No.	Order Code	1+	25+	100+	250+	500+
PC900V0NSZXF	**970-7743●**	0.77	0.55	0.42	0.30	0.29

Digital Output Optocouplers

New

NEC

No of Channels 1
Input Current 10mA
Output Voltage (max) 7V
Operating Temperature -40°C to +85°C

Case Style	No. of Channels	Outpu Type	Isolation Voltage	Mftrs. List No.	Order Code
5-SOIC	1	Open Collector	3750V rms	PS9117A-F3-A	168-2894
8-DIP	1	Open Collector	5000V rms	PS9587L1-A	168-2900
8-SMDIP	1	Open Collector	5000V rms	PS9587L2-E3-A	168-2901
8-SSOP	1	Open Collector	2500V rms	PS9821-1-F3-A	168-2902
8-SSOP	2	Open Collector	2500V rms	PS9821-2-F3-A	168-2904

528856

Case Style	Mftrs. List No.	Order Code	1+	10+	25+	100+	250+
5-SOIC	PS9117A-F3-A	**168-2894●** RL	1.24	1.05	0.89	0.77	0.66
8-DIP	PS9587L1-A	**168-2900●**	1.87	1.57	1.33	1.15	1.00
8-SMDIP	PS9587L2-E3-A	**168-2901●** RL	1.87	1.57	1.33	1.15	1.00
8-SSOP	PS9821-1-F3-A	**168-2902●** RL	1.71	1.45	1.22	1.05	0.92
8-SSOP	PS9821-2-F3-A	**168-2904●** RL	2.84	2.39	2.02	1.74	1.51

Gate Drive Output Optocouplers

New

NEC

No of Channels 1
Isolation Voltage 5000V rms
Output Voltage (max) 35V
Operating Temperature -40°C to +100°C

Case Style	No. of Channels	Output Type	Isolation Voltage	Mftrs. List No.	Order Code
Dual In-Line Package					
8-DIP	1	Open Collector	5000V rms	PS9513L1-A	168-2895
8-DIP	1	Gate Drive	5000V rms	PS9552L1-A	168-2897
Surface Mount Package					
8-SMDIP	1	Open Collector	5000V rms	PS9513L2-E3-A	168-2896
8-SMDIP	1	Gate Drive	5000V rms	PS9552L2-E3-A	168-2898
8-SMDIP	1	Gate Drive	5000V rms	PS9552L3-E3-A	168-2899

528857

Case Style	Mftrs. List No.	Order Code	1+	10+	25+	100+	250+
Dual In-Line Package							
8-DIP	PS9513L1-A	**168-2895●**	1.33	1.11	0.94	0.82	0.70
8-DIP	PS9552L1-A	**168-2897●**	2.22	2.16	1.83	1.65	1.27
Surface Mount Package							
8-SMDIP	PS9513L2-E3-A	**168-2896●** RL	1.33	1.11	0.94	0.82	0.70
8-SMDIP	PS9552L2-E3-A	**168-2898●** RL	2.57	2.16	1.83	1.58	1.37
8-SMDIP	PS9552L3-E3-A	**168-2899●** RL	2.57	2.16	1.83	1.58	1.37

Logic to Logic

– High Speed

FAIRCHILD SEMICONDUCTOR





740L6000



740L6001



740L6010



740L6011

UL recognised

Pins: 1=V_{CC1} (Input V_{CC}), 2=V_{IN} (Data In), 3=GND_1 (Input GND), 4=GND_0 (Output GND), 5=V_0 (Data Out), 6=V_{CC0} (Output V_{CC}).

'Optologic'® optocouplers provide logic to logic interfacing. The range covers LSTTL to TTL and LSTTL to CMOS interfacing, each being available as a buffer or inverter. Contains input IC for 5V supply, high speed, high output amplifier and internal noise shield. Supports data communication up to 15MBd.

Input Supply V_{CC1}	5V	Common mode transient immunity	±15kV/µs
Output Supply V_{CC0}	5V (740L6000/1) 4.5 – 15V (740L6010/1)	Power dissipation	350mW
		Propagation delay t_{PHL}	60ns typ.
Withstand test voltage	2500V rms		

Output Configuration	Mftrs. List No.	Order Code
Totem Pole	740L6000	102-1122
Totem Pole	740L6001	102-1123

206236

Order Code	1+	25+	100+	250+	500+
102-1122●	2.55	2.05	1.70	1.42	1.17
102-1123●	2.55	2.37	1.23	1.10	1.07

Logic Output

TOSHIBA

New



- Consists of a GaAlAs light-emitting diode and an integrated high-gain, high-speed photodetector
- Inverter logic (totem pole output)

Operating Temperature -40°C to +100°C

Case Style	No. of Channels	Input Current	Isolation Voltage	Mftrs. List No.	Order Code
6-SMDIP	1	2mA	5000V rms	TLP701F(TP.F)	168-4608
6-SMDIP	1	5mA	5000V rms	TLP702F(D4-TP.F)	168-4609
6-SMDIP	1	5mA	5000V rms	TLP706(F)	168-4610
6-SMDIP	1	–	5000V rms	TLP719F(TP.F)	168-4611

528911

Mftrs. List No.	Order Code	1+	25+	100+	250+	500+
TLP701F(TP.F)	**168-4608●** RL	3.60	2.48	1.89	1.58	1.21
TLP702F(D4-TP.F)	**168-4609●** RL	3.93	2.70	2.06	1.73	1.33
TLP706(F)	**168-4610●**	3.56	2.45	1.87	1.57	1.20
TLP719F(TP.F)	**168-4611●** RL	3.38	2.33	1.77	1.49	1.14

RL Re-reeling available

Farnell

Optocouplers - continued

IPM Driver O/P

TOSHIBA



SMD New

- Consists of a GaAlAs light-emitting diode and an integrated high-gain, high-speed photodetector
- Inverter logic (totem pole output)

Operating Temperature -40°C to +85°C

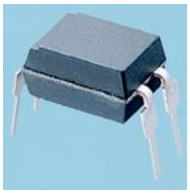
Case Style	No. of Channels	Input Current	Voltage Output (max)	Isolation	Mftrs. List No.	Order Code
MFSOP6	1	3mA	20V	3750V rms	TLP102(F)	168-4599
MFSOP6	1	3mA	20V	3750V rms	TLP106(F)	168-4600
MFSOP6	1	5mA	6V	3750V rms	TLP116(F)	168-4601

528910

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
TLP102(F)	168-4599●	2.99	2.05	1.56	1.32	1.01
TLP106(F)	168-4600●	2.99	2.05	1.56	1.32	1.01
TLP116(F)	168-4601●	6.33	4.36	3.32	2.79	2.14

Logic Output

TOSHIBA



New

- Consists of a silicone photo-transistor optically coupled to a gallium arsenide infrared emitting diode

No. of Channels 1
Output Voltage (max) 80V
Isolation Voltage 5000V rms
Operating Temperature -55°C to +110°C

528920

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
TLP781(D4-GB.F)	168-4595●	0.330	0.220	0.169	0.142	0.109
TLP781(D4-Y.F)	168-4596●	0.520	0.360	0.280	0.230	0.175
TLP781F(D4-GB.F)	168-4597●	0.330	0.220	0.169	0.142	0.109
TLP781F(D4-Y.F)	168-4598●	0.520	0.360	0.280	0.230	0.175

Opto Couplers

Logic Output

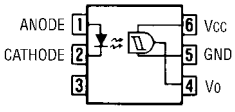
496761

Mftr.	Description	Mftrs. List No.	Order Code	Price Each 1+	25+	50+
AV	Totem Pole, CMOS O/P	ACPL-072L-000E	SMD 124-4506●	4.84	3.39	3.08
AV	Totem Pole O/P	ACPL-4800-300E	SMD 122-3818●	1.86	1.46	1.19
AV	Bi-directional, high speed	ACPL-4800-000E	122-3817●	1.82	1.42	1.16
AV	Triple All-in-One, high speed, 3 Chn.	ACSL-6300-00TE	SMD 122-3819●	4.53	3.51	2.89
AV	Bi-directional 2/1, high speed, 3 Chn.	ACSL-6310-00TE	SMD 122-3820●	4.58	3.56	2.91
AV	Bi-directional 3/1, high speed, 4 Chn.	ACSL-6410-00TE	SMD 122-3821●	6.16	4.78	3.92
AV	Bi-directional 2/2, high speed, 4 Chn.	ACSL-6420-00TE	SMD 122-3822●	6.41	4.98	4.08
AV	Stretched SO8, 2 Chn.	ACPL-K63L-000E	SMD 124-4508●	3.96	2.79	2.52
AV	Stretched SO6	ACPL-P611-000E	SMD 124-4512●	1.94	1.36	1.24
AV	Stretched SO6	ACPL-W60L-000E	SMD 124-4517●	2.12	1.49	1.35
AV	Stretched SO6	ACPL-W611-000E	SMD 124-4518●	1.94	1.36	1.24
Optek	8.9x28x6.3mm $7V_{CE}$	OPI1266	122-6875●	7.82	6.26	5.40
Optek	8.9x28x6.3mm $18V_{CE}$	OPI1268	122-6876●	5.63	4.51	3.90
TOSH	Mini-flat, 5 pin. I_f=10mA	TLP113	122-5836●	1.74	1.45	1.26
TOSH	Mini-flat, 5 pin. I_f=5mA	TLP115A	122-5837●	2.70	2.24	1.94
TOSH	11-10C4, 2 Chn.	TLP2630	122-5831●	3.04	2.53	2.16
TOSH	11-10C4, 1 Chn.	TLP2200	122-5845●	2.66	2.21	1.90

Schmitt Trigger Output

FAIRCHILD SEMICONDUCTOR





All parts are **UL** recognised, H11L1V-M, H11L2V-M, H11L3V-M, H11N1V-M, H11N2V-M, H11N3V-M are **VDE** approved.

Typ. Data Rate (NRZ)	Turn-on Current (max)	Voltage V_{CC} (max)	Mftrs. List No.	Order Code
5300 V pk Isolation voltage				
1Mbps	1.6mA	16V	H11L1V-M	102-1228
1Mbps	5mA	16V	H11L3-M	102-1233
1Mbps	10mA	16V	H11L2-M	102-1231
5Mbps	1mA	16V	H11N3-M	102-1241
5Mbps	3.2mA	16V	H11N1-M	102-1236
5Mbps	5mA	16V	H11N2-M	102-1239
5Mbps	5mA	16V	H11N2V-M	102-1240
Typ. Data Rate	Turn-on Current	Voltage V_{CC}		
5656 V pk Isolation voltage				
5Mbps	3.2mA	16V	H11N1	102-1128
7500 V pk Isolation voltage				
1Mbps	1.6mA	16V	H11L1M	102-1127
1Mbps	10mA	15V	H11L1SR2M	108-6683

206209

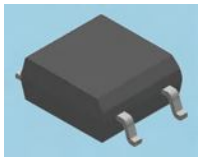
Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
5300 V pk Isolation Voltage						
H11L1V-M	102-1228●	0.82	0.52	0.38	0.28	0.22
H11L3-M	102-1233●	0.59	0.51	0.38	0.26	0.22
H11L2-M	102-1231●	0.82	0.52	0.38	0.28	0.22
H11N3-M	102-1241●	2.48	2.17	1.74	1.00	0.87
H11N1-M	102-1236●	1.81	1.23	0.90	0.82	0.76
H11N2-M	102-1239●	2.58	2.26	1.80	1.04	0.91
H11N2V-M	102-1240●	2.73	2.36	1.83	0.97	0.85
5656 V pk Isolation Voltage						
H11N1	102-1128●	5.60	4.99	3.75	2.12	– –
7500 V pk Isolation Voltage						
H11L1M	102-1127●	0.73	0.52	0.38	0.28	– –
SMD - lead bend options						
H11L1SR2M	SMD 108-6683●	0.79	0.65	0.51	0.37	0.23

Photovoltaic

TOSHIBA



168-4606



168-4602

New SMD

- Consists of a GaAs lilght emitting diode, optically coupled to a series connected photo diode array which is suitable for MOS FET gate drive

528917

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
TLP190B(U,C,F)	168-4602●	4.25	2.93	2.23	1.88	1.44
TLP3914(TP15,F)	168-4606● RL	4.86	3.35	2.55	2.14	1.64

IGBT Gate Driver

TOSHIBA



New

- Consists of a GaAlAs light-emitting diode and an integrated photodetector
- Suitable for gate driving IGBTs or power MOSFETs

Operating Temperature -40°C to +100°C

Case Style	No. of Channels	Input Current	Isolation Voltage	Mftrs. List No.	Order Code
8-DIP	1	2mA	3750V rms	TLP350F(TP4.F)	168-4603

528908

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
TLP350F(TP4.F)	168-4603● RL	4.23	2.91	2.21	1.86	1.43

Isolation Voltage (V)	Data Rate Typ. (MHz)	Turn ON Current Max. (mA)	V_{cc} Max. (V)	Package Style	Mftrs. List No.
7500	1	1.6	15	6 Pin SMD	H11L1SR2M

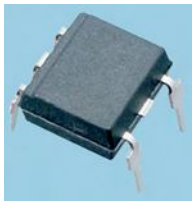
423755

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
H11L1SR2M	SMD 108-6683●	0.79	0.65	0.51	0.37	0.23

Triac Output

6 pin Dual In Line package

SHARP



The PC3S series of optocouplers include an infrared emitting diode optically coupled to an output photo-triac. The devices feature full wave control and are idealy suited to driving medium to high power triacs. Widebody version with pin row spacing of 10.16mm available (9707786).
The DIL package provides 5.0kV input to output isolation with a high degree of noise imunity.
They are approved by **CSA** and are **UL** Recognised

H=3.5, W=7.12, D=7.62mm

Voltage V_F (typ)	Voltage Output (max)	Noise Immunity dV/dt (min)	Turn on Time	Trigger Current (I_{FT}) (min)	Zero Cross Voltage	Mftrs. List No.	Order Code
Zero cross type							
1.1V	600V	1000V/µs	50µs	7mA	20 V	PC3SD21NTZBF	970-7751
1.1V	600V	1000V/µs	50µs	5mA	20 V	PC3SD21NTZCF	970-7760
1.1V	600V	1000V/µs	50µs	7mA	20 V	PC3SF21YVZBF	970-7786
1.2V	600V	1000V/µs	50µs	5mA	20 V	PC1S3063YXPF	161-8464
1.2V	800V	500V/µs	50µs	5mA	20 V	PC4SD21YXPCF	161-8469

RL Re-reeling available

Farnell

Voltage V_F (typ)	Voltage Output (max)	Noise Immunity dV/dt (min)	Turn on Time	Trigger Current (I_{FT}) (min)	Zero Cross Voltage	Mftrs. List No.	Order Code
Zero cross type							
1.2V	800V	500V/µs	50µs	5mA	20 V	PC4SD21YXPDF	161-8470
1.2V	800V	500V/µs	50µs	5mA	20 V	PC4SF21YTZCF	161-8471
None zero cross type							
1.1V	600V	1000V/µs	100µs	7mA	—	PC3SF11YTZBF	970-7778
1.2V	600V	1000V/µs	100µs	5mA	—	PC3SD11YTZCF	161-8466
1.2V	600V	1000V/µs	100µs	5mA	—	PC3SD11YXPCF	161-8467
1.2V	600V	1000V/µs	100µs	10mA	—	PC3SF11YVZBF	161-8468
1.2V	600V	1000V/µs	100µs	10mA	—	S2S3LB0F	161-8472
1.2V	600V	500V/µs	100µs	10mA	—	S2S5A00F	161-8505

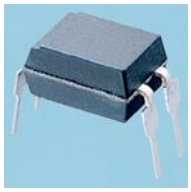
411992

Mftrs. List No.	Order Code			Price Each 1+	25+	100+	250+	500+
Zero Cross type								
PC3SD21NTZBF	**970-7751●**			0.66	0.59	0.45	0.34	0.30
PC3SD21NTZCF	**970-7760●**			0.81	0.61	0.47	0.35	0.31
PC3SF21YVZBF	**970-7786●**			1.20	0.85	0.65	0.49	0.44
PC1S3063YXPF	NEW	**161-8464●**	RL	0.64	0.58	0.51	0.46	0.42
PC4SD21YXPCF	NEW	**161-8469●**	RL	0.98	0.86	0.78	0.71	0.64
PC4SD21YXPDF	NEW	**161-8470●**	RL	1.41	1.27	1.14	1.04	0.94
PC4SF21YTZCF	NEW	**161-8471●**		1.64	1.47	1.34	1.19	1.08
None Zero Cross type								
PC3SF11YTZBF		**970-7778●**		1.09	0.78	0.60	0.45	0.40
PC3SD11YTZCF	NEW	**161-8466●**		0.91	0.82	0.75	0.67	0.61
PC3SD11YXPCF	NEW	**161-8467●**	RL	0.82	0.75	0.67	0.61	0.56
PC3SF11YVZBF	NEW	**161-8468●**		0.91	0.82	0.75	0.67	0.61
S2S3LB0F	NEW	**161-8472●**	RL	0.74	0.66	0.60	0.54	0.48
S2S5A00F	NEW	**161-8505●**	RL	0.45	0.41	0.36	0.33	0.30

Triac Output

TOSHIBA

New



- Consists of a photo-triac optically coupled to a gallium arsenide infrared-emitting diode in a four-lead plastic DIP package

Output Type	Phototraic
No. of Channels	1
Isolation Voltage	5000V rms

528925

Mftrs. List No.	Order Code	1+	25+	Price Each 100+	250+	500+
TLP360J(F)	**168-4604●**	2.26	1.56	1.18	1.00	0.77

Optically Coupled Bilateral Switch

Non-Zero Crossing Triac

ISOCOM COMPONENTS

New

SMD



6-pin

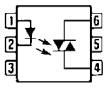
Case Style	No. of Channels	Input Current	Voltage Isolation	Mftrs. List No.	Order Code
Dual In-LIne Package Package					
6-DIP	1	10mA	5300V rms	MOC3020X	168-3313
6-DIP	1	10mA	5300V rms	MOC3021X	168-3315
6-DIP	1	10mA	5300V rms	MOC3022X	168-3318
6-DIP	1	10mA	5300V rms	MOC3023X	168-3320
6-DIP	1	20mA	5300V rms	MOC3041X	168-3322
6-DIP	1	20mA	5300V rms	MOC3042X	168-3324
6-DIP	1	20mA	5300V rms	MOC3043X	168-3326
6-DIP	1	20mA	5300V rms	MOC3060X	168-3328
6-DIP	1	20mA	5300V rms	MOC3061X	168-3332
6-DIP	1	20mA	5300V rms	MOC3062X	168-3334
6-DIP	1	20mA	5300V rms	MOC3063X	168-3336
6-DIP	1	20mA	5300V rms	MOC3080X	168-3338
6-DIP	1	20mA	5300V rms	MOC3081X	168-3339
6-DIP	1	20mA	5300V rms	MOC3082X	168-3340
6-DIP	1	20mA	5300V rms	MOC3083X	168-3341
6-DIP	1	10mA	5300V rms	IS6005X	168-3233
6-DIP	1	10mA	5300V rms	IS6010X	168-3235
6-DIP	1	10mA	5300V rms	IS6015X	168-3237
6-DIP	1	20mA	5300V rms	IS620X	168-3241
6-DIP	1	20mA	5300V rms	IS621X	168-3243
6-DIP	1	20mA	5300V rms	IS622X	168-3245
6-DIP	1	20mA	5300V rms	IS623X	168-3247
Surface Mount Package					
6-SMDIP	1	10mA	5300V rms	MOC3020XSM	168-3314
6-SMDIP	1	10mA	5300V rms	MOC3021XSM	168-3316
6-SMDIP	1	10mA	5300V rms	MOC3022XSM	168-3319
6-SMDIP	1	10mA	5300V rms	MOC3023XSM	168-3321
6-SMDIP	1	20mA	5300V rms	MOC3041XSM	168-3323
6-SMDIP	1	20mA	5300V rms	MOC3042XSM	168-3325
6-SMDIP	1	20mA	5300V rms	MOC3043XSM	168-3327
6-SMDIP	1	20mA	5300V rms	MOC3060XSM	168-3331
6-SMDIP	1	20mA	5300V rms	MOC3061XSM	168-3333
6-SMDIP	1	20mA	5300V rms	MOC3062XSM	168-3335
6-SMDIP	1	20mA	5300V rms	MOC3063XSM	168-3337
6-SMDIP	1	10mA	5300V rms	IS6005XSM	168-3234
6-SMDIP	1	10mA	5300V rms	IS6010XSM	168-3236
6-SMDIP	1	10mA	5300V rms	IS6015XSM	168-3239
6-SMDIP	1	20mA	5300V rms	IS620XSM	168-3242
6-SMDIP	1	20mA	5300V rms	IS621XSM	168-3244
6-SMDIP	1	20mA	5300V rms	IS622XSM	168-3246
6-SMDIP	1	20mA	5300V rms	IS623XSM	168-3248

528646

Mftrs. List No.	Order Code	Price Each 5+	25+	100+	250+	500+
Dual In-LIne Package Package						
MOC3020X	**168-3313●**	0.560	0.440	0.360	0.300	0.270
MOC3021X	**168-3315●**	0.590	0.460	0.380	0.320	0.280
MOC3022X	**168-3318●**	0.670	0.520	0.430	0.360	0.310
MOC3023X	**168-3320●**	0.740	0.580	0.480	0.400	0.350
MOC3041X	**168-3322●**	1.070	0.840	0.680	0.580	0.500
MOC3042X	**168-3324●**	0.910	0.710	0.580	0.490	0.430
MOC3043X	**168-3326●**	0.990	0.770	0.630	0.530	0.470
MOC3060X	**168-3328●**	0.910	0.710	0.580	0.490	0.430
MOC3061X	**168-3332●**	0.990	0.770	0.630	0.530	0.470
MOC3062X	**168-3334●**	0.970	0.750	0.620	0.520	0.460
MOC3063X	**168-3336●**	0.970	0.750	0.620	0.520	0.460
MOC3080X	**168-3338●**	0.700	0.550	0.440	0.380	0.330
MOC3081X	**168-3339●**	0.700	0.550	0.440	0.380	0.330
MOC3082X	**168-3340●**	0.700	0.550	0.440	0.380	0.330
MOC3083X	**168-3341●**	0.700	0.550	0.440	0.380	0.330
IS6005X	**168-3233●**	0.400	0.310	0.250	0.217	0.189
IS6010X	**168-3235●**	0.400	0.310	0.250	0.217	0.189
IS6015X	**168-3237●**	0.400	0.310	0.250	0.217	0.189
IS620X	**168-3241●**	0.560	0.440	0.350	0.300	0.260
IS621X	**168-3243●**	0.560	0.440	0.350	0.300	0.260
IS622X	**168-3245●**	0.560	0.440	0.350	0.300	0.260
IS623X	**168-3247●**	0.560	0.440	0.350	0.300	0.260
Surface Mount Package						
MOC3020XSM	**168-3314●**	0.410	0.320	0.260	0.223	0.193
MOC3021XSM	**168-3316●**	0.410	0.320	0.260	0.223	0.193
MOC3022XSM	**168-3319●**	0.410	0.320	0.260	0.223	0.193
MOC3023XSM	**168-3321●**	0.410	0.320	0.260	0.223	0.193
MOC3041XSM	**168-3323●**	0.570	0.450	0.360	0.310	0.270
MOC3042XSM	**168-3325●**	0.570	0.450	0.360	0.310	0.270
MOC3043XSM	**168-3327●**	0.570	0.450	0.360	0.310	0.270
MOC3060XSM	**168-3331●**	0.410	0.320	0.260	0.223	0.193
MOC3061XSM	**168-3333●**	0.570	0.450	0.360	0.310	0.270
MOC3062XSM	**168-3335●**	0.410	0.320	0.260	0.223	0.193
MOC3063XSM	**168-3337●**	0.570	0.450	0.360	0.310	0.270
IS6005XSM	**168-3234●**	0.410	0.320	0.260	0.223	0.193
IS6010XSM	**168-3236●**	0.410	0.320	0.260	0.223	0.193
IS6015XSM	**168-3239●**	0.410	0.320	0.260	0.223	0.193
IS620XSM	**168-3242●**	0.570	0.450	0.360	0.310	0.270
IS621XSM	**168-3244●**	0.570	0.450	0.360	0.310	0.270
IS622XSM	**168-3246●**	0.570	0.450	0.360	0.310	0.270
IS623XSM	**168-3248●**	0.570	0.450	0.360	0.310	0.270

Triac Driver





MOC30XX, TLP30XX & K30XXX are **UL** recognised.

Optocouplers with light activated silicon bi-lateral switch detectors, designed for applications requiring isolated triac triggering.

◆=Zero voltage crossing triac drivers to give reduced EMI and line noise, and improved static dv/dt.

Isolation Voltage (pk)	I_F Trigger (max.)	Blocking Voltage (min)	RMS Fwrd. Current @ 25°C (max.)	Mftr	Mftrs. List No.
3750V	15mA	250V	100mA	VISHAY	K3010P
3750V	15mA	250V	100mA	VISHAY	K3011P
3750V	15mA	250V	100mA	VISHAY	K3012P
3750V	15mA	400V	100mA	VISHAY	K3020P
3750V	15mA	400V	100mA	VISHAY	K3021P
3750V	15mA	400V	100mA	VISHAY	K3022P
3750V	15mA	400V	100mA	VISHAY	K3023P
5300V	2.0mA	600V	300mA	FAIRCHILD	IL410
6000V	10mA	400V	100mA	TOSHIBA	TLP3022(S,F)
6000V	5mA	400V	100mA	TOSHIBA	TLP3043(S,C,F)
6000V	10mA	600V	100mA	TOSHIBA	TLP3052(S,F)
6000V	10mA	600V	100mA	TOSHIBA	◆TLP3062(S,C,F)
6000V	5mA	600V	100mA	TOSHIBA	◆TLP3063(S,C,F)
7500V	10mA	250V	100mA	FAIRCHILD SEMICONDUCTOR	MOC3011-M
7500V	5mA	250V	100mA	FAIRCHILD SEMICONDUCTOR	MOC3012-M
7500V	15mA	400V	100mA	FAIRCHILD SEMICONDUCTOR	MOC3021-M
7500V	10mA	400V	100mA	FAIRCHILD SEMICONDUCTOR	MOC3022-M
7500V	5mA	400V	100mA	FAIRCHILD SEMICONDUCTOR	MOC3023-M
7500V	10mA	400V	100mA	FAIRCHILD SEMICONDUCTOR	◆MOC3042-M
7500V	5mA	400V	100mA	FAIRCHILD SEMICONDUCTOR	◆MOC3043-M
7500V	15mA	600V	100mA	FAIRCHILD SEMICONDUCTOR	◆MOC3061-M
7500V ac		600V	60mA	FAIRCHILD SEMICONDUCTOR	MOC3063M
7500V ac		600V	60mA	FAIRCHILD SEMICONDUCTOR	◆MOC3062M
7500V ac		400V	60mA	FAIRCHILD SEMICONDUCTOR	◆MOC3041M
7500V ac		600V	60mA	FAIRCHILD SEMICONDUCTOR	◆MOC3052M
5000V				SHARP	◆PC3SF21YTZBF
3.75kV			0.05A		◆S2S3ADYF
3750V					◆S2S4BY0F
5000V ac			100mA		◆TLP3022(S)
5000V ac			100mA		◆TLP3023(S)
5000V ac			100mA		◆TLP3042(S)
5000V ac			100mA		◆TLP3043(S)
5000V ac			100mA		◆TLP3052(S,C,F,T)
5000V ac			100mA		◆TLP3062(S)

RL Re-reeling available

Farnell

Optocouplers - continued

Triac Driver - continued

206212

Mftrs. List No.	Order Code	1+	25+	100+	250+	500+
		Price Each				
TLP3022(S,F)	114-1135●	1.090	0.960	0.760	0.690	– –
TLP3043(S,C,F)	114-1136●	0.850	0.550	0.390	0.290	– –
TLP3052(S,F)	114-1137●	0.680	0.480	0.360	0.270	– –
TLP3062(S,C,F)	120-1934●	0.880	0.760	0.580	0.530	– –
TLP3063(S,C,F)	114-1138●	0.700	0.510	0.390	0.290	– –
MOC3011-M	102-1363●	0.370	0.240	0.178	0.126	0.123
MOC3012-M	102-1364●	0.500	0.320	0.230	0.169	0.136
MOC3021-M	102-1365●	0.620	0.400	0.290	0.210	0.171
MOC3022-M	102-1366●	0.540	0.360	0.310	0.182	0.162
MOC3023-M	102-1367●	0.540	0.340	0.250	0.181	0.146
MOC3042-M	102-1368●	0.730	0.660	0.470	0.350	0.280
MOC3043-M	102-1371●	0.760	0.590	0.450	0.340	0.300
MOC3061-M	102-1372●	1.000	0.640	0.460	0.340	0.270
IL410	104-5434●	1.130	1.090	1.040	1.000	0.960
K3010P	104-5435●	0.310	0.250	0.200	0.174	0.152
K3011P	104-5436●	0.390	0.320	0.290	0.198	0.168
K3012P	104-5437●	0.300	0.270	0.250	0.152	0.146
K3020P	104-5438●	0.390	0.320	0.290	0.198	0.168
K3021P	104-5439●	0.400	0.330	0.300	0.200	0.157
K3022P	104-5440●	0.390	0.350	0.310	0.198	0.162
K3023P	104-5442●	0.400	0.330	0.300	0.200	0.164
PC3SF21YTZBF	124-3885●	0.740	0.520	0.420	0.380	0.370
S2S3ADYF	SMD 124-3887● RL	0.520	0.360	0.310	0.290	0.280
S2S4BY0F	124-3888● RL	0.910	0.620	0.500	0.420	0.410
TLP3022(S)	122-5865●	0.760	0.630	0.550	0.470	0.430
TLP3023(S)	122-5866●	0.710	0.590	0.500	0.440	0.390
TLP3042(S)	122-5867●	0.760	0.630	0.550	0.470	0.430
TLP3043(S)	122-5869●	0.710	0.590	0.520	0.440	0.400
TLP3052(S,C,F,T)	122-5871●	1.210	1.000	0.870	0.760	0.670
TLP3062(S)	122-5872●	0.710	0.590	0.500	0.440	0.390

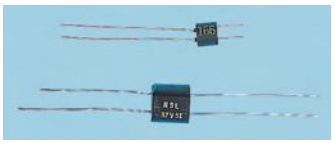
Isolation Voltage (V)	I_f Trigger (mA)	Continuous Forward Current (mA)	OFF State Terminal Voltage (V)	Package Style	Mftrs. List No.
7500	5	60	600	DIL-6	MOC3063M
7500	10	60	600	DIL-6	MOC3062M
7500	15	60	400	DIL-6	MOC3041M
7500	10	60	600	DIL-6	MOC3052M

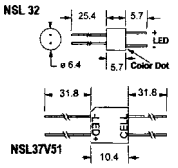
423752

Mftrs. List No.	Order Code	1+	25+	100+	250+	500+
		Price Each				
Triac Driver						
MOC3063M	108-6673●	0.74	0.52	0.40	0.30	0.27
MOC3062M	108-6676●	0.77	0.55	0.42	0.32	0.28
MOC3041M	108-6677●	1.01	0.66	0.47	0.35	0.28
MOC3052M	108-6680●	0.81	0.55	0.40	0.29	0.24

Photoresistive Optocouplers

SILONEX





Photoresistor optocouplers are ideal for audio applications, Soft switching, potentiometer replacement, compressors, expanders, limiters, etc. The resistive output of this type of device has very low distortion characteristics.

Mftrs. List No.	LED I_f (mA)	R_{off} MIN (Ω)	R_{on} MAX (Ω)	Order Code
NSL 32.	20	500	500	316-8773
NSL-32SR3	25	25	60	369-2218

206638

Mftrs. List No.	Order Code	1+	25+	100+
		Price Each		
NSL 32.	316-8773▲	1.19	1.05	0.94
NSL-32SR3	369-2218▲	1.85	1.60	1.46

Surface Mount Optocouplers - Transistor, Darlington, SCR

FAIRCHILD SEMICONDUCTOR

Schmitt Trigger & High Speed Logic Gate Outputs



Surface mount optocouplers in 6 pin and 8 pin packages. Items ending with F-M or FR2V-M are low profile packages. They are all compatible with standard surface mount processes.
The electrical parameters are identical to the standard DIL versions.

All parts are **UL** recognised. Items ending in either 'V-M' or '300' are also **VDE** approved.

Mftrs List No. for Surface Mount Version	Order Code for Surface Mount Version	Mftrs List No. for Surface Mount Version	Order Code for Surface Mount Version
Transistor Output		**Transistor Output**	
4N25S-M	102-1152	4N36S-M	102-1181
4N25SR2V-M	102-1153	4N37SR2V-M	102-1184
4N35S-M	102-1179	6N136.S	102-1196
CNY17-3S-M	102-1214	H11L1S-M	102-1226
CNY17-3SR2V-M	102-1215	H11L1SR2V-M	102-1227
HCPL-2531.S	102-1248	**High Speed Logic Gate Output**	
Darlington Output		6N137.S	102-1198
6N139.S	102-1200	HCPL-2601.S	102-1250
HCPL-2731S	102-1259	HCPL-2630.S	102-1253
Schmitt Trigger Output		HCPL-2631.S	102-1256

228765

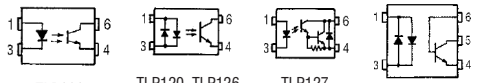
Order Multiple=5 Mftrs. List No.	Order Code	5+	25+	100+	250+	500+
		Price Each				
Transistor Output						
4N25S-M	102-1152●	0.460	0.320	0.230	0.159	0.120
4N25SR2V-M	102-1153●	0.440	0.380	0.300	0.172	0.164
4N35S-M	102-1179●	0.460	0.320	0.230	0.159	0.120
4N36S-M	102-1181●	0.360	0.310	0.250	0.152	0.134
4N37SR2V-M	102-1184●	0.310	0.260	0.240	0.144	0.125
6N136.S	102-1196●	0.920	0.830	0.670	0.390	0.340
CNY17-3S-M	102-1214●	0.420	0.350	0.290	0.164	0.144
CNY17-3SR2V-M	102-1215●	0.470	0.420	0.340	0.200	0.164
HCPL-2531.S	102-1248●	1.880	1.670	1.390	0.790	0.660
Darlington Output						
6N139.S	SMD 102-1200●	0.920	0.830	0.670	0.390	0.360
HCPL-2731S	102-1259●	1.850	1.650	1.370	0.780	0.680
Schmitt Trigger Output						
H11L1S-M	SMD 102-1226●	0.820	0.520	0.380	0.280	0.220
H11L1SR2V-M	SMD 102-1227●	0.850	0.550	0.390	0.230	0.220
High Speed Logic Gate Output						
6N137.S	SMD 102-1198●	0.910	0.800	0.650	0.350	0.320
HCPL-2601.S	SMD 102-1250●	1.950	1.670	1.370	0.750	0.660
HCPL-2630.S	SMD 102-1253●	2.160	1.480	1.060	0.990	0.910
HCPL-2631.S	102-1256●	3.090	2.660	2.190	1.200	1.050

Mini Flat — Surface Mount

TOSHIBA

Transistor Output, Darlington Transistor Outout





TLP181
1 Anode
3 Cathode
4 Emitter
6 Collector

TLP120, TLP126
1 Anode, Cathode
3 Cathode, Anode
4 Emitter
6 Collector

TLP127
1 Anode
3 Cathode
4 Emitter
6 Collector

TLP130
1 Anode, Cathode
3 Cathode, Anode
4 Emitter
5 Collector
6 Base

Isolation Voltage (pk) (AC_{RMS})	Curr. Trsfr Ratio (min.) @ I_F	Breakdown $V_{(BR)}$ CEO min	Mftrs. List No.	Order Code
Transistor Output				
3750	100% @ 5mA	80V	TLP181(F,T)	114-1129
Transistor Output, AC Input				
V	100% @ ±1mA	80V	TLP126(F)	114-1128
V	100% @ ±5mA	80V	TLP180(F,T)	120-1936
Darlington Transistor Output				
2500	1000% @ 1mA	300V	TLP127(U,F)	120-1937

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Order Code	1+	25+	100+	250+	500+
	Price Each				
114-1129●	0.430	0.270	0.220	0.210	0.195
114-1128●	0.710	0.640	0.630	0.610	0.570
120-1936●	0.760	0.710	0.670	0.450	0.430
120-1937●	0.760	0.650	0.630	0.580	0.550

Surface Mount

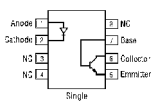
FAIRCHILD SEMICONDUCTOR

VISHAY

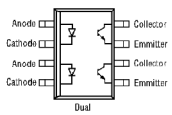
SMD



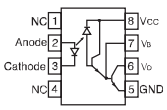
H=3.18, W=6.10, D=5.84



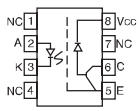
Pin out (a)



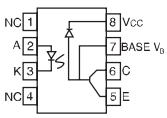
Pin out (b)



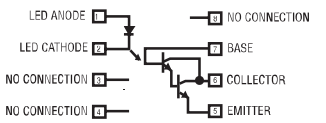
Pin out (c)



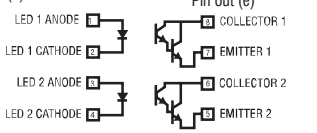
Pin out (d)



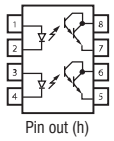
Pin out (e)



Pin out (f)



Pin out (g)



Pin out (h)

Channels	Curr. Trsfr. Ratio min (%)	Ratio @ I_F (mA)	Switching Time (µs) t_{on}	Switching Time (µs) typ. t_{off}	Mftr	Mftrs. List No.
High CTR						
Single	63	10	3	3	VISHAY	IL206AT
Single	100	10	3	3	VISHAY	IL213AT
Single	500	1.6	4	4	VISHAY	SFH6319T
Single	100-200	10	3.5	5	VISHAY	SFH6186-3T
Single	-		3	3	VISHAY	IL206AT
Single	-		3	3	VISHAY	IL213AT
Single	-		5	4	VISHAY	ILD206T
Single	-		5	4	VISHAY	ILD213T
Single	100-200	10	3.5	5	VISHAY	SFH6186-3T
Single	-		0.25	0.5	VISHAY	SFH6316T
Single	-		4	4	VISHAY	SFH6319T
Single	-		0.5	0.5	VISHAY	SFH6343T
Dual	63	10	5	4	VISHAY	ILD206T
Dual	100	10	5	4	VISHAY	ILD213T
Dual	63	10	3	2.8	FAIRCHILD	MOC206-M
High Speed						
	100	10	1.6	2.2	FAIRCHILD	MOCD207R2M
Darlington Output						
Dual	500	1	3.5	95	FAIRCHILD	MOCD223-M

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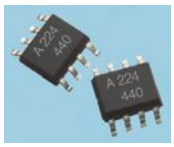
Mftrs. List No.	Order Code	Price Each 1+	25+	100+
MOC206-M	SMD 102-1360● RL	0.47	0.30	0.22
MOC211-M	SMD 102-1361● RL	0.47	0.30	0.22
IL206AT	SMD 104-5448● RL	0.31	0.24	0.23
IL213AT	SMD 104-5449● RL	0.85	0.62	0.51
MOCD207R2M	SMD 108-6672● RL	0.70	0.50	0.38
ILD206T	SMD 104-5450● RL	1.03	0.87	0.71
ILD213T	SMD 104-5451● RL	1.30	0.87	0.72
SFH6186-3T	SMD 104-5433● RL	0.99	0.69	0.54
SFH6316T	SMD 104-5452● RL	1.04	0.89	0.70
SFH6319T	SMD 104-5454● RL	1.04	0.88	0.66
SFH6343T	SMD 104-5455● RL	1.51	1.38	1.18
MOC223-M	SMD 102-1362● RL	0.59	0.38	0.27
MOCD223-M	SMD 102-1375● RL	0.80	0.57	0.44

Phototransistor Optocouplers

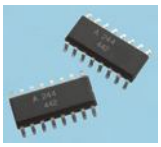
AC Input Multi-Channel Half-Pitch

AVAGO TECHNOLOGIES

New



Dual



Quad

The ACPL-224 is an AC-input dual channel half-pitch phototransistor optocoupler each of which contains two light emitting diodes connected inversely parallel and optically coupled to two separate phototransistors. It is packaged in an 8-pin SO package.

The ACPL-244 is an AC-input quad channel half-pitch phototransistor optocoupler each of which contains two light emitting diodes connected inversely parallel and optically coupled to four separate phototransistors. It is packaged in a 16-pin SO package.

Channels	AV Input Current mA	CTR @1mA (min)	Switching Time Rise	Switching Time Fall	Package	Mftrs. List No.	Order Code
2	1	20%	2µs	3µs	8-SOIC	ACPL-224-500E	163-4747
2	1	20%	2µs	3µs	8-SOIC	ACPL-224-560E	163-4748
4	1	20%	2µs	3µs	16-SOIC	ACPL-244-500E	163-4755
4	1	20%	2µs	3µs	16-SOIC	ACPL-244-560E	163-4757

528134

Channels	Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+
2	ACPL-224-500E	163-4747● RL	0.62	0.44	0.37	0.33
2	ACPL-224-560E	163-4748●	0.67	0.48	0.40	0.36
4	ACPL-244-500E	163-4755●	1.11	0.80	0.66	0.59
4	ACPL-244-560E	163-4757●	1.16	0.83	0.69	0.61

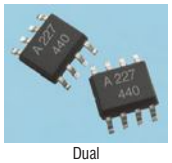
Phototransistor Optocouplers

DC Input Multi-Channel Half-Pitch

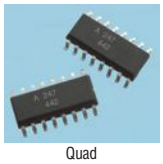
AVAGO TECHNOLOGIES

New

SMD



Dual



Quad

The ACPL-227 is a DC-input dual channel half-pitch phototransistor optocoupler which contains two light emitting diodes optically coupled to two separate phototransistors. It is packaged in an 8-pin SO package.

The ACPL-247 is a DC-input quad channel half-pitch phototransistor optocoupler which contains four light emitting diodes optically coupled to four separate phototransistors. It is packaged in a 16-pin SO package.

Channels	AV Input Current mA	CTR @10mA (min)	Switching Time Rise	Switching Time Fall	Package	Mftrs. List No.	Order Code
2	5	50%	2µs	3µs	8-SOIC	ACPL-227-500E	163-4749
2	5	50%	2µs	3µs	8-SOIC	ACPL-227-50BE	163-4750
2	5	50%	2µs	3µs	8-SOIC	ACPL-227-50CE	163-4751
2	5	50%	2µs	3µs	8-SOIC	ACPL-227-560E	163-4752
2	5	50%	2µs	3µs	8-SOIC	ACPL-227-56BE	163-4753
2	5	50%	2µs	3µs	8-SOIC	ACPL-227-56CE	163-4754
4	5	100%	2µs	3µs	16-SOIC	ACPL-247-500E	163-4758
4	5	100%	2µs	3µs	16-SOIC	ACPL-247-560E	163-4759

528135

Channels	Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+
2	ACPL-227-500E	163-4749● RL	0.51	0.36	0.31	0.27
2	ACPL-227-50BE	163-4750●	0.54	0.39	0.32	0.29
2	ACPL-227-50CE	163-4751●	0.54	0.39	0.32	0.29
2	ACPL-227-560E	163-4752● RL	0.55	0.40	0.33	0.30
2	ACPL-227-56BE	163-4753●	0.59	0.42	0.35	0.32
2	ACPL-227-56CE	163-4754●	0.59	0.42	0.35	0.32
4	ACPL-247-500E	163-4758● RL	0.98	0.70	0.58	0.52
4	ACPL-247-560E	163-4759● RL	1.03	0.73	0.61	0.55

Phototransistor Output, AC Input

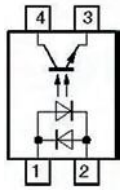
Long Mini-Flat SOP4L Package

VISHAY

SMD



H = 2, W = 7.5, D = 3.8mm



The optocoupler consists of a darlington phototransistor optically coupled to a gallium arsenide infrared emitting diode in a SO6L package.
The elements are mounted on one leadframe, provide a fixed distance between input and output for highest safety requirements

- Low profile
- Extra low coupling capacitance - typicaly 0.2pF
- High common mode rejection
- Creepage distance > 8mm
- Reinforced isolation provides circuit protection against electric shock (Safety Class II)
- **BSI, CSA** & **DIN** Approvals, **UL** Recognised

Current Transfer Ratio (CTR)	(V_I) Max.	Isolation test voltage (RMS)	Total power dissipated	Operating/Storage temperature	Collector emitter voltage (V_{CEO})	Collector current (I_C)
80 to 800%	1.6V	5000V ac	250mW	-40 to 100°C	70V	50mA

380767

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	1K+
TCLT1600.	SMD 831-0840● RL	0.420	0.330	0.270	0.187	0.162

Phototransistor Output

Half Pitch Mini-Flat SOP-4 Package

VISHAY

SMD





H = 2.1, W = 7, D = 2.5mm

The optocoupler consists of a phototransistor optically coupled to a gallium arsenide infrared emitting diode in a SO-4 package.
The elements are mounted on one leadframe, provide a fixed distance between input and output for highest safety requirements

- Low profile package (half pitch)
- Low coupling capacitance, typically 0.3pF
- AC Isolation test voltage 3750 V_{RMS}
- **CSA** & **DIN** Approvals, **UL** Recognised

Current Transfer Ratio (CTR)	(V_I) Max.	Isolation test voltage (RMS)	Total power dissipated	Operating/Storage temperature	Collector emitter voltage (V_{CEO})	Collector current (I_C)
50 to 800%	1.6V	3750V ac	250mW	-40 to 100°C	70V	50A

457824

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
TCMT1103	SMD 132-8388●	0.250	0.188	0.163	0.149	0.143

Phototransistor Output

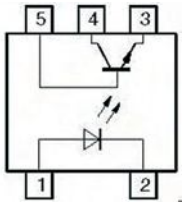
Long Mini-Flat SOP5L Half Pitch Package

VISHAY

SMD



H = 2, W = 7.5, D = 3.8mm



RL Re-reeling available

Farnell

Optocouplers - continued

Phototransistor Output - continued

Long Mini-Flat SOP5L Half Pitch Package - continued

The TCLT11 Series consists of a phototransistor optically coupled to a gallium arsenide infrared emitting diode in a 5-lead SOP5L package.
The elements are mounted on one leadframe, provide a fixed distance between input and output for highest safety requirements

- Low profile 5 lead package
- Isolation Test Voltage 5000 V_{RMS}
- Extra low coupling capacitance - 0.3pF @1 MHz
- Connected base
- DC input with transistor output
- **BSI, CSA, DIN** & **FIMKO** Approvals, **UL** Recognised

Current Transfer Ratio (CTR)	(V_f) Max.	Isolation test voltage (RMS)	Total power dissipated	Operating/Storage temperature	Collector emitter voltage (V_{CEO})	Collector current (I_C)	Order Code
50 to 600%	1.6V	5000V ac	250mW	-40 to 100°C	70V	50mA	831-0769
100 to 200%	1.6V	5000V ac	250mW	-40 to 100°C	70V	50mA	831-0785
200 to 400%	1.6V	5000V ac	250mW	-40 to 100°C	70V	50mA	831-0831

380766

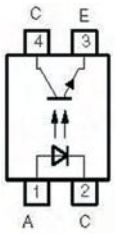
Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	1K+
TCLT1100.	SMD 831-0769● RL	0.340	0.280	0.210	0.153	0.135
TCLT1103.	SMD 831-0785● RL	0.350	0.290	0.220	0.158	0.142
TCLT1109.	SMD 831-0831● RL	0.370	0.290	0.240	0.178	0.160

Phototransistor Output

Long Mini-Flat SOP4L Package



H = 2, W = 7.5, D = 3.8mm



The TCLT10 Series consists of a phototransistor optically coupled to a gallium arsenide infrared emitting diode in a 4-lead SOP4L package.
The elements are mounted on one leadframe, provide a fixed distance between input and output for highest safety requirements

- Low profile 4 lead package
- High Isolation 5000 V_{RMS}
- Extra low coupling capacitance - 0.3pF @1 MHz
- DC input with transistor output
- **BSI, CSA, DIN** & **FIMKO (SETI)** Approvals, **UL** Recognised

Current Transfer Ratio (CTR)	(V_f) Max.	Isolation test voltage (RMS)	Total power dissipated	Operating/Storage temperature	Collector emitter voltage (V_{CEO})	Collector current (I_C)	Order Code
50 to 600%	1.6V	5000V ac	250mW	-40 to 100°C	70V	50mA	831-0688
63 to 125%	1.6V	5000V ac	250mW	-40 to 100°C	70V	50mA	831-0696
100 to 200%	1.6V	5000V ac	250mW	-40 to 100°C	70V	50mA	831-0700
100 to 300%	1.6V	5000V ac	250mW	-40 to 100°C	70V	50mA	831-0726
80 to 160%	1.6V	5000V ac	250mW	-40 to 100°C	70V	50mA	831-0734
130 to 260%	1.6V	5000V ac	250mW	-40 to 100°C	70V	50mA	831-0742
200 to 400%	1.6V	5000V ac	250mW	-40 to 100°C	70V	50mA	831-0750

380765

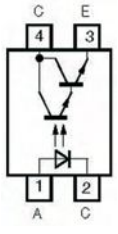
Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	1K+
TCLT1000.	SMD 831-0688● RL	0.330	0.270	0.210	0.148	0.129
TCLT1002.	SMD 831-0696● RL	0.270	0.200	0.168	0.143	0.124
TCLT1003.	SMD 831-0700● RL	0.330	0.280	0.210	0.158	0.138
TCLT1006.	SMD 831-0726● RL	0.330	0.270	0.210	0.148	0.129
TCLT1007.	SMD 831-0734● RL	0.330	0.270	0.210	0.148	0.129
TCLT1008.	SMD 831-0742● RL	0.330	0.270	0.210	0.151	0.136
TCLT1009.	SMD 831-0750● RL	0.350	0.290	0.220	0.158	0.139

Photodarlington Output

Long Mini-Flat SOP4L Package



H = 2, W = 7.5, D = 3.8mm



The optocoupler consists of a darlington phototransistor optically coupled to a gallium arsenide infrared emitting diode in a SO6L package.
The elements are mounted on one leadframe, provide a fixed distance between input and output for highest safety requirements

- Low profile
- Extra low coupling capacitance - typicaly 0.2pF
- High common mode rejection
- Creepage distance > 8mm
- Reinforced isolation provides circuit protection against electric shock (Safety Class II)
- **BSI, CSA** & **DIN** Approvals, **UL** Recognised

Current Transfer Ratio (CTR)	(V_f) Max.	Isolation test voltage (RMS)	Total power dissipated	Operating/Storage temperature	Collector emitter voltage (V_{CEO})	Collector current (I_C)
600 to 800%	1.6V	5000V	250mW	-40 to 100°C	35V	80mA

377690

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	1K+
TCLD1000.	SMD 831-0670● RL	0.350	0.280	0.220	0.156	0.143

Optically Isolated Error Amplifier

Transistor Output





These optically isolated error amplifiers consist of a precision programmable shunt reference and an optocoupler. These devices are primarily intended for use as the error amplifier/reference voltage/optocoupler function in isolated ac to dc power supplies and dc/dc converters. The use of these components in power supply designs can significantly reduce the component count and save space in tightly packaged designs. The tight tolerance reference eliminates the need for adjustments in most applications.
BSI, **CSA** and **VDE** approved, **UL** Recognised

Reference Voltage (V)	Isolation Voltage (V rms)	CTR min (%)	CTR max (%)	Package type	Mftrs. List No.	Order Code
Tolerance 1%						
1.24	2500	100	200	8 Pin SOP	FOD2712	122-0026
2.5	5000	100	200	8 Pin DIL	FOD2741B	108-6658
2.5	5000	100	200	8 Pin SMD	FOD2741BSD	108-6659
2.5	5000	100	200	8 Pin DIL	FOD2741BTV	122-0037
Tolerance 2%						
2.5	2500	100	200	8 Pin SOP	FOD2742C	122-0049
2.5	5000	100	200	8 Pin SMD	FOD2741CSD	108-6661

423723

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
Tolerance 1%						
FOD2712	SMD 122-0026●	0.490	0.370	0.310	0.210	0.200
FOD2741B	108-6658●	0.670	0.510	0.430	0.300	0.260
FOD2741BSD	SMD 108-6659●	0.750	0.570	0.480	0.330	0.300
FOD2741BTV	122-0037●	0.670	0.510	0.430	0.300	0.260
Tolerance 2%						
FOD2742C	SMD 122-0049●	0.430	0.330	0.280	0.186	0.181
FOD2741CSD	SMD 108-6661●	0.560	0.420	0.350	0.240	0.220

Mosfet Output

Mosfet Output Optocouplers

New

Resistance (On State)	Load Voltage RMS (max)	Load Current RMS (max)	Mftrs. List No.	Order Code
Through Hole				
0.1ohm	60V	3.6A	PS710A-1A-A	168-2874
0.05ohm	60V	5A	PS710BL-1A-E3-A	168-2875
0.6ohm	60V	600mA	PS7206-1A-E3-A	168-2882
0.9ohm	80V	500mA	PS7205B-1A-E3-A	168-2881
25ohm	400V	250mA	PS7141E-1A-A	168-2877
33ohm	600V	200mA	PS7360-1A-A	168-2884
Surface Mount Package				
17ohm	400V	120mA	PS7241E-1A-E3-A	168-2883
25ohm	400V	250mA	PS7141EL-1A-E3-A	168-2879
33ohm	600V	200mA	PS7360L-1A-E3-A	168-2885

528858

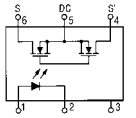
Mftrs. List No.	Order Code	Price Each 1+	10+	25+	100+	250+
Through Hole						
PS710A-1A-A	168-2874●	4.34	3.90	3.68	3.32	2.96
PS710BL-1A-E3-A	168-2875●	6.91	5.81	4.92	4.25	3.68
PS7206-1A-E3-A	168-2882●	3.03	2.55	2.15	1.87	1.61
PS7205B-1A-E3-A	168-2881●	3.70	3.11	2.63	2.28	1.97
PS7141E-1A-A	168-2877●	0.95	0.80	0.67	0.58	0.50
PS7360-1A-A	168-2884●	2.16	1.82	1.53	1.33	1.15
Surface Mount Package						
PS7241E-1A-E3-A	168-2883● RL	0.95	0.80	0.67	0.58	0.50
PS7141EL-1A-E3-A	168-2879● RL	0.91	0.77	0.65	0.56	0.49
PS7360L-1A-E3-A	168-2885● RL	2.16	1.82	1.53	1.33	1.15

Solid State Relays

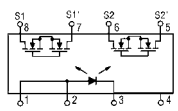
Single and Dual, Form A



- Bounce free switching
- No arcing or noise
- No mounting restrictions
- Extremely high reliability
- Immune to shock
- Immune to environmental hazards such as dirt and humidity



LH1517AT
LH1540AT
LH1516AT
1 Form A



LH1513AB
LH1503AB
2 Form A

RL Re-reeling available

A range of optocouplers with high voltage MOSFET outputs that duplicate the function of electromechanical relays. These Solid State Relays incorporate current limiting which will clamp the load current at a predetermined value preventing damage to the device from transients and load short circuits. The devices are capable of switching currents from nanoamps to hundreds of milliamps, making then ideal for a wide variety of switching applications.

Type	Max Load Current (mA) AC/DC	DC	Max Load Voltage (V)	Isolation Test Voltage (AC_{RMS})	Switching Time t_r, t_f (ms)	Mftrs. List No.
Single Form A (NO)	120	250	350	5300	2	LH1540AT
Dual Form A (NO)	140	–	200	3750	2.5	LH1513AB
Dual Form A (NO)	110	–	350	3750	2.5	LH1503AB

206452

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
LH1540AT	**104-5531●**	2.77	2.13	1.61	1.29	1.03
LH1513AB	**104-5533●**	4.76	4.28	3.61	3.02	2.59
LH1503AB	**104-5534●**	4.23	3.76	3.37	2.95	2.71

Solid State Relays

SHARP

New



161-8473, 161-8474
161-8475, 161-8479
161-8480



161-8430, 161-8484
161-8485, 161-8486
161-8502



161-8481



161-8482



161-8487



161-8476, 161-8478

Load RMS (max) Current	Voltage	Surge Current	Mftrs. List No.	Order Code
3A	600V	30A	S201S06F	161-8473
8A	600V	80A	S202S01F	161-8474
8A	600V	80A	S202S02F	161-8475
2A	600V	20A	S202T01F	161-8476
2A	600V	20A	S202T02F	161-8478
16A	600V	160A	S216S01F	161-8479
16A	600V	160A	S216S02F	161-8480
0.15A	600V	1.2A	PR32MA11NTZF	161-8481
120mA	240V	1.2A	PR32MA11YXPF	161-8482
0.6A	600V	6A	PR36MF51NSZF	161-8483
0.6A	600V	6A	PR36MF21NSZF	161-8484
0.9A	600V	9A	PR39MF51NSZF	161-8485
0.9A	600V	9A	PR39MF21NSZF	161-8486
–	600V	9A	PR39MF51YIPF	161-8487
0.3A	600V	3A	PR33MF51NSZF	161-8502

528654

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
S201S06F	**161-8473●**	4.39	3.94	3.55	3.20	2.88
S202S01F	**161-8474●**	4.41	3.96	3.57	3.23	2.91
S202S02F	**161-8475●**	4.73	4.26	3.84	3.44	3.11
S202T01F	**161-8476●**	3.19	2.87	2.58	2.32	2.11
S202T02F	**161-8478●**	3.56	3.22	2.89	2.60	2.33
S216S01F	**161-8479●**	5.75	5.18	4.66	4.20	3.78
S216S02F	**161-8480●**	6.04	5.43	4.89	4.41	3.96
PR32MA11NTZF	**161-8481●**	0.52	0.47	0.43	0.38	0.35
PR32MA11YXPF	**161-8482●** RL	0.64	0.58	0.51	0.46	0.42
PR36MF51NSZF	**161-8483●**	0.69	0.62	0.56	0.49	0.45
PR36MF21NSZF	**161-8484●**	1.16	1.05	0.95	0.84	0.76
PR39MF51NSZF	**161-8485●**	0.79	0.72	0.65	0.59	0.52
PR39MF21NSZF	**161-8486●**	1.37	1.22	1.11	1.01	0.90
PR39MF51YIPF	**161-8487●** RL	0.87	0.79	0.72	0.65	0.59
PR33MF51NSZF	**161-8502●**	0.58	0.51	0.46	0.42	0.37

Slotted Opto Switches

General purpose PCB Verticle Mounting

OMRON



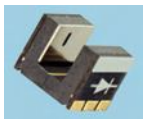
Style a



Style b



Style c



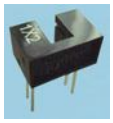
Style d



Style e



Style f



Style g



Style h



Style i

- High quality photomicrosensor
- Compact size
- PCB Mount, with through-hole and snap-in options
- Op temp: -25 to +85°C
- Snap-in type, connects to Ty-co-Amps CT-series connectors

Slit Width (mm)	H,W,D (mm)	Emitter, λ_P (nm)	Mounting Type	Mftrs List No.	Order Code
1	3 x 3 x 3	940	a	EESX1107	134-8955
2	5 x 4.2 x 5.2	950	i	EESX1103	134-8951
2	5 x 4 x 4	940	d	EESX4134	134-8964
2	5 x 4 x 4	940	d	EESX1131	134-8957
2	3.3 x 2.6 x 4.9	800		EESX1105	134-8952
3	6 x 4.2 x 5.4	950	f	EESX1106	134-8953
3	8.5 x 5 x 12.2	870	c	EESX398	134-8961
3	8.5 x 5 x 12.2	870	c	EESX498	134-8968
3.4	25 x 6.2 x 10.2	940	b	EESH3	134-8940
3.4	13 x 6.2 x 10.2	940	c	EESX1071	134-8947
3.4	25 x 6 x 10	940	h	EESX1096	134-8950
5	14 x 6 x 10	940	c	EESX1041	134-8943
5	13 x 5 x 10	940		EESX1081	134-8948
5	8.5 x 5 x 10.5	870	c	EESX4081	134-8963
14	23 x 5 x 16.3	940		EESX1140	134-8958

479859

Mftrs. List No.	Order Code	Price Each 1+	10+	25+	50+	100+
EESH3	**134-8940●**	2.38	2.09	1.81	1.54	1.42
EESX1041	**134-8943●**	1.58	1.26	1.07	0.97	0.87
EESX1046	**134-8944●**	2.02	1.78	1.54	1.32	1.20
EESX1071	**134-8947●**	1.65	1.26	1.07	0.97	0.87
EESX1081	**134-8948●**	1.65	1.26	1.07	0.97	0.87
EESX1096	**134-8950●**	1.92	1.69	1.46	1.24	1.14
EESX1103	**134-8951●**	1.16	0.92	0.79	0.71	0.64
EESX1105	**134-8952●**	0.70	0.62	0.52	0.46	0.43
EESX1106	**134-8953●**	1.16	0.92	0.79	0.71	0.64
EESX1107	**134-8955●** RL	1.20	0.92	0.79	0.71	0.64
EESX1131	**134-8957●**	0.86	0.76	0.67	0.57	0.51
EESX1140	**134-8958●**	2.69	2.35	2.06	1.76	1.59
EESX398	**134-8961●**	1.36	1.19	1.03	0.88	0.81
EESX4081	**134-8963●**	2.06	1.80	1.56	1.34	1.21
EESX4134	**134-8964●** RL	3.27	2.87	2.50	2.13	1.94
EESX498	**134-8968●**	1.42	1.24	1.08	0.93	0.84

Slotted Optical Switch

TT electronics OPTEK Technology

Non-contact switching





Dimensions (mm) Slot Width	H	W	D	Output Type	Terminals	Mftrs List No.	Order Code
3.81	8.125	8.89	5.33	Phototransistor	Pins	OPB610	149-7899
9.53	10.8	30.99	6.35	Phototransistor	Solder leads	OPB800L55	149-7913
3.94	11.68	12.57	6.34	Phototransistor	Pins	OPB804	149-7914
3.175	12.7	26.42	5.08	Phototransistor	Leads	OPB806	149-7915
9.525	10.8	30.99	6.35	Phototransistor	Wires	OPB810W51Z	149-7916
9.525	10.8	30.99	6.35	Phototransistor	Soldr leads	OPB811L55	149-7917
9.525	10.8	30.99	6.35	Phototransistor	Wires	OPB811W55Z	149-7918
9.5	14.1	31.75	6.35	Phototransistor	Wires	OPB815WZ	149-7919
5.08	10.67	15.24	6.35	Phototransistor	PCB Pins	OPB818	149-7920
32	41.28	76.2	7.92	Phototransistor	Leads	OPB819Z	149-7921
2.03	8.89	15.24	6.35	Phototransistor	Leads	OPB821S5Z	149-7922
2.29	16.0	24.13	11.18	Phototransistor	Pins	OPB822SD	149-7924
4.06	11.43	10.67	6.35	Phototransistor	PCB Pins	OPB825	149-7925
3.18	10.03	24.64	6.35	Phototransistor	Wire	OPB829AZ	149-7926
3.18	10.03	24.64	6.35	Phototransistor	Wire	OPB829CZ	149-7927
3.18	10.03	24.64	6.35	Phototransistor	Wire	OPB829DZ	149-7928
3.18	10.54	23.75	12.95	Phototransistor	Leads	OPB830W11Z	149-7929
3.18	10.54	23.75	12.95	Phototransistor	Leads	OPB830W55Z	149-7930
3.18	10.54	23.75	12.95	Phototransistor	Leads	OPB840W11Z	149-7931
3.18	10.54	23.75	12.95	Phototransistor	Leads	OPB840W51Z	149-7932
3.18	10.54	23.75	12.95	Phototransistor	Leads	OPB840W55Z	149-7933
3.18	10.54	23.75	12.95	Phototransistor	Leads	OPB841W55Z	149-7934
2.54	10.8	12.7	6.35	Phototransistor	PCB Pins	OPB848	149-7936
5.21	6.86	12.98	6.35	Phototransistor	PCB Pins	OPB855	149-7937
3.11	10.73	24.63	6.35	Phototransistor	Wires	OPB891T51Z	149-7938
9.5	10.8	30.99	6.35	TTL Totem Pole	Leads	OPB910W55Z	149-7940
3.18	10.54	23.75	12.95	TTL Totem Pole	Leads	OPB930W55Z	149-7942
3.18	10.54	23.75	12.95	Inverted Open Collector	Leads	OPB943W51Z	149-7945
3.18	10.8	12.32	6.35	Inverted Open Collector	PCB Boar Leads	OPB973N51	149-7946
3.18	10.8	12.32	6.35	Buffered Totem Pole	PCB Leads	OPB980T51Z	149-7948
3.11	10.8	12.32	6.35	Buffered Open Collector	Wire Leads	OPB981T51Z	149-7949
3.11	10.8	12.32	6.35	Buffered Totem Pole	Wire Leads	OPB990T51Z	149-7950

497586

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+
OPB610	**149-7899●**	1.73	0.95	0.87	0.84
OPB800L55	**149-7913●**	2.50	1.44	1.32	1.27
OPB804	**149-7914●**	1.72	0.96	0.89	0.86
OPB806	**149-7915●**	3.05	2.36	2.13	1.94
OPB810W51Z	**149-7916●**	4.47	2.49	2.29	2.21
OPB811L55	**149-7917●**	2.47	1.41	1.30	1.25
OPB811W55Z	**149-7918●**	4.27	2.38	2.19	2.11
OPB815WZ	**149-7919●**	3.80	2.96	2.66	2.42
OPB818	**149-7920●**	2.47	1.33	1.22	1.18

RL Re-reeling available

Slotted Opto Switches - continued

Slotted Optical Switch - continued

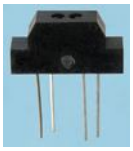
Non-contact switching - continued

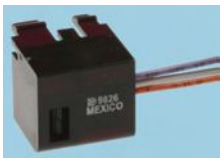
Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+
OPB819Z	**149-7921●**	6.14	3.44	3.17	3.05
OPB821S5Z	**149-7922●**	3.79	2.95	2.65	2.41
OPB822SD	**149-7924●**	4.20	3.26	2.55	2.45
OPB825	**149-7925●**	1.69	1.03	0.94	0.91
OPB829AZ	**149-7926●**	3.44	2.67	2.41	2.19
OPB829CZ	**149-7927●**	3.41	2.65	2.39	2.17
OPB829DZ	**149-7928●**	6.22	6.05	5.89	5.73
OPB830W11Z	**149-7929●**	4.75	3.69	3.32	3.03
OPB830W55Z	**149-7930●**	4.52	2.54	2.34	2.25
OPB840W11Z	**149-7931●**	5.81	3.25	2.98	2.88
OPB840W51Z	**149-7932●**	3.97	3.10	2.79	2.54
OPB841W55Z	**149-7934●**	4.58	2.55	2.35	2.27
OPB891T51Z	**149-7938●**	4.20	2.35	2.16	2.08
OPB910W55Z	**149-7940●**	5.11	3.97	3.57	3.25
OPB930W55Z	**149-7942●**	5.59	3.13	2.88	2.77
OPB943W51Z	**149-7945●**	4.68	3.64	3.27	2.97
OPB973N51	**149-7946●**	3.12	1.88	1.72	1.66
OPB980T51Z	**149-7948●**	4.23	3.28	2.95	2.68
OPB981T51Z	**149-7949●**	4.23	3.28	2.95	2.68
OPB990T51Z	**149-7950●**	4.13	3.22	2.90	2.63

Reflective Optoswitches

TT electronics OPTEK Technology

New



Output Type	No. of Channels	Input Current	Output Voltage	Operating Temperature	Mftrs. List No.	Order Code
Transistor	1	20mA	30V	-40°C to +85°C	OPB702	167-8630
Transistor	1	40mA	30V	-40°C to +85°C	OPB703WZ	167-8631
Transistor	1	40mA	30V	-40°C to +85°C	OPB704WZ	167-8633
Transistor	1	40mA	30V	-40°C to +85°C	OPB705	167-8634
Transistor	1	40mA	30V	-40°C to +85°C	OPB705WZ	167-8635
Transistor	1	40mA	30V	-40°C to +85°C	OPB708	167-8636
Transistor	1		5V	0°C to + 50°C	OPB720A-12Z	167-8638
Transistor	1	20mA	30V	-40°C to +85°C	OPB732WZ	167-8639
Transistor	1	40mA	30V	-40°C to +80°C	OPB742WZ	167-8640
Transistor	1	40mA	30V	-40°C to +85°C	OPB743	167-8641
Transistor	1	40mA	30V	-40°C to +80°C	OPB743WZ	167-8642
Transistor	1	40mA	30V	-40°C to +85°C	OPB744	167-8643
Transistor	1	40mA	30V	-40°C to +80°C	OPB744WZ	167-8645
Transistor	1	40mA	24V	-40°C to +85°C	OPB750N	167-8646
Transistor	1	40mA	24V	-40°C to +85°C	OPB750T	167-8647
Open Collector	1	40mA	2.4V	-40°C to +70°C	OPB761N	167-8649
Open Collector	1	40mA	2.4V	-40°C to +70°C	OPB761T	167-8650
Totem Pole	2	50mA	400mV	-40°C to +85°C	OPB715Z	167-8637
Totem Pole	2	40mA	2.4V	-40°C to +70°C	OPB760N	167-8648

528458

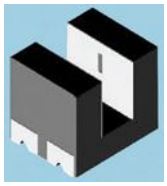
Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
Transistor						
OPB702	**167-8630●**	2.03	1.81	1.17	1.10	1.06
OPB703WZ	**167-8631●**	3.34	2.97	1.91	1.81	1.74
OPB704WZ	**167-8633●**	3.53	3.14	2.02	1.91	1.84
OPB705	**167-8634●**	2.48	2.21	1.42	1.34	1.29
OPB705WZ	**167-8635●**	3.62	3.22	2.07	1.95	1.89
OPB708	**167-8636●**	2.26	2.01	1.29	1.22	1.18
OPB720A-12Z	**167-8638●**	12.82	11.39	7.32	6.92	6.66
OPB732WZ	**167-8639●**	5.00	4.44	2.86	2.70	2.59
OPB742WZ	**167-8640●**	3.77	3.35	2.15	2.03	1.95
OPB743	**167-8641●**	2.26	2.01	1.29	1.22	1.18
OPB743WZ	**167-8642●**	3.84	3.42	2.19	2.08	2.00
OPB744	**167-8643●**	2.79	2.48	1.59	1.51	1.45
OPB744WZ	**167-8645●**	4.23	3.76	2.42	2.29	2.19
OPB750N	**167-8646●**	3.91	3.47	2.24	2.11	2.03
OPB750T	**167-8647●**	3.93	3.50	2.24	2.13	2.05
Open Collector						
OPB761N	**167-8649●**	4.55	4.04	2.61	2.46	2.36
OPB761T	**167-8650●**	4.57	4.07	2.62	2.47	2.38
Totem Pole						
OPB715Z	**167-8637●**	6.60	5.87	3.77	3.58	3.43
OPB760N	**167-8648●**	4.55	4.04	2.61	2.46	2.36

£ € **40,000 PRICES REDUCED**

Transmissive Optical Sensor

2mm Gap

VISHAY SMD



These sensors are compact transmissive devices that include an infrared emitter and phototransistor dector, located face-to-face in a surface mount package. Two versions are available, the TCPT1200 single channel and the TCUT1200 dual channel. Both versions have the same overall dimensions.

H=10, W=13.7, D=5.2mm

- Gap 2mm
- Aperture 0.3mm
- Emitter wavelength 950nm
- Temperature range -40 to 85°C

Input LED Forward Voltage V_F	Forward Current I_R	Reverse Voltage V_R	Output Circuit Voltage - Collector/Emitter V_{CEO}	Voltage - Emitter/Collector V_{ECO}	Gap Width
1.5V	25mA	5V	70V	7V	2mm

460206

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
TCPT1200	SMD **132-8397●**	1.21	0.91	0.81	0.72	0.70
TCUT1200	SMD **132-8398●**	0.99	0.75	0.65	0.59	0.57

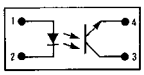
Transistor/Darlington Output

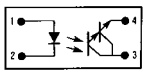

Top View


489-1016


489-1028

Top View


Transistor


Darlington

Note: 491-354 has emitter connections reversed.

H	W	D	Gap width	Pin spacing	Order Code
11	12	6.35	3.1	7.2 x 2.5	102-1129, 102-1130, 102-1131
5.2	5	4	2	3.75 x 2.54	491-354
9.52	10.16	5.58	5.08	8.26 x 2.67	491-330
16.2	17.7	6	8	13.8 x 2.5	117-3621
19.7	14	5	5	11.2 x 1.25	117-3623
16.1	31.75	6.35	16.76	2.54 x 1.25	489-1016
10.55	23.75	12.95	3.18	8.13 x 2.54	489-1028

IC mA @ I_F mA		Breakdown $V_{(BR)}$ CEO min	Switching Time (µs) typ. t_{on}µs	t_{off}µs	VCE $_{(SAT)}$	Mftr.	Mftrs. List No.
Transisitor Output							
1	20	30	8	50	0.4	FCH	H22A1
1	20	55	8	50	0.4	FCH	H22A4
0.25	10	30	50	50	0.4	Kodenshi	SG-211
1	5	30	40	20	0.4	OPTEK	OPB620
20	50	30	4	4	0.4	OMRON	EE-SX1070
20	50	30	4	4	0.4	OMRON	EE-SX1042
50	20	30			0.4	OPTEK	OPB815L
50	20	30			0.4	OPTEK	OPB840L51
Darlington Output							
7.5	10	30	45	250	1	FCH	H22B1

206214

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+
SG-211	**491-354●**	1.65	1.32	1.15	0.95
OPB620	**491-330●**	1.92	0.95	0.87	0.84
EE-SX1070	**117-3621●**	1.65	1.26	1.07	0.97
EE-SX1042	**117-3623●**	1.65	1.39	1.07	0.97
OPB815L	**489-1016●**	3.25	2.83	2.66	2.51
OPB840L51	**489-1028●**	3.26	3.11	2.91	2.80
H22A1	**102-1129●**	0.93	0.67	0.51	0.38
H22A4	**102-1130●**	1.38	1.31	1.07	0.64
H22B1	**102-1131●**	0.57	0.42	0.32	0.28

Transistor/Darlington Output

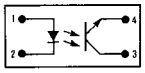

121-6963


121-6962


117-3627


118-2342-with leads
183-8386-with pins
176-9388-with pins

Top View


◆Transistor

Top View

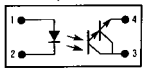

Darlington

Illustration 121-6963 also represents the following:
102-1132, 139-828, 120-1176, 120-1178, 102-1133, 117-3624 & 117-3626

◆**Note:** HOA1873-11 has detector connections reversed, i.e. pin 4 is collector.

Chamfer indicates emitter (diode) on H21 series. Pin 1 identified on OPB866-T55.

	H	W	D	Gap width	Pin spacing	Fixing Centres
H21A1, H21B1	10.8	24.7	6.35	3.1	7.2 x 2.5	19
HOA1877-002*	12.7	31.75	7.62	9.52	17.78 x 2.5	25.4
OPB365T55	10.8	24.7	6.35	2.9	5.6 x 2.5	19
HOA1873-11	10.8	25.4	6.35	2.54	7.62 x 2.54	19
HOA0865-T55	10.8	24.7	6.35	3.1	5.6 x 2.5	19
EE-SX129	8.0	13	6	3	9.2 x 1.94	—
EE-SG3	18	25.4	6.35	3.6	7.6 x 2.54	19
EE-SG3-B	15.9	25.4	6.2	3.6	7.6 x 2.54	19
EE-SV3	18.2	15.1	6.2	3.4	7.6 x 2.54	12.7
HOA1877-003	12.7	31.75	7.62	9.52	17.78 x 2.54	25.4
H21A1	10.8	24.7	6.35	3.1	7.2 x 2.54	19
H21B1	10.8	24.7	6.35	3.1	7.2 x 2.54	19

* = Flying Lead Termination, Length = 610mm min.

IC mA	I_F @ mA	t_{on} µs typ.	t_{off} µs typ.	$V_{CE\ (SAT)}$ max.	Mftr.	Mftrs. List No.	Order Code
NPN Transistor Output							
1	20	8	50	0.4	FCH	H21A1	102-1132
20	50	4	4	0.4	OMRON	EE-SX1070	117-3621
20	50	4	4	0.4	OMRON	EE-SX1042	117-3623
20	50	4	4	0.4	OMRON	EE-SV3	117-3627
NPN Transistor Output - Deep Gap							
0.5	50	—	—	0.4	HONEYWELL	HOA1877-002	176-9388
NPN Transistor Output							
14**	20	—	—	0.4	OPTEK	OPB365T55	139-828
0.3	20	10	12	0.4	HWL	HOA1873-11	120-1176
0.5	10	5	5	0.4	HWL	HOA0865-T55	120-1178
20	50	4	4	—	OMRON	EE-SX129	121-6962
20	50	4	4	0.4	OMRON	EE-SG3	117-3624
20	50	4	4	0.4	OMRON	EE-SG3-B	117-3626
20	50	4	4	0.4	OMRON	EE-SV3	117-3627
Darlington Output							
1	20	8	50	0.4	FCH	H22A1	102-1129
1	20	8	50	0.4	FCH	H22A4	102-1130
7.5	10	45	250	1	FCH	H22B1	102-1131
1.5	50	15	15	1.1	HONEYWELL	HOA1877-003	183-8386
1.5	10	45	250	1.1	FCH	H21B1	102-1133

** I_C = Maximum Rating

206213

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	1K+
H21A1	**102-1132●**	0.93	0.67	0.51	0.38
EE-SX1070	**117-3621●**	1.65	1.26	1.07	0.97
EE-SX1042	**117-3623●**	1.65	1.39	1.07	0.97
EE-SV3	**117-3627●**	4.27	3.36	2.86	2.57
HOA1877-002	**176-9388●**	4.50	4.23	4.12	4.01
OPB365T55	**139-828●**	3.22	2.97	2.91	1.86
HOA1873-11	**120-1176●**	2.18	2.09	1.99	– –
HOA0865-T55	**120-1178●**	2.13	2.04	1.95	– –
EE-SX129	**121-6962●**	3.31	2.46	2.33	1.83
EE-SG3	**117-3624●**	3.53	3.28	2.58	2.37
EE-SG3-B	**117-3626●**	3.55	2.72	2.31	2.08
EE-SV3	**117-3627●**	4.27	3.36	2.86	2.57
H22A1	**102-1129●**	0.93	0.67	0.51	0.38
H22A4	**102-1130●**	1.38	1.31	1.07	0.64
H22B1	**102-1131●**	0.57	0.42	0.32	0.28
HOA1877-003	**183-8386●**	7.46	6.56	5.93	5.40
H21B1	**102-1133●**	0.53	0.39	0.30	0.29

OPIC Opto Switches

SHARP

5mm Wide Gap



H=10, W=13.7, D=5.2mm

A PCB Mounting photoswitch incorporating a standard 5mm wide sensing gap. An OPIC device consists of a light-detecting element and signal-processing circuit integrated onto a single chip. The outputs are driven from an internal schmidt-trigger circuit to provide clean signal switching and are LSTTL / TTL compatible. This devices is suitable for applications including process control, cameras, printers, photo copiers and video equipment. (OPIC is a registered trademark of the Sharp Corporation).

Input LED Forward Voltage V_F	Reverse Current I_R	Output Circuit Voltage Supply V_{CC}	Gap Width	Slit Width	Mftrs. List No.
1.4V	10.0µA	4.5 to 17V	5.0mm	0.5mm	GP1A53HRJ00F

412006

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
GP1A53HRJ00F	**970-8006●**	1.57	1.06	0.84	0.71	0.63

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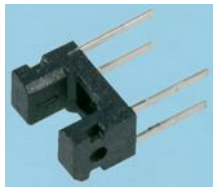
Subminature Opto Switches

SHARP

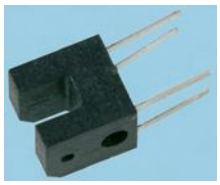
2mm Slot Width



9708022 - H=2.9, W=4.5, D=2.6mm



9708030 - H=2.9, W=4.5, D=2.6mm



9708049 - H=5.2, W=5, D=4.2mm

A range of sub-miniature transmissive photoswitches incorporating a very low profile from the PCB. Available in either through-hole or surface mounting options, these devices find many applications in multimedia drives, automation, printers and CD-ROM drives. High accuracy is achieved via the small LED slit width of 0.3mm.

- High sensing accuracy
- 0.3mm slit width
- Transistor output
- 50µs typical response time
- -20 to 85°C operating temperature range

Type	Input Forward Voltage V_F	Forward Current I_F	Reverse Current I_R	Output Voltage V_{CEO}	Current I_C	Gap Width	Mftrs. List No.
Compact	1.4V	50mA	10.0µA	20mA	35V	2mm	GP1S092HCPIF
Low Profile	1.4V	50mA	10.0µA	20mA	35V	2mm	GP1S093HCZ0F

412007

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
GP1S092HCPIF	SMD **970-8022●** RL	0.490	0.340	0.260	0.220	0.187
GP1S093HCZ0F	**970-8030●**	0.490	0.290	0.200	0.169	0.146

Compact Opto Switches

SHARP

0.3mm and 0.5mm Slot Width



- High sensing accuracy
- 0.5mm slit width
- Transistor output
- Direct PCB mounting
- -20 to 85°C operating temperature range

9708057 - H=10, W=12.2, D=5mm
9708065 - H=10, W=13.7, D=5.2mm
9708073 - H=10, W=13.7, D=5.2mm

Input Forward Voltage V_F	Forward Current I_F	Reverse Current I_R	Output Voltage V_{CEO}	Current I_C	Gap Width	Mftrs. List No.
1.4V	50mA	10.0µA	20mA	35V	3mm	GP1S52VJ000F
1.4V	50mA	10.0µA	20mA	35V	5mm	GP1S53VJ000F
1.4V	50mA	10.0µA	20mA	35V	5mm	GP1S58VJ000F

A range of standard compact opto-switches designed for PCB mounting. Position accuracy is achieved via a narrow 0.5mm LED aperture slit. The GP1S53V J000F version (970-8065)also includes a series of moulded plastic pins to maintain PCB alignment. Typical applications include Process Control, Printers, Edge detection and disk drives.

412008

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
GP1S52VJ000F	**970-8057●**	0.80	0.57	0.44	0.33	0.29
GP1S53VJ000F	**970-8065●**	0.77	0.55	0.42	0.32	0.28
GP1S58VJ000F	**970-8073●**	0.42	0.40	0.36	0.33	0.31

Photologic® Optical Flag Switch

TT electronics OPTEK Technology

New





Each flag switch consists of an infrared emitting diode and a monolithic integrated circuit that incorporates a photodiode, a linear amplifier and a Schmitt trigger.
A lever arm actuated flag interrupts the light beam, which switches the output between states that can readily drive logic gates.

Output Power	No. of Channels	Input Current	Output Voltage	Operating Temperature	Mftrs. List No.	Order Code
Pull-Up	1	10mA	6.5V	-40°C to +100°C	OPB695AZ	167-8628
Pull-Up	1	10mA	14.5V	-40°C to +100°C	OPB685	167-8625
Open Collector	1	10mA	6.5V	-40°C to +100°C	OPB696AZ	167-8629
Open Collector	1	10mA	14.5V	-40°C to +100°C	OPB686	167-8626
Transistor	1	10mA	30V	-40°C to +100°C	OPB690Z	167-8627

528435

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
OPB695AZ	**167-8628●**	4.50	4.00	2.57	2.43	2.34
OPB685	**167-8625●**	4.02	3.58	2.30	2.17	2.09
OPB696AZ	**167-8629●**	4.50	4.00	2.57	2.43	2.34
OPB686	**167-8626●**	4.28	3.81	2.45	2.32	2.23
OPB690Z	**167-8627●**	4.06	3.60	2.32	2.19	2.10

RL Re-reeling available

Farnell

Slotted Opto Switches - continued

Flag/Switch Activated



491-378
H=10.16 (exc. flag), W=11.18, D=12.32

1 Anode
2 Emitter
3 Collector
4 Cathode

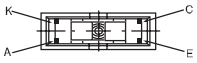


Pin spacing 7.0 x 2.5



567-656
H=23.2, W=9.4, D=4.4

A Anode
K Cathode
C Collector
E Emitter



Pin spacing 6.8 x 2.5

Slotted opto switch with a lever arm actuated flag or a microswitch spring plunger type actuator. The flag/microswitch interrupts the light beam, switching the transistor output between states that can readily drive logic gates.

This switch is a useful alternative to a mechanical switch or a reflective opto-switch for single-sided sensing, for example for paper sensing, and in dirty environments.

IC mA	I_F mA	t_rµs	t_fµs	VCE (SAT) max.	Breakdown $V_{(BR)}$ CEO min	Mftr.	Mftrs. List No.
0.6	10	40	30	0.4	30	OPTEK	OPB680
20	50	—	—	0.4	30	OMRON	EE-SA105

206288

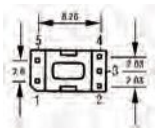
Mftrs. List No.	Order Code	Price Each 1+	25+	100+	1K+
OPB680	**491-378●**	4.00	2.36	2.17	2.09
EE-SA105	**121-6964●**	2.75	2.11	1.79	1.61

4

Schmitt Trigger Output



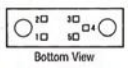
491-342



Bottom View
1 Anode
2 Gnd
3 Output
4 V_{CC}
5 Cathode



102-1134,
120-1179



Bottom View
1 Anode
2 Cathode
3 V_{CC}
4 VO
5 GND

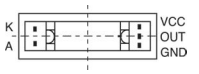


113-6079 (610mm flying leads)

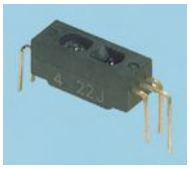
Red	Anode
Black	Cathode
Green	Ground
White	V_{CC}
Blue	V_{out}



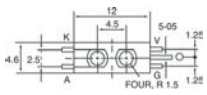
117-3622



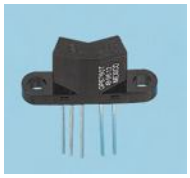
Bottom View
A Anode
K Cathode
V V_{cc}
O Output
G GND



117-3631



Top View
A Anode
K Cathode
V V_{cc}
O Output
G GND



139-841

Top View (Pin 1 Left)
1 Cathode
2 Anode
3 GND
4 Output
5 V_{CC}



121-7280
White Collector
Blue Output
Green Emitter
Red Anode
Black Cathode



121-7281
White VCC
Blue Output
Green Ground
Red Anode
Black Cathode

	H	W	D	Gap width	Fixing Centres	Pin spacing
Transmissive Sensing						
HAO2001	10	24.6	6.35	3.05	19.05	7.6 x 2.5 x 1.27
HOA6990-T51	11.5	24.89	6.6	3.05	19.18	Flying leads
OPB625	9.52	10.16	5.58	5.08	—	8.26 x 2.6 x 2.3
EE-SX4070	18.3	17.7	6	8	—	13.8 x 2.5 x 1.25
OPB916B	16.51	30.73	6.48	5.08	24.38	Flying leads
OPB917B	25.65	30.73	6.48	5.08	24.38	Flying leads
H21LO1	10.6	24.5	6.35	3	24.38	Flying leads
Reflective Sensing						
EE-SY410	8.8	17.2 (overall)	4.6	—	—	17 x 2.5 x 1.25
OPB760T	10.8	25.1	6.4	—	19.1	—

H21LOI - Emitter: V_F max. 1.6V @ 20mA. V_R max 6V.
Detector: Schmitt trigger. Power dissipation 150mW @ 25°C. Operating voltage 4V to 15V. Turn-on threshold current I_F (on) 20mA typ. for V_{CC}=5V, RL=270=t_r, t_f=100ns typ. (Mftr. Fairchild)
HOA2001 - Emitter: V_F max. 1.5V @ 20mA. V_R max 3V.
Detector: Includes amplifier, voltage regulator, Schmitt trigger and output stage for direct interfacing to TTL/LSTTL/CMOS. Power dissipation 250mW @ 25°C. Operating voltage 4.5V to 16V. Max. O/P sink current 40mA when light beam interrupted. Supply current 5mA typ. t_r 60ns typ. t_f 15ns typ. (Mftr. Honeywell).
HOA6990-T51 - Emitter: V_F max. 1.5V 20mA. V_R max. 3V.
Detector: Includes amplifier, voltage regulator, Schmitt trigger and totem pole output stage for direct TTL interfacing. Output is low when exitation is zero. Operating voltage 4.5V to 7.0V. Max. supply current 15mA, t_r t_f 70ns typ. (Mftr. Honeywell).
OPB625 - Emitter: V_F max. 1.6V @ 10mA. V_R max. 3V.
Detector: Includes linear amplifier, Schmitt trigger and output stage 10K pull up, buffered for TTL/LSTTL interfacing. Max o/p sink current 16mA. Supply current 5mA typ t_r t_f 30ns typ. (Mftr. Optek).
EE-SX4070 - Emitter: V_F max. 1.5V @ 20mA. V_R max. 4V.
Detector: Includes amplifier, voltage regulator, Schmitt trigger and output stage for direct interfacing to TTL/LSTTL/CMOS. Power dissipation 250mW @ 25°C. Operating voltage 4.5V to 16V. Consumption current 3.2mA typ. for V_{CC}=16V. Propagation delay - 3µs (H ➡ L), 20µs (L ➡ H). (Mftr. Omron).
EE-SY410 - Emitter: V_F max. 1.5V @ 20mA. V_R max. 4V.
Detector: Includes pre-amplifier circuit with temperature-compensating circuit, voltage regulator, Schmitt trigger and output stage for direct interfacing to TTL/LSTTL/CMOS. Power dissipation 250mW @ 25°C. Operating voltage 4.5V to 16V. Response delay time - 3µs (H ➡ L), 20µs (L ➡ H). (Mftr. Omron).
OPB760T - Emitter: V_F max. 1.8V @ 40mA. V_R max 3V.
Detector: Includes built-in hysteresis amplifier, Photologic™ output, TTL Totem Pole Buffered output. Total device power dissipation 300mW @ 25°C, diode forward current 40mA, (Mftrs. Optek)
OPB916B - V_F max. 1.8V @ 20mA. I_R max 100µA.
Light ON - Output HIGH, Photologic™ Buffered output with 10kR pull-up resistor. Input power dissipation 100mW, Output power dissipation 90mW (Mftrs. Optek)
OPB917B - V_F max. 1.8V @ 20mA. I_R max 100µA.
Light ON - Output HIGH, Photologic™ Buffered output with 10kR pull-up resistor. Input power dissipation 100mW, Output power dissipation 90mW (Mftrs. Optek)

206215

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	1K+
Transmissive Sensing					
HOA2001	**120-1179●**	2.43	2.01	1.95	– –
HOA6990-T51	**113-6079●**	4.82	3.30	3.22	3.14
OPB625	**491-342●**	2.47	1.23	1.13	1.09
EE-SX4070	**117-3622●**	1.90	1.46	1.24	1.12
OPB916B	**121-7280●**	5.51	5.21	4.89	4.69
OPB917B	**121-7281●**	5.64	4.91	4.62	4.36
H21LO1	**102-1134●**	2.46	1.92	1.13	0.57
Reflective Sensing					
EE-SY410	**117-3631●**	3.42	2.77	2.22	2.00
OPB760T	**139-841●**	6.57	4.96	4.58	3.74

Sub-Miniature Opto Switches

SHARP

Through-Hole



161-8429



161-8497



970-8090

- Subminiature reflective photosensors with open collector transistor outputs
- Applications include multimedia disk drives, tape recorders and compact process control

Input Current	50mA	Time (rise)	50µs
Voltage Vf (typ)	1.2V	Time (fall)	50µs
Voltage Vf (max)	1.4V	Operating Temperature	-25°C to +85°
Voltage Vceo	35V		

Current, I_C (max)	Power Dissipation	Dimensions (mm) L	D	W	Mftrs. List No.	Order Code
3mA	175mW	2.4	4.0	4.0	GP2S40J0000F	970-8090
20mA	100mW	4.5	2.6	4.5	GP1S097HCZ0F	161-8429
20mA	100mW	2.9	2.6	3.5	GP1S096HCZ0F	161-8497

526245

RL Re-reeling available

Farnell

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
GP2S40J0000F	970-8090●	1.43	0.97	0.77	0.65	0.58
GP1S097HCZ0F	NEW 161-8429●	0.31	0.28	0.25	0.23	0.20
GP1S096HCZ0F	NEW 161-8497●	0.31	0.28	0.25	0.23	0.20

Slotted Optical Switch

Analog and Logic Outputs

TT electronics OPTEK Technology

New





Case Style	No. of Channels	Input Current	Output Type	Output Voltage (max)	Mftrs List No.	Order Code
Analog Output						
Slot	1	20mA	Transistor	30V	OPB365N51	167-8582
Slot	1	20mA	Transistor	30V	OPB380T51Z	167-8583
Slot	1	20mA	Transistor	30V	OPB390L51Z	167-8584
Slot	1	20mA	Transistor	30V	OPB390N51Z	167-8585
Slot	1	20mA	Transistor	30V	OPB390P51Z	167-8586
Slot	1	20mA	Transistor	30V	OPB390T51Z	167-8587
Slot	1	20mA	Transistor	30V	OPB800L51	167-8651
Slot	1	20mA	Transistor	30V	OPB800W51Z	167-8652
Slot	1	20mA	Transistor	30V	OPB802L55	167-8653
Slot	1	20mA	Transistor	30V	OPB802W55Z	167-8654
Slot	1	20mA	Transistor	30V	OPB880T51Z	167-8655
Logic Output						
Slot	1	20mA	Pull-Up	14.5V	OPB460L11	167-8588
Slot	1	20mA	Pull-Up	14.5V	OPB460N11	167-8591
Slot	1	20mA	Pull-Up	14.5V	OPB460P11	167-8592
Slot	1	20mA	Pull-Up	14.5V	OPB460T11	167-8593
Slot	1	20mA	Pull-Up	14.5V	OPB480N11Z	167-8599
Slot	1	20mA	Pull-Up	14.5V	OPB480T11Z	167-8600
Slot	1	10mA	Pull-Up	14.5V	OPB615	167-8612
Slot	1	10mA	Pull-Up	14.5V	OPB627	167-8615
Slot	1	10mA	Pull-Up	14.5V	OPB665N	167-8618
Slot	1	10mA	Pull-Up	14.5V	OPB667N	167-8623
Slot	1	20mA	Pull-Up	14.5V	OPB917BZ	167-8659
Slot	1	20mA	Open Collector	14.5V	OPB461L11	167-8594
Slot	1	20mA	Open Collector	14.5V	OPB461N11	167-8595
Slot	1	20mA	Open Collector	14.5V	OPB461P11	167-8597
Slot	1	20mA	Open Collector	14.5V	OPB461T11	167-8598
Slot	1	20mA	Open Collector	14.5V	OPB481N11Z	167-8601
Slot	1	20mA	Open Collector	14.5V	OPB481T11Z	167-8602
Slot	1	10mA	Open Collector	14.5V	OPB616	167-8613
Slot	1	10mA	Open Collector	14.5V	OPB626	167-8614
Slot	1	10mA	Open Collector	14.5V	OPB666N	167-8621
Slot	1	10mA	Open Collector	14.5V	OPB666T	167-8622
Slot	1	10mA	Open Collector	14.5V	OPB668N	167-8624
Slot	1	20mA	Open Collector	400mV	OPB911L55	167-8658
Slot	1	20mA	Open Collector	13.9V	OPB961N51	167-8664
Slot	1	20mA	Open Collector	13.9V	OPB961T51	167-8665
Slot	1	10mA	Transistor	24V	OPB660N	167-8616
Slot	1	10mA	Transistor	24V	OPB660T	167-8617
Slot	2	–	Transistor	2.4V	OPB950Z	167-8661
Slot	1	20mA	Totem Pole	2.4V	OPB900L55	167-8657
Slot	2	20mA	Totem Pole	2.4V	OPB930W51Z	167-8660
Slot	2	20mA	Totem Pole	13.9V	OPB960N51	167-8662
Slot	2	20mA	Totem Pole	13.9V	OPB960T51	167-8663

528648

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
Analog Output						
OPB365N51	167-8582●	2.31	2.05	1.31	1.25	1.20
OPB380T51Z	167-8583●	3.74	3.31	2.14	2.02	1.94
OPB390L51Z	167-8584●	3.58	3.18	2.05	1.93	1.85
OPB390N51Z	167-8585●	3.58	3.18	2.05	1.93	1.85
OPB390P51Z	167-8586●	3.58	3.18	2.05	1.93	1.85
OPB390T51Z	167-8587●	3.58	3.18	2.05	1.93	1.85
OPB800L51	167-8651●	2.45	2.17	1.39	1.33	1.27
OPB800W51Z	167-8652●	4.09	3.63	2.33	2.21	2.13
OPB802L55	167-8653●	2.41	2.15	1.38	1.30	1.26
OPB802W55Z	167-8654●	3.96	3.52	2.26	2.15	2.06
OPB880T51Z	167-8655●	3.77	3.35	2.15	2.03	1.95
Logic Output						
OPB460L11	167-8588●	2.70	2.46	1.57	1.51	1.44
OPB460N11	167-8591●	2.76	2.46	1.58	1.50	1.44
OPB460P11	167-8592●	2.76	2.46	1.58	1.50	1.44
OPB460T11	167-8593●	2.76	2.46	1.58	1.50	1.44
OPB480N11Z	167-8599●	4.32	3.84	2.47	2.33	2.24
OPB480T11Z	167-8600●	4.32	3.84	2.47	2.33	2.24
OPB615	167-8612●	1.94	1.73	1.11	1.05	1.01
OPB627	167-8615●	1.96	1.75	1.12	1.06	1.02
OPB665N	167-8618●	2.64	2.35	1.51	1.43	1.37
OPB667N	167-8623●	2.64	2.35	1.51	1.43	1.37
OPB917BZ	167-8659●	5.36	4.76	3.06	2.89	2.79
OPB461L11	167-8594●	2.76	2.46	1.58	1.50	1.44
OPB461N11	167-8595●	2.76	2.46	1.58	1.50	1.44
OPB461P11	167-8597●	2.76	2.46	1.58	1.50	1.44
OPB461T11	167-8598●	2.76	2.46	1.58	1.50	1.44
OPB481N11Z	167-8601●	4.32	3.84	2.47	2.33	2.24
OPB481T11Z	167-8602●	4.32	3.84	2.47	2.33	2.24
OPB616	167-8613●	1.94	1.73	1.11	1.05	1.01
OPB626	167-8614●	1.96	1.75	1.12	1.06	1.02
OPB666N	167-8621●	2.64	2.35	1.51	1.43	1.37
OPB666T	167-8622●	2.57	2.29	1.47	1.39	1.34
OPB668N	167-8624●	2.64	2.35	1.51	1.43	1.37

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
Logic Output						
OPB911L55	167-8658●	3.66	3.26	2.09	1.98	1.90
OPB961N51	167-8664●	2.86	2.54	1.63	1.54	1.49
OPB961T51	167-8665●	2.86	2.54	1.63	1.54	1.49
OPB660N	167-8616●	2.16	1.92	1.23	1.17	1.12
OPB660T	167-8617●	2.09	1.86	1.19	1.13	1.09
OPB950Z	167-8661●	8.35	7.43	4.78	4.51	4.34
OPB900L55	167-8657●	4.10	3.64	2.34	2.22	2.14
OPB930W51Z	167-8660●	5.07	4.50	2.90	2.74	2.64
OPB960N51	167-8662●	2.86	2.54	1.63	1.54	1.49
OPB960T51	167-8663●	2.86	2.54	1.63	1.54	1.49

Non-contact Reflective Object Sensor

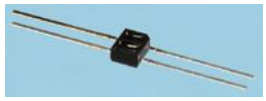
TT electronics OPTEK Technology



Radial



Gull



Axial



Right Angle

- Phototransistor output
- Unfocused for sensing diffuse surface
- Low cost plastic housing

Applications:

- Assembly line automation
- Machine automation
- Machine safety
- End of travel sensor

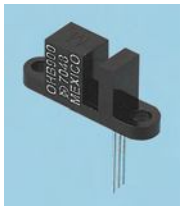
New

528460

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
Radial						
OPB606B	167-8604●	1.200	1.060	0.690	0.650	0.620
OPB608A	167-8608●	1.530	1.360	0.880	0.830	0.800
OPB607A	167-8605●	1.330	1.180	0.750	0.720	0.690
OPB607B	167-8606●	1.330	1.180	0.750	0.720	0.690
Axial						
OPB609AX	167-8609●	0.340	0.300	0.260	0.220	0.183
Gull						
OPB609GU	167-8610●	0.580	0.460	0.380	0.310	0.290
Right Angle						
OPB609RA	167-8611●	0.340	0.300	0.260	0.220	0.183

Hall Effect Sensor

OPTEK



H=10.8, W=26.0, D=6.4

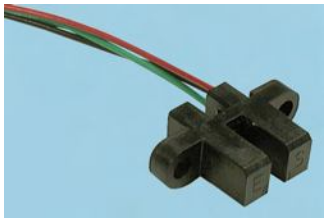
- Hall element, linear amplifier and Schmitt trigger on a Hal-logic® silicon chip
- Non-contact motion sensing
- May be used in high dust and dirt environments in prefer-ence to opto devices
- Operates over a wide range of voltages
- 3.18mm wide gap, similar to optically slotted swithches.

206517

Mftrs. List No.	Order Code	Price Each 1+	10+	25+	50+	100+
OHB900	139-853●	6.01	2.98	2.74	2.64	2.43

SR16C-J6 Digital Vane Sensor

Honeywell



- Compact, robust package
- Mechanically interchangeable with stan-dard optical style sensors
- Operated by a 'Ferrous Vane' interrupter for pulse counting or position sensing
- Current sinking (open collector) output
- 3.8V dc to 30V dc power supply
- Medium level magnetic switching to re-duce stray field interference
- Internally sealed packages for moderate environment applications
- No mechanical contacts; eliminates product wear
- Non-contact position sensing

Package Style	Dual Tower Wire Exit
Supply Voltage	3.8 to 30V dc
Output Type	Sink
Termination Type	26 Guage 7 Strand Lead Wire
Operating Temperature	-20 to 85°C
Output Voltage	0.4V dc
Vibration	10g/10Hz to 500Hz
Humidity	95% RH/40°C 100 h
Vane and Geartooth	Low Carbon Steel, High Permeability,
Target Material	Low Residual Induction
Output Current (Max.)	40mA
Supply Current (Max. @ 25°C)	10mA
Vane Thickness	1.14mm
Minimum Tooth Depth	6.35mm

RL Re-reeling available

Farnell

Slotted Opto Switches - continued

SR16C-J6 Digital Vane Sensor - continued

419622

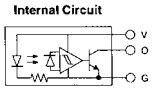
Mftrs. List No.	Order Code	Price Each 1+	5+	10+	25+	+
SR16C-J6	108-2266●	4.51	4.15	3.59	2.97	– –

Snap-In Fitting

OMRON

5mm & 15mm Slots, Photo-Logic Outputs





H=23.6, W=30 (inc. connector), D=11

- Photo-Logic output
- 5mm slot (EE-SX460-P1) & 15mm slot (EE-SX461-P11)
- Easy snap-in mounting
- Connection uses OMRON connector EE-1005 with 1 metre of cable (available separately)

EE-SX461-P11: I_{cc}=35mA max. V_{cc}=5V (V_{cc} max.=7V), V_{OL}=0.3V max. V_{OH}=(V_{cc}0.9) V min f=3kHz min.

206646

Mftrs. List No.	Order Code	Price Each 1+	10+	25+	50+	100+
EE-SX461-P11	117-3620●	6.55	6.03	5.90	4.73	4.53
EE-1005	117-2756●	2.80	2.59	2.46	1.86	1.69

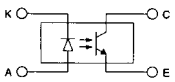
Side Fixing Flanges

OMRON

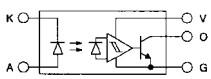
3.4mm Slots, Photo-Transistor & Photo-Logic Outputs



Internal Circuit



Internal Circuit



H=11.4, W=25, D=6

- Standard type slotted sensor with 3.4mm slot
- Photo-Transistor (E-SX1088-W1) or Photo-Logic (EE-SX4088-W1)
- Both types pre-wired with 610mm wires

EE-SX1088-W1 I_c=20mA @ I_F=50mA, t_r& t_f=4µs typ. V_{CE}(sat) = 0.4V max
EE-SX4088-W1 I_{cc}=10mA max. V_{cc}=4.5V - 16V, t_{PLH}=3µs typ. t_{PHL}20µs typ. f=3 kHz min.

206643

Mftrs. List No.	Order Code	Price Each 1+	10+	25+	50+	100+
EE-SX1088-W1	117-3617●	5.97	4.91	4.17	3.58	3.38
EE-SX4088-W1	117-3618●	6.51	6.02	5.86	4.77	4.50

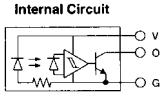
Screw Mounting

OMRON

5mm Slot, Photo-Logic Outputs



Internal Circuit



H=21, W=44.5 (inc. connector), D=11

- Photo-Logic output
- 5mm slot
- Easy screw mounting (no cut-out)
- Connection uses OMRON connector EE-1005 complete with 1 metre of cable (available separately)

EE-SX4009-P1: I_{cc}=30mA max. V_{cc}=5V (V_{cc}max. = 10V) V_{OL}0.3V max. V_{OH}= (V_{cc}0.9) V min. f=3kHz min.

206645

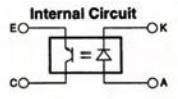
Mftrs. List No.	Order Code	Price Each 1+	10+	25+	50+	100+
EE-SX4009-P1	117-3619●	3.27	2.74	2.33	2.10	1.89
EE-1005	117-2756●	2.80	2.59	2.46	1.86	1.69

Surface Mount

OMRON

2mm Photo-Transistor Outputs





- Provides phototransistor outputs for the optimum combination of speed of response and current handling capability
- Ultra compact devices
- High resolution sensing devices
- EE-SX1108-H=4mm, W=5.0, D=4.0, slot width=2mm

EE-SX1108: 1_c=20mA @ 1_F=25mA, t_r& t_f=10µs typ. V_{CE}(sat) = 0.4V max.

206644

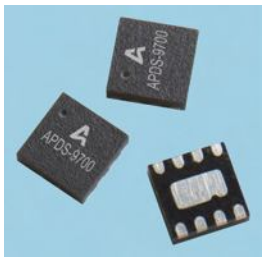
Mftrs. List No.	Order Code	Price Each 1+	10+	25+	50+	100+
EESX-1108	SMD 316-8682● RL	1.20	0.92	0.83	0.71	0.64

Reflective Opto Switches

Optical Proximity Sensors

AVAGO TECHNOLOGIES

New



Operating temperature: -40°C to +105°C

- Low power consumption
- Complete shutdown mode
- Supply voltage: 2.4V to 3.6V
- Artificial light immunity
- LED stuck High protection
- External capacitor and resistor for integration and gain controls
- Design flexibility to pair with Avago Proximity Sensors or discretes pair solution
- Applications include PDA and mobile phones, personal computers, amusement / vending machines, industrial automation, contactless switches, sanitary automation

521741

Mftrs. List No.	Order Code	Price Each 1+	10+	25+	100+
APDS-9700-020	SMD 163-4725●	0.98	0.71	0.62	0.55

Reflective Optical Sensor

VISHAY

SMD

6mm Peak Distance



- Peak operating range 2mm to 25mm
- Peak operating distance 6mm
- High linearity
- Emitter wavelength 940nm
- Daylight blocking filter
- Temperature range -40 to 85°C

H=10, W=13.7, D=5.2mm

The TCND5000 is a reflective sensor that includes an infrared emitter and PIN photodiode in a surface mount package which blocks visible light.

Input Emitter Forward Voltage V_F	Reverse Voltage$_R$	Output Detector Forward Voltage V_{FD}	Breakdown Voltage V_{BR}	Mftrs. List No.
1.2V (Typ.) / 1.5V (Max.)	5V	1.0V (Typ.) / 1.3V (Max.)	60V	TCND5000

460202

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
TCND5000	SMD 132-8395●	1.85	1.39	1.23	1.11	1.07

Reflective HALIOS® Optical Sensor

VISHAY

SMD

20mm Peak Distance



- Peak operating range 10mm to 20mm
- Peak operating distance 20mm
- Emitter wavelength 885nm
- Daylight blocking filter
- High ambient light suppression for sunlight
- High ambient light suppression for CIE standard illuminant A
- Temperature range -40 to 85°C

H=10, W=13.7, D=5.2mm

The TCND3000 is a reflective optical sensor for applications using the HALIOS® (High Ambient Light Independent Optical System) principle. It consists of an infrared emitter and a photo detector forming the optical sensing path. According to the HALIOS principle a second infrared emitter is used for compensation of disturbing ambient light. Optoelectronic parameters of the sensor are matched to the corresponding integrated circuit E909.01, manufactured by ELMOS Semiconductor AG.

Input Emitters Forward Voltage V_{FS}	Reverse Voltage$_{RS}$	Output Detectors Forward Voltage V_{FD}	Breakdown Voltage V_{BR}	Mftrs. List No.
1.3V (Typ.)	5V	1.0V (Typ.) / V1.3 (Max.)	5V	TCND3000

460198

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
TCND3000	SMD 132-8394●	1.48	1.11	0.99	0.89	0.85

RL Re-reeling available

Reflective Optical Switch

Side-by-Side Mounted



Style 1



Style 2



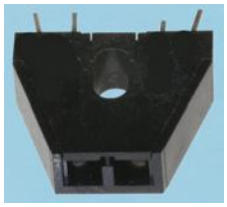
Style 3



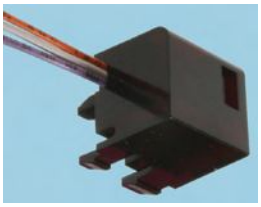
Style 4



Style 5



Style 6



Style 7

APPLICATIONS:

- Non-contact object sensors
- Assembly line automation
- Machine automation
- Machine safety
- End of travel sensor
- Door sensor

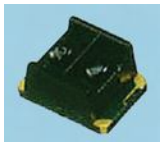
Case Style	Input Diode V_F (V)	Input Diode I_R (µA)	Output Phototransistor V_{CEO} (V)	Output Phototransistor I_{CEO} (µA)	Wavelength (nm)	Reflective Distance (mm)	Mftrs List No.	Order Code
1	1.7	100	30	500	935	1.27	OPB606A	149-7898
2	1.7	100	25	2.5	890	5.08	OPB700ALZ	149-7901
2	1.7	100	25	2.5	890	5.08	OPB700Z	149-7902
2	1.7	100	15	43	890	5.08	OPB701ALZ	149-7903
3	1.7	50	24	25	935	1.27	OPB706A	149-7904
3	1.7	50	15	125	935	1.27	OPB707A	149-7905
4	1.5	50	30	150	935	6.35	OPB710F	149-7906
4	1.5	50	30	150	935	6.35	OPB710	149-7907
5	5	50	35 V		890	12.7	OPB716Z	149-7908
6	1.7	40	30	10	880	3.81	OPB742	149-7909
6	1.7	40	15	1000	890	3.81	OPB745	149-7910
7	1.8	40			890	5.6	OPB770TZ	149-7912

497516

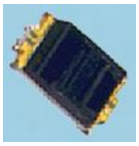
Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+
OPB606A	149-7898●	1.34	0.77	0.70	0.68
OPB700ALZ	149-7901●	8.13	6.33	5.70	5.18
OPB700Z	149-7902●	7.19	5.58	5.04	4.57
OPB701ALZ	149-7903●	11.30	6.31	5.80	5.58
OPB706A	149-7904●	2.21	1.27	1.16	1.13
OPB707A	149-7905●	2.86	1.63	1.50	1.45
OPB710F	149-7906●	5.74	4.47	4.02	3.65
OPB710	149-7907●	6.60	3.70	3.40	3.27
OPB716Z	149-7908●	7.38	4.13	3.80	3.66
OPB742	149-7909●	2.48	1.40	1.29	1.24
OPB745	149-7910●	3.12	1.74	1.60	1.54
OPB770TZ	149-7912●	7.71	4.30	3.96	3.81

Sub-Miniature Opto Switches

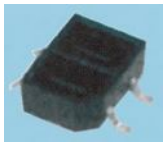
Reflective Types



161-8426



161-8427



970-8081

- Subminiature reflective photosensors with open collector transistor outputs
- Applications include multimedia disk drives, tape recorders and compact process control

Input Current	50mA	Time (rise)	20µs
Voltage Vf (typ)	1.2V	Time (fall)	20µs
Voltage Vf (max)	1.4V	Operating Temperature	-25°C to +85°
Voltage Vceo	35V		

Current, I_C (max)	Power Dissipation	Dimensions (mm) L	D	W	Mftrs. List No.	Order Code
120µA	175mW	1.7	3	4	GP2S27CJ000F	970-8081
20mA	100mW	2	3	4	GP2S700HCP	161-8426
20mA	100mW	1.1	1.7	3.2	GP2S60	161-8427

412009

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
GP2S27CJ000F	SMD 970-8081● RL	0.89	0.82	0.77	0.71	0.64
GP2S700HCP	NEW SMD 161-8426● RL	0.91	0.82	0.75	0.67	0.61
GP2S60	NEW SMD 161-8427● RL	0.39	0.35	0.32	0.29	0.26

£ € 40,000 PRICES REDUCED

Sub-Miniature Opto Switches

Snap-In



161-8498: L=8, D=8, W=19.7
161-8499: L=8, D=8, W=26

Designed for use in:

- OA equipment
- Audio visual equipment
- Home appliances
- Telecommunications equipment (terminal)
- Measuring equipment
- Tooling machines
- Computers

New

Detecting Distance	1mm to 9mm	Time (rise)	1ms
Voltage Supply (min)	4.75V	Time (fall)	1ms
Voltage Supply (max)	5.25V	Operating Temperature	-10°C to +70°C

526246

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
GP2A230LRSAF	161-8498●	3.14	2.82	2.54	2.28	2.05
GP2A230LRS0F	161-8499●	4.12	3.71	3.34	3.01	2.71

Miniature/Standard



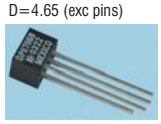
120-1180
H=6.22, W=4.5, D=4.65 (exc pins)



Bottom View
Pin spacing 2.54 2.29
Collector identification dy dot



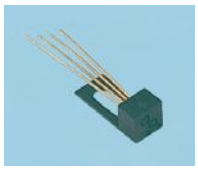
120-1174



489-0991
H = 4.7, W = 6.22, D = 4.6



1 Cathode
2 Anode
3 Collector
4 Emitter



H=6.35, Dia.=6.35, D=15.88
491-573, 491-585

1. Cathode
2. Anode
3. Collector
4. Emitter

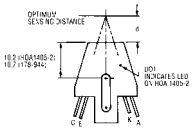


H=6.35, W=6.35, D=15.88, Lead length=305
113-6080

Red Anode
Black Cathode
White Collector
Green Emitter



H=23, W=17, D=5
Fixing slot=8.5 3.1



178-944, 120-1181, 176-9741



120-1182

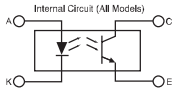
Red Anode
Black Cathode
Orange Collector
Black Emitter

H=24, W=15.4, D=2.79, Lead length=610



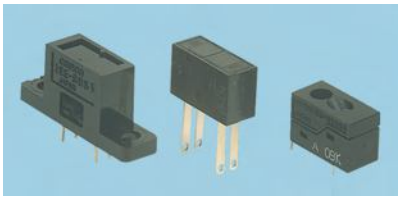
117-3629
H=8.5, W=15 (overall), D=4.2

117-3630
H=8.4, W=15.2 (overall), D=6.2



A Anode
K Cathode
C Collector
E Emitter

121-6966 and 117-3628 have PCB terminals. 121-6965 and 121-6967 have soldering terminals



121-6966
H=15.9, W=25.4, D=6.35

121-6965
H=18, W=25.4, D=6.35

121-6967
H=17.7, W=13, D=5.7 (overall)

117-3628
H=15.6, W=13, D=5.7 (overall)

117-3632
H=11, W=14.1 (overall), D=6

RL Re-reeling available

Farnell

Reflective Opto Switches - continued

Miniature/Standard - continued



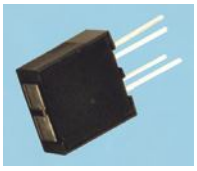
139-830
H=4.5, W=6.1, D=4.40
1 Collector
2 Emitter
3 Anode
4 Cathode
Pin 1 identified by flat on body



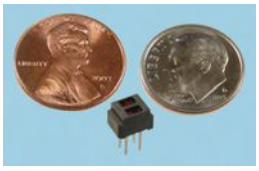
118-2345
H = 12.45, W = 12.7, D = 12.07



118-2344
H = 15.49, W = 18.03, D = 5.33
Orange Anode
Green Cathode
White Collector
Blue Emitter



1226877
Mounting holes:
15.49
H=5.08, W=
12.19, D=12.7



1226879
Mounting holes: 15.49
H=5.08, W= 19.81, D=12.7

Reflective object sensors in miniature and stardard packages, all with transistor outputs.

I_F mA	@ I_F	Output Transistor V_{DE}(max)	P_D(max)	Optimum sensing distance	Mftr	Mftrs. List No.	Order Code
Miniature							
0.7	20mA	30V	100mW	1.2	HWL	HOA1397-2	120-1180
0.16	30mA	30V	75mW	5.08	HWL	HOA2498-2	491-573
0.16	30mA	30V	75mW	5.08	HWL	HOA1180-2	113-6080
2	30mA	15V	75mW	5.08	HWL	HOA2498-3	491-585
4	20mA	30V	100mW	2.79	OPTEK	OPB608B*	139-830
20	50mA	30V	100mW	3.5	OMRON	EE-SY171	117-3629
20	50mA	30V	100mW	4.4	OMRON	EE-SY113	117-3630
25	50mA	30V	75mW	1.27	OPTEK	OPB706B	489-0991
Standard							
0.025	40mA	30V	75mW	5.08	HWL	HOA1406-1	120-1182
0.2	40mA	30V	60mW	3.81	OPTEK	OPB704	178-944
0.8	50mA	30V	75mW	5	HWL	HOA1404-002	176-9741
0.8	30mA	30V	70mW	5	HWL	HOA1405-2	120-1181
1.0	50mA	30V	70mW	3.8	HWL	HOA0709-001	120-1174
20	50mA	30V	100mW	5	OMRON	EE-SB5	121-6965
20	50mA	30V	100mW	5	OMRON	EE-SB5-B	121-6966
20	50mA	30V	100mW	5	OMRON	EE-SF5	121-6967
20	50mA	30V	100mW	4	OMRON	EE-SY169A	117-3632
20	50mA	30V	100mW	5	OMRON	EE-SF5-B	117-3628
50	50mA	35V	300mW	12.7	OPTEK	OPB715-Z	118-2345
50	mA	V	mW		OPTEK	SFH9201-Z	122-6449
50	mA	V	mW		OPTEK	SFH9240-Z	122-6450
200	40mA	30V	100mW	3.81	OPTEK	OPB704W-Z	118-2344
12		30 V	100 mW	38.1	OPTEK	OPB608V	122-6879
						OPB608R	122-6880
50	N/A	(5V high, 0.8V low)	300 mW	152	OPTEK	OPB720-06	122-6881
						OPB720-24	122-6882
50	50mA	30 V	100 mW	3.79	OPTEK	OPB732	122-6877
						OPB732W	122-6878

* The OPB608B has enhanced low current roll off to improve the contrast ratio and immunity to back-ground irradiance

206216

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	1K+
Miniature					
OPB608B	**139-830●**	3.07	2.64	1.68	1.03
HOA1397-2	**120-1180●**	3.80	3.64	3.47	3.41
HOA2498-2	**491-573●**	4.06	3.89	3.73	3.65
HOA2498-3	**491-585●**	5.99	5.73	5.50	5.39
HOA1180-2	**113-6080●**	9.94	9.53	9.12	8.93
EE-SY171	**117-3629●**	5.83	3.83	3.56	2.86
EE-SY113	**117-3630●**	4.52	3.99	3.58	3.23
OPB706B	**489-0991●**	4.02	3.70	3.59	3.47
Standard					
OPB704	**178-944●**	3.24	1.61	1.48	1.42
HOA1404-002	**176-9741●**	6.00	5.00	4.41	4.30
HOA1405-2	**120-1181●**	5.13	3.79	2.76	2.31
HOA1406-1	**120-1182●**	14.12	13.54	12.66	10.98
EE-SB5	**121-6965●**	4.73	3.62	3.08	2.77
OPB704W-Z	**118-2344●**	4.64	4.34	3.94	3.77
EE-SB5-B	**121-6966●**	4.55	3.62	3.19	3.11
EE-SF5	**121-6967●**	4.08	3.40	3.03	2.72
EE-SF5-B	**117-3628●**	3.89	3.77	3.60	3.23
EE-SY169A	**117-3632●**	8.15	6.72	6.07	5.46
OPB715-Z	**118-2345●**	8.54	8.11	7.62	6.89
HOA0709-001	**120-1174●**	2.99	2.60	2.30	2.05
OPB732	**122-6877●**	3.31	3.08	2.91	2.76
OPB732W	**122-6878●**	5.41	4.32	3.73	3.43
OPB608V	**122-6879●**	10.68	8.55	7.37	6.80

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	1K+
Standard					
OPB608R	**122-6880●**	1.43	1.15	0.98	0.91
OPB720-06	**122-6881●**	14.09	11.27	9.71	8.95
OPB720-24	**122-6882●**	14.09	11.27	9.71	8.95
SFH9201-Z	SMD **122-6449●**	1.17	0.97	0.83	0.73
SFH9240-Z	SMD **122-6450●**	1.48	1.23	1.05	0.92

Slotted Opto Switches

New

ROHM SEMICONDUCTOR

No. of Channels	1	Output Voltage (max)	30V
Forward Current	50mA	Forward Voltage (max)	1.6V
Power Dissipation	80mW	Operating temperature	-25°C to +85°C

528848

Mftrs. List No.	Order Code	Price Each 1+	10+	100+	250+	500+
RPI-221A	**168-4997●**	0.91	0.52	0.36	0.30	0.29
RPI-243	**168-4998●**	0.87	0.54	0.38	0.36	0.34
RPI-441C1	**168-4999●**	0.91	0.52	0.36	0.30	0.28

Infrared Modulated Detector

SHARP



H=4, W=3, D=2.8mm

- Compact Integrated I/R detector
- Use with any external I/R LED emitter
- High Rejection of External Emissions
- Wide Voltage range (4.5V to 16Vdc)

This is an infrared detector with an integral modulation drive.
An external infrared emitter is sync-modulated using a two-wire system. External interference is eliminated by use of a comparator and sync-detector circuit, the resulting signal then being demodulated and output as TTL.
The elimination of unwanted signals being detected make this device ideal for use in high ambient light conditions.
Suitable for use with all infrared LED emitters.

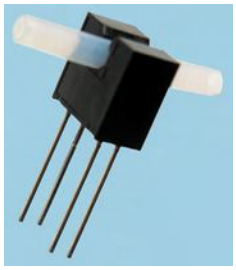
Acceptance Angle (50%) sense	Wavelength Peak Sense	Rise / Fall time	Nominal V_O(max)	I_{CC} (typ)	V_{CC}	Order Code
115°	940nm	400µs	16V dc	3.5mA	4.5V dc - 16Vdc	970-7840

411953

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
IS471FE	**970-7840●**	2.43	1.70	1.32	1.19	1.01

Tube Liquid Sensor

TT electronics OPTEK Technology



The OPB350 series liquid sensor is designed to work with 1/16" [1.6mm] 1/8" [3.2mm], 3/16" [4.8 mm] and1/4" [6.3 mm] outside diameter clear tubes. When output reference circuitry is added, multiple output states such as fluid present," no fluid present" and no tube present" can be recognised.
Clear liquid present causes the phototransistor to sink the maximum current, while dark liquid present causes it to sink the minimum current. As bubbles pass through the tube, the signal will vary between the liquid present" and no liquid" states. If no tube is present, the phototransistor sinks current between the dark fluid and clear Fluid states. The customer will have to identify the typical current values for each situation. The ratio between the different stated allows acknowledgement of different conditions.
Smaller outside diameter tubes can be used when the tube is sized up to one of the standard sizes and is fitted properly in the housing opening. For example, fluid in a 1/32" [0.8 mm] outside diameter tube can be sensed when a piece of tubing with a 1/8" (3.2mm) outside diameter and a 1/32" [0.8 mm] inside diameter is used as an adapter.

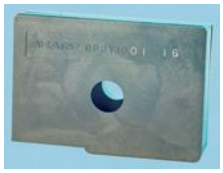
490866

Mftrs. List No.	Order Code	Price Each 1+	25+	100+
OPB350	**149-7897●**	5.48	3.07	2.82

Dust Sensor

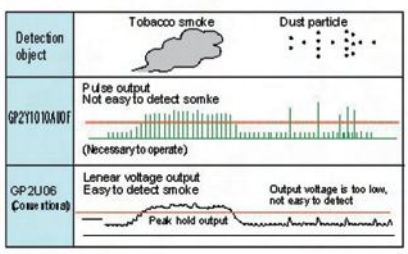
SHARP

Pulse Output



H=17.6, W=46, D=30mm

Comparison of detection methods



Features:
- Dust and smoke particle detection from 0.1 to 100um
- Distinguish between cigarette smoke and house dust
- Pulse or peak-hold versions
- 5 volt operation
- Analogue voltage output
- Simple interface to microcontroller

Applications:
- Air cleaners
- Air conditioner
- Copiers
- Printers
- HVAC equipment

An infrared reflective sensor designed specifically for applications where the level of airborne dust, pollen, fungus spores or particles from cigarette smoke need to be detected. The device detects the amount of light reflected from particles in the air which pass through a sensing chamber, this is then processed to generate an analogue voltage. The GP2U06 device is biased towards the detection of finer particles such as smoke by incorporating a peak hold circuit to integrate the readings and give a slower stable reading.

Output Type	Supply Voltage	Detection Current	Sensitivity	V_{out} (no dust) typ.	Mftrs. List No.
Pulse	5V dc ±0.5V	20mA	0.5V/(0.1mg/m^3) ±30%	0.9V	GP2Y1010AU0F

412003

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
GP2Y1010AU0F	970-7956●	9.38	6.63	5.73	5.27	4.75

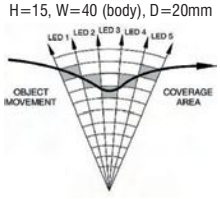
Distance Sensors

SHARP

Infrared - Wide Angle



H=15, W=40 (body), D=20mm



Sensing Capability

- 3 versions covering:
  Short range - 4 to 30 cm,
  Mid range - 20 to 150cm,
  Long range - 40 to 300cm
- Analogue output
- No moving parts
- 5 volt operation

Applications
- Energy saving in LCD displays/ kiosks
- Auto-cleaner Systems
- Vending Machines
- Security
- ATM machines
- Personal Robot
- Amusement Equipment

A range of unique infrared sensors, which can detect the distance and direction of an object(s) within a 25 degree field of view. Each sensor incorporates five individually addressable infrared LEDs each with a 5 degree illumination field and an infrared position detector utilising a triangulation method to determine the distance from the sensor to the target. By selecting a particular LED zone the range of the target can be interpreted by an analogue voltage from the internal signal processor.
Requires connector, Molex 53047-0910. Order Code **9732888**

Supply Voltage	Current (max)	Wavelength ±70nm	Sensing Angle (max)
4.5 to 5.5V dc	350 mA	870nm	25°
Range	970-7921	4 to 30cm	
	970-7930	20 to 150cm	
	970-7948	40 to 300cm	

412002

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
Analogue Output						
GP2Y3A001K0F	970-7921●	36.04	33.38	30.84	27.95	25.55
GP2Y3A002K0F	970-7930●	26.68	24.71	22.83	21.33	20.79
GP2Y3A003K0F	970-7948●	31.38	29.04	26.85	24.33	22.25

Infrared Distance Detectors

SHARP



9707859, 9707867, 9707875, 9707883, 1618431, 1618438



9707891, 9707905



1618432



1618437

- A range of general purpose infrared distance detecting modules with fully integrated drive electronics.
- The analogue output versions of the modules are capable of detecting an object or body within the range 3 to 550cm (depending on selected model), the output voltage corresponding to the distance of the object from the sensor.
- The digital on/off modules can detect the presence of an object when it falls within the detection range of 10cm to 150cm (depending on selected model), the output being an open collector switching transistor.
- The modules will detect the presence / absence of objects with low influence of the colour or reflectivity of the object due to an optical triangulation measuring principle.
- The detectors require a connector, the connector housing is Order Code **361-6198** and the contact Order Code is **361-7210**.
- Applications include hand dryers, vending machines, office equipment, vehicle reversing aids, level detection, game machines, energy saving on doors and lighting, industrial control, consumer electronics

Sensing Distance	Supply Current	Supply Voltage (min)	(max)	Dimensions L x W x D (mm)	Mftrs List No.	Order Code
Analogue						
20cm to 150cm	50mA	4.5	5.5	13.5 x 44.5 x 18.9	GP2Y0A02YK0F	970-7891
4cm to 30cm	22mA	4.5	5.5	13.5 x 44.5 x 18.9	GP2Y0A41SK0F	161-8431
100cm to 550cm	mA50	4.5	5.5	17.6 x 58 x 22.5	GP2Y0A710K0F	161-8432
3cm to 30cm	50mA	4.5	5.5	21.6 x 44.5 x 18.9	GP2D150AJ00F	970-7875
Digital						
80cm to 120cm	50mA	4.5	5.5	8.7 x 15 x 9.6	GP2Y0D310K	161-8437
21cm to 27cm	40mA	4.5	5.5	13 x 29.5 x 13.5	GP2Y0D21YK0F	161-8438

411952

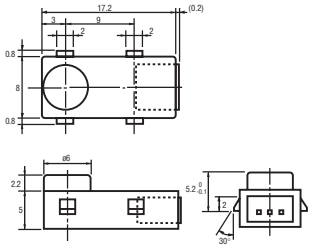
Sensing distance	Order Code	Price Each 1+	25+	100+	250+	500+
Analogue output types						
4cm to 30 cm	970-7859●	10.85	7.39	6.19	5.87	5.06
20cm to 150cm	970-7891●	12.81	8.73	7.31	6.93	5.98
4cm to 30cm	NEW! 161-8431●	7.11	6.40	5.76	5.19	4.67
100cm to 550cm	NEW! 161-8432●	17.07	15.35	13.82	12.44	11.19
3cm to 30cm	970-7875●	10.85	7.39	6.19	5.87	5.06
Digital output types						
20cm to 150cm	970-7905●	7.80	5.71	4.78	4.52	4.40
80cm to 120cm	NEW! 161-8437●	6.40	5.76	5.19	4.67	4.21
21cm to 27cm	NEW! 161-8438●	7.11	6.40	5.76	5.19	4.67

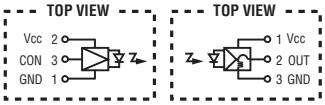
Separated Opto Switches

Matched Pair

KODENSHI







- Internally modulated infra-red LED and a matching photodetector mounted insepa-rate compact housings with lenses
- May be used up to 100cm separation
- Electrical connection is made by integral connector
- Logic output detector will drive TTL cir-cuits directly
- Integral light filtering and modulation pro-vide immunity to ambient light
- May be used for sensing applications where wide separation is required at an economic cost
- May also be used in reflective mode with a very long range
- 3 way cable assembly for emitter and detector available, lead length - 30cm

Detecting Distance:	100cm minimum @ Vcc 5V	Switching speeds:	0.5mS
Power Dissipation:	100mW maximum	Operating temperature range:	-10°C to +60°C

343629/206515

Mftrs. List No.	Order Code	Price Each 1+	5+	10+	25+	50+
PIE310/PID310D	118-2343●	15.59	14.33	12.73	9.31	8.67
Cable assembly	121-5660●	2.00	1.95	1.70	1.27	1.16

Ultra Violet Emitters

UV LED's

BIVAR Opto

3mm and 5mm



3mm and 5mm epoxy lensed UV LED's featuring a waterclear lens and high radiant flux power output. These devices offer an increased energy efficiency over conventional UV sources.
Typical applications include test and measurement, medical, security and currency checking.

Wavelength Min. (nm)	Max. (nm)	Output Power mW	Viewing Angle	Forward Voltage Typ.	Max.	Forward current Typ.
390	410	12	30°	3.7V	4.0V	30mA

339959.343574

Mftrs List No.	Order Code	Price Each 1+	10+	25+	100+	250+
LED5-UV-400-30	105-7106●	3.01	2.72	2.49	2.32	2.07

CAUTION: EMITS ULTRAVIOLET RADIATION
These devices radiate intense ultraviolet (UV) light when operated.
Exposure to UV radiation can be harmful to health.
Protect eyes and skin during operation.
Do NOT look directly at this device during operation.
Exposure to UV light, even for a brief period, can damage eyes.

RL Re-reeling available

Farnell

Ultra Violet Emitters - continued

UV LEDs, 3mm and 5mm



A selected range of low cost Ultra Violet (UV) LEDs in 3mm and 5 mm package styles.
The range includes various wavelength, power and half angle variants.
The UV LED is of particular use for compound analysis whereby a product may fluoresce when exposed to UV light. The wavelength of light emitted from the subject may be then monitored and processed.

CAUTION: Invisible UV Radiation, precautions must be taken when operating. During operation the UV LEDs radiate intense UV light. Do not look directly into the UV light, as this can be harmful to the eyes even for very brief periods of time.

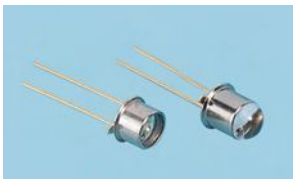
Size	Luminous Intensity (mcd)	Output Power (mW)	Half Intensity Angle	Peak Wavelength	Forward Voltage @ 10mA	Forward Current I_{FM}	Mftrs List No.	Order Code
3	1200	—	20°	400nm	3.2V	30	HUVL400-320B	120-0308
5	2200	1.8	10°	400nm	3.2V	30	HUVL400-510	120-0310
5	2800	1.8	10°	400nm	3.2V	30	HUVL400-510B	120-0311
5	2200	1.8	20°	400nm	3.2V	30	HUVL400-520B	120-0312
5	1700	1.8	30°	400nm	3.2V	30	HUVL400-530B	120-0313

240946

		Price Each				
Mftrs List No.	Order Code	1+	3+	5+	10+	25+
HUVL400-510	120-0310●	2.94	2.67	2.37	2.16	1.98
HUVL400-510B	120-0311●	3.10	2.79	2.47	2.25	2.06
HUVL400-520B	120-0312●	2.48	2.24	1.98	1.79	1.65
HUVL400-530B	120-0313●	3.10	2.79	2.47	2.25	2.06

TO-46 Package, Flat and Domed Lens

MARL



CAUTION: Invisible Laser Radiation, precautions must be taken when operating. During operation the UV LEDs radiate intense UV light. Do not look directly into the UV light, as this can be harmful to the eyes even for very brief periods of time.

Optical Power	View Angle	Peak Wavelength	I_F(mA) (max)	PIV (max)	Forward Voltage @ 10mA	Order Code
Flat Lens - Wide Viewing						
1mW	100°	370nm	15	5	3.5V	105-7077
Domed Lens - Narrow Viewing						
0.75mW	10°	370nm	15	5	3.5V	105-7079

221728

		Price Each				
Colour	Order Code	1+	3+	5+	10+	25+
Flat Lens	105-7077●	6.74	5.73	5.09	4.73	4.50
Domed lens	105-7079●	6.74	5.73	5.09	4.73	4.50

Emitters and Detectors

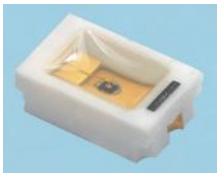
Surface Mount - OCU 400 Series

Ceramic UV

osa opto light

SMD

New



LED Size	3 x 2mm
Forward Current	20mA
Operating Temperature	-40°C to +85°C

Wavelength	Power Output	Mftrs. List No.	Order Code
411nm	11mW	OCU 400 411 OS	165-5536
403nm	11mW	OCU 400 403 OS	165-5537
378nm	2.2mW	OCU 400 378 OT	165-5538

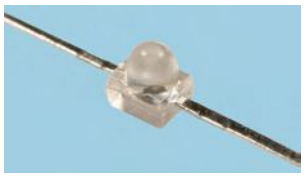
525402

		Price Each				
Wavelength	Order Code	1+	25+	100+	250+	500+
411nm	165-5536● RL	2.83	2.11	1.80	1.60	1.53
403nm	165-5537● RL	3.29	2.45	2.10	1.86	1.77
378nm	165-5538● RL	7.37	5.49	4.69	4.16	3.97

Phototransistors - 1.9mm IR

TT electronics OPTEK Technology

New



Axial

Viewing Angle	25°
Power Dissipation	130mW
Forward Current (typ)	20mA
Wavelength (typ)	890nm
Operating Temperature	-40°C to +85°C



Gull



Yoke



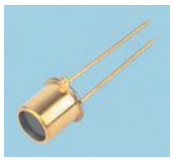
Reverse Gull

Each device in this series is a GaAlAs infrared LED mounted in a clear plastic SMD package. Each device has an integral molded lens that enables a narrow beam angle and provides an even emission pattern. This series offers four lead configurations, which are compatible with most automated mounting equipment.

528757

Lead Configuration	Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
Axial	OP270	167-8544●	0.320	0.300	0.194	0.183	– –
Gull	OP271	167-8545●	0.380	0.300	0.240	0.210	0.183
Yoke	OP272	167-8546●	0.390	0.300	0.250	0.210	0.183
Reverse Gull	OP273	167-8547●	0.400	0.320	0.260	0.230	0.194

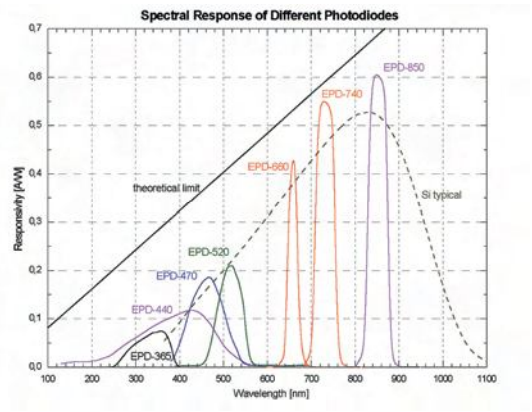
Wavelength Selective and UV Photodiodes



TO-46 Case



5mm Plastic Case



Spectral Response chart for Photodiodes

- Highly Wavelength Selective
- Addition Filters not required
- High signal to Noise Ratio
- Higher Responsivity than Traditional Silicon Photodiodes
- Rise / Fall times ~ 100ns
- Dark Currents <0.1nA
- Operating Temperature (TO can) -40 to +125°C

A range of highly wavelength selective photodiodes using patented technology which offers a responsivity of 0.5 A/W, this can be acheived without any additional filters. Unwanted signals from ambient light may be neglected because of the excellent selectivity of the devices.The following chart shows the spectral responsivity for the range of photodiodes. The range covers wavelengths from Infrared up into the UV region.

Typ Resp. at λ_p	Spectral Range (min)	Spectral Range (max)	Active Area	Dark Current $V_{R=.01V}$	Case Style	Wavelength Peak Sensitivity λ_p	Mftrs. List No.
0.07Sλ	245nm	400nm	1.96mm^2	0.002nA	TO-46	365nm	EPD-365-0/1.4
0.12Sλ	190nm	570nm	1.2mm^2	0.02nA	TO-46	440nm	EPD-440-0/1.45
0.12Sλ	430nm	510nm	0.13mm^2	0.05nA	5mm Plastic Lens	470nm	EPD-470-5/0.5
0.14Sλ	490nm	560nm	0.13mm^2	0.05nA	5mm Plastic Lens	525nm	EPD-520-5/0.5
0.12Sλ	620nm	700nm	0.13mm^2	0.2nA	5mm Plastic Lens	660nm	EPD-660-5/0.5
0.5Sλ	700nm	780nm	0.13mm^2	0.2nA	5mm Plastic Lens	740nm	EPD-740-5/0.5

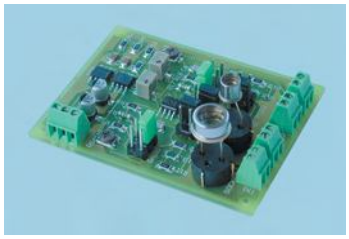
Mftrs. List No.
EPD-365-0/1.4 = 120-0314 EPD-470-5/0.5(RoHs) = 120-0327 EPD-660-5/0.5 = 120-0329
EPD-440-0/1.45 = 120-0315 EPD-520-5/0.5 = 120-0328 EPD-740-5/0.5(RoHs) = 120-0330

241019

Peak Wavelength	Order Code	Price Each 1+	3+	5+	10+	25+
365	120-0314●	32.40	29.90	28.30	25.42	24.45
440	120-0315●	32.40	29.90	28.30	25.42	24.45
470	120-0327●	5.00	4.18	3.93	3.51	3.28
525	120-0328●	5.00	4.18	3.93	3.51	3.28
660	120-0329●	8.06	6.72	6.32	5.66	5.27
740	120-0330●	7.26	6.04	5.69	5.09	4.74

Over 480,000 products online QGO

Photodiode 2-channel Amplifier Board



- Ideal for Photodiode Evaluation
- Two channels with Adjustable Gain
- Photodiodes Plug into Board or Connect to Screw Terminals
- On-Board Voltage Regulators

Note: the board is supplied without photodiodes

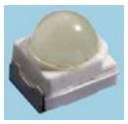
In most applications using photodiodes only very small photocurrents are generated. These currents normally range from a microampere down to picoampere and they cannot be measured by a usual multimeter, the multifunctional amplifier board provides this function by converting the minute photocurrents to voltages using transimpedance amplifiers.
The board has two independant channels, each with adjustable gain with links to select voltage or transimpedance amplifier type and also to cascade the amplifiers into a single two-stage amplifier.
Current gain is provided in the range 10^5 V/A....10^7 and voltage gain from 2 to 1000 V/V in single stage configuration. Higher gains up to 10^{10} V/A may be achieved in two-stage configuration.
The circuit is ideally operated with a dual power supply of ±9V to ±24V. For lower performance measurements a single supply of 24V to 36V may be used.The photodiodes plug directly into sockets or are externally connected via screw terminals. The output voltages are available on screw terminals.

241020

Description	Order Code	Price Each 1+
Photodiode Amplifier Board	**120-9955**	67.66

Infra Red Emitters SMT

OSRAM



TopLED® with Lens



SideLED®



Golden Dragon®



TopLED® (PLCC4)



SmartLED®

λ_{Peak} (nm)	Radiant Intensity min (mW/Sr)	I_F max (mA)	V_F typ (V)	Time off, on (ns)	Mftrs List No.	Order Code
850	6.3	100	1.5	12, 12	SFH4050-Z	144-1335
850	10	100	1.5	12, 12	SFH4250-Z	122-6347
850	10	100	1.5	12, 12	SFH4252	157-3491
850	25	100	1.5	12, 12	SFH4259-Z	122-6348
850	40	100	1.5	12, 12	SFH4258	157-3492
850	170	1	1.8	10, 10	SFH4230	124-2051
880	6.3	100	1.5	500, 500	SFH4289-Z	122-6349
880	7	100	1.5	500, 500	SFH421-Z	122-6346
940	—	1	1.8	20, 20	SFH4231	124-4119
950	8	100	1.5	10, 10	SFH4203-Z	122-6342
950	10	100	1.5	10, 10	SFH4205-Z	122-6343
950	24	100	1.5	10, 10	SFH4209-Z	122-6345

481972

Mftrs. List No.	Order Code	1+	25+	100+	250+
SFH4050-Z	SMD 144-1335● RL	0.45	0.32	0.28	0.26
SFH4250-Z	SMD 122-6347● RL	0.39	0.33	0.28	0.24
SFH4252	NEW SMD 157-3491● RL	0.43	0.34	0.29	0.26
SFH4259-Z	SMD 122-6348● RL	0.58	0.43	0.35	0.29
SFH4258	NEW SMD 157-3492● RL	0.52	0.41	0.36	0.33
SFH4230	SMD 124-2051●	3.55	3.00	2.68	2.26
SFH4289-Z	SMD 122-6349● RL	0.42	0.35	0.31	0.25
SFH421-Z	SMD 122-6346● RL	0.34	0.28	0.24	0.20
SFH4231	SMD 124-4119●	8.24	5.77	5.21	4.77
SFH4203-Z	SMD 122-6342● RL	0.34	0.28	0.24	0.20
SFH4205-Z	SMD 122-6343● RL	0.36	0.31	0.26	0.22
SFH4209-Z	SMD 122-6345● RL	0.43	0.36	0.31	0.26

Surface Mount - IR Emitters

osa opto light

SMD

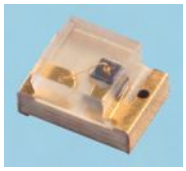
New



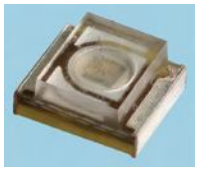
1206



1206 (lensed)



0805



PLCC2

Operating Temperature: -40°C to +85°C

	Forward Voltage	Forward Current	Wavelength	Mftrs. List No.	Order Code
1206 (lensed)	1.7V	50mA	880nm	OIS 330 880	165-5532
1206 (lensed)	2V	30mA	770nm	OIS 330 770	165-5531
1206	1.7V	50mA	875nm	OIS 150 880	165-5533
0805	1.7V	50mA	875nm	OIS 170 880	165-5534
PLCC2	1.75V	200mA	870nm	OHL 604 870	165-5535

525404

	Wavelength	Order Code	Price Each 1+	25+	100+	250+	500+
1206 (lensed)	880nm	**165-5532●** RL	0.510	0.380	0.320	0.290	0.270
1206 (lensed)	770nm	**165-5531●** RL	0.740	0.550	0.470	0.420	0.400
1206	875nm	**165-5533●** RL	0.440	0.330	0.280	0.250	0.236
0805	875nm	**165-5534●** RL	0.440	0.330	0.280	0.250	0.236
PLCC2	870nm	**165-5535●** RL	1.310	0.980	0.840	0.740	0.710

Infra-Red Emitting Diode

VISHAY

High Power - SMD



- Very high radiant power
- Low forward voltage
- Suitable for high pulse current operation
- High reliability

H = 2.7, W = 2.5, D = 2mm

Radiant Intensity @ 20mA	Half Angle	Peak Wavelength	Switching t_r, t_f(µs)	Mftrs. List No.	Order Code
3 / 15mW/Sr	12°	950nm	800 / 800ns	TSML1020	132-8301

457850

Mftrs. List No.	Order Code	Price Each 5+	25+	100+	500+	1K+
TSML1020	SMD **132-8301●**	0.51	0.39	0.35	0.31	0.30

Surface Mount IR Emitters

VISHAY

SMD

PLCC-2 Package



H = 1.65, W = 3.5, D = 2.8mm

Features:
- High reliability
- Low forward voltage
- PLCC-2 package
- Compatable with automatic placement equipment

Applications:
- Infrared source in tactile keyboards
- IR diode in low space applications
- Imiiter in miniature photo-interupters

Ultra fast GaAs technology IR emitting diodes, in miniture PLCC-2 package, with wide aperture and flat window, enables easy design of external optics.

Peak Wavelength λ_{peak} (nm)	Radiant Intensity max. (mW/sr)	I_F max. (mA)	I_F Pulsed @ 100 µs (A)	Vf max. (V)	Test, I_F @ V_F (mA)	V_R max. (V)	Order Code	Mftrs. List No.
890	22	100	1	1.6	100	5	132-8297	VSMF3710
940	20	100	1	1.6	100	5	132-8302	VSML3710
950	8	100	1.5	1.7	100	5	132-8303	VSMS3700

457898

Order Code	Price Each 5+	25+	100+	500+
SMD **132-8297●**	0.270	0.196	0.180	0.157
SMD **132-8302●**	0.182	0.138	0.121	0.110
SMD **132-8303●**	0.200	0.152	0.136	0.121

3mm High Power Infrared Emitter

OSRAM

New



L=5.2, Dia=3mm
Lead dia=0.6, Lead pitch=2.54

Viewing Angle	Power Dissipation	Voltage, Vf max	Current, If	Wavelength, typ	Temperature Range	Mftrs. List No.	Order Code
13°	180mW	1.5V	100mA	850nm	-40°C to +100°C	SFH4350	157-3493

511499

Order Code	Price Each 1+	25+	100+	250+	500+
157-3493● RL	0.45	0.35	0.32	0.28	0.27

RL Re-reeling available

Farnell

Emitters and Detectors - continued

Infra-Red Emitter - High Power

High Power - 5mm, T1¾



- High reliability
- High radiant power and intensity
- Low forward voltage
- Suitable for high pulse current operation

Radiant Intensity @ 100mA	Half Angle	Peak Response	Response t_r, t_f(µs)	Mftrs. List No.	Order Code
30 / 150mW/Sr	22°	940nm	800 / 800	TSAL5300	132-8298
80 / 400mW/Sr	10°	940nm	800 / 800	TSAL6100	132-8299

457851

Mftrs. List No.	Order Code	Price Each 5+	25+	100+	500+	1K+
TSAL5300	132-8298●	0.178	0.134	0.120	0.107	0.103
TSAL6100	132-8299●	0.184	0.138	0.123	0.109	0.105

Infrared Transmitters

Small Plastic Package



Case Style	Beam Angle (°)	Current I_F (mA) Min/Max	Voltage V_F (V)	Output Power (mW/cm²)	Wavelength (nm)	Mftrs List No.	Order Code
Side Emitting	40	20 / 50	1.6	0.40	935	OP140A	149-7862
Side Emitting	40	20 / 50	1.6	0.30	935	OP140B	149-7863
T 1	18	20 / 50	1.6	1.95	935	OP165A	149-7864
T 1	18	20 / 50	1.6	1.95	935	OP166A	149-7865
TO-46	18	100	2.0	8.0	890	OP232	149-7866
TO-46	18	100	2.0	10	890	OP233	149-7867
Side Emitting	40	20 / 50	1.8	60	880	OP240A	149-7869
T 1	18	20 / 50	1.8	2.7	880	OP265A	149-7871
T-1 3/4	50	1500 / 5000	4.0	210	880	OP290A	149-7872
T-1 3/4	50	100 / 2000	2.0	16	880	OP291A	149-7873
TO-18	60	100 / 200	2.0	16	880	OP293A	149-7874
T-1 3/4	50	1500 / 5000	4.0	44	880	OP295A	149-7875
T-1 3/4	50	1500 / 5000	4.0	33	880	OP295B	149-7876
TO-18	25	100 / 200	2.0	3.0	880	OP298A	149-7877

497367

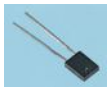
Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+
OP140A	149-7862●	0.85	0.44	0.41	0.39
OP140B	149-7863●	0.85	0.44	0.41	0.39
OP165A	149-7864●	0.96	0.50	0.47	0.44
OP166A	149-7865●	1.08	0.56	0.52	0.50
OP232	149-7866●	2.71	2.33	2.17	2.03
OP233	149-7867●	2.40	2.08	1.97	1.86
OP240A	149-7869●	0.82	0.44	0.41	0.39
OP265A	149-7871●	0.78	0.62	0.46	0.44
OP290A	149-7872●	0.88	0.48	0.44	0.42
OP291A	149-7873●	0.92	0.48	0.44	0.42
OP293A	149-7874●	0.73	0.44	0.41	0.39
OP295A	149-7875●	0.88	0.48	0.44	0.42
OP295B	149-7876●	0.92	0.48	0.44	0.42
OP298A	149-7877●	0.88	0.44	0.41	0.39

Infra-Red Emitters - Plastic Package



5mm/T1¼
Lead pitch=2.54
Flat: Cathode
(SFH486=Flat: Anode)

5mm/T1¼
SFH485F-1: Flat top
H=5.0, Lead pitch=2.54
Flat: Cathode

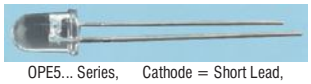


Side Viewing
SEP8506-3:
5.7 x 4.5 x 2.3
Lead pitch=2.54



Side viewing
SEP8736-3
3.3 4.57 4.29
Lead pitch=2.54

TO-18
Lead pitch 2.54
tab: cathode



OPE5... Series, Cathode = Short Lead, Anode = 24mm (Min)



Side Viewing
CQX48B
5.0 5.0 2.65
Lead pitch=2.54

1.8mm/T¼
CQY37N
L=2.9, Lead pitch=2.54
Flat: Cathode

Peak Wavelength	Light Output mW @ 1_F (mA)	Half Angle	Switching (tr, tf)	Mftr.	Mftrs. List No.	Order Code
5mm/T1¾						
880nm	90W/sr@100	10°	25ns	KNON	OPE5587	489-0942
880nm	80–160mW/sr@100	8°	0.6µs, 0.5µs	OSRAM	SFH484-2	121-2737
880nm	3.15–6.3mW/sr@100	80°	0.6µs, 0.5µs	OSRAM	SFH485P	121-2738
880nm	60mW/Sr @ 100	22°	0.6µs, 0.5µs	OSRAM	SFH486	121-2759
940nm	80W/sr@100	10°	25ns	KNON	OPE5594A	489-0929
950nm	15mW/sr@100	50°	1µs	OSRAM	LD271	121-2748
950nm	>40mW/sr@100	34°	0.5µs	OSRAM	SFH415-U	121-2749
875nm	30-50mW/sr @ 100	12°	0.6µs	VISH	TSHA5201	104-5516
nm	25-40mW/sr @ 100	12°	0.6µs, 0.6µs	VSH	TSHA5200	104-5522
950nm	15W/sr@100	15°	0.4µs	VSH	TSUS5202	104-5377
950	60mW/Sr	18	10ns	OSRAM	SFH4502	122-6337
950	250mW/Sr	4	10ns	OSRAM	SFH4503	122-6338
950	110mW/Sr	7	10ns	OSRAM	SFH4501	122-6339
950	11mW/Sr	22	0.4µs	VSH	TSUS5400	104-5378
3mm/T1						
875nm	16-30mW/Sr @ 100	20°	0.6µs, 0.6µs	VSH	TSHA4401	104-5517
880nm	2–4mW/cm² @100	15°	0.6µs	HWL	SEP8705-3	120-1203
940nm	0.5mW/Sr @ 20	16°	0.6µs, 0.35µs	OPTEK	OP165D	178-945
950nm	7-18mW/sr @ 100	16°	0.8µs, 0.8µs	VISH	TSUS4300	104-5518
nm	16–30mW/cm² @100	25°	0.8µs	VSH	TSAL4400	104-5420
1.8mm/T¾						
950nm	2.2-5mW/sr @ 50	12°	0.4µs, 0.45µs	VISH	CQY37N	104-5521
TO-18 Narrow Angle						
890nm	4.8mW @ 100	25°	0.5µs, 0.25µs	OPTEK	OP298B	491-305
TO-18 Wide Angle						
890nm	26mW/ @ 100	60°	0.5µs, 0.25µs	OPTEK	OP293B	491-299
Side Viewing						
880nm	1.7mW (min) @20	10°	0.7µs	HWL	SEP8736-3	120-1209
890nm	0.4–1.2mW/cm²	40°	0.5µs, 0.25µs	OPTEK	OP240B	316-7537
935nm	–mW/cm² @ 100	50°	0.6µs	HWL	SEP85063	120-1204
950nm	mW (min) @20	30°	400ns	SLX	TSKS5400S	149-7669

206221

Order Multiple=5 Mftrs. List No.	Order Code	Price Each 5+	25+	100+	250+	1K+
5mm/T1¾						
OPE5594A	489-0929●	0.600	0.510	0.420	0.400	0.360
OPE5587	489-0942●	0.420	0.380	0.300	0.260	0.230
LD271	121-2748●	0.770	0.760	0.670	0.360	0.240
SFH415-U	121-2749●	0.240	0.230	0.220	0.176	0.151
SFH484-2	121-2737●	0.360	0.320	0.260	0.230	0.200
SFH485P	121-2738●	0.530	0.520	0.510	0.420	0.390
SFH486	121-2759●	0.410	0.360	0.280	0.220	0.198
TSHA5201	104-5516●	0.280	0.260	0.240	0.162	0.143
TSHA5200	104-5522●	0.330	0.250	0.200	0.145	0.126
TSUS5202	104-5377●	0.300	0.196	0.174	0.092	0.081
TSUS5400	104-5378●	0.182	0.121	0.096	0.061	0.055
3mm/T1		5+	25+	100+	500+	1K+
OP165D	178-945●	1.750	1.490	1.380	0.830	0.650
SEP8705-3	120-1203●	1.000	0.940	0.910	0.890	– –
TSHA4401	104-5517●	0.310	0.290	0.270	0.191	0.160
TSUS4300	104-5518●	0.137	0.112	0.102	0.076	0.068
TSAL4400	104-5420●	0.240	0.167	0.147	0.103	0.092
Order Multiple=5						
1.8mm/T1¾		5+	25+	100+	500+	1K+
CQY37N	104-5521●	0.340	0.280	0.260	0.193	0.167
Order Multiple=1						
TO-18 Narrow Angle		1+	25+	100+	500+	1K+
OP298B	491-305●	0.880	0.440	0.410	0.390	0.360
TO-18 Wide Angle						
OP293B	491-299●	0.880	0.440	0.410	0.390	0.360
Order Multiple=5						
Side Viewing		5+	25+	100+	500+	1K+
OP240B	316-7537●	0.970	0.830	0.710	0.540	0.520
Order Multiple=1						
		1+	25+	100+	500+	1K+
SEP85063	120-1204●	0.970	0.910	0.890	0.870	0.820
SEP8736-3	120-1209●	0.970	0.910	0.890	0.870	0.820
TSKS5400S	149-7669●	0.610	0.380	0.340	0.310	0.300
Order Multiple=1						
		1+	25+	100+	250+	+
SFH4502	122-6337● RL	0.450	0.320	0.280	0.260	– –
SFH4503	122-6338● RL	0.370	0.310	0.260	0.220	– –
SFH4501	122-6339● RL	0.490	0.350	0.310	0.280	– –

RL Re-reeling available

5mm High Power Infrared Emitter

OSRAM

New



L=9, Dia=5mm
Lead dia=0.8, Lead pitch=2.54

Viewing Angle	Power Dissipation	Voltage, Vf max	Current, If	Wavelength, typ	Temperature Range	Mftrs. List No.	Order Code
6°	180mW	1.5V	100mA	850nm	-40°C to +100°C	SFH4550	157-3495

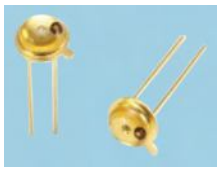
523826

Order Code	Price Each 1+	25+	100+	250+	500+
157-3495● RL	0.45	0.35	0.32	0.28	0.27

L9337 Infrared LED

HAMAMATSU

High power LED for optical switches



Features
- High radiant output power
- High reliability
- Low price

Applications
- Optical switches

External diameter	5.4mm	Lead length	13.5mm
Head diameter	4.2mm	Lead pitch	2.54mm
Height	2.3mm	Operating temperature range	-30°C to +85°C

L9337 is an infrared LED developed for optical switches. Because a high-power LED chip is mounted, 9337 provides high radiant output power, yet is low cost due to the improved manufacturing process. L9337 also achieves a directivity that matches applications using a light-transmitting lens.

Current, forward (If)	Power Dissipation	Voltage, Vf (max)	Wavelength (typ)	Mftrs. List No.	Order Code
80mA	150mW	1.55V	870nm	L9337	149-5548

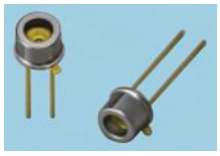
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Mftrs. List No.	Order Code	Price Each 1+	10+	25+
L9337	149-5548●	2.30	2.07	1.88

L9437 Infrared LED

HAMAMATSU

LED emitting collimated light for rotary encoder



Features
- Collimated light beam
- Uniform light spot
- Narrow directivity: ±5°
- High speed response: 40MHz typ.
- High reliability

Applications
- Rotary encoder

L9437 is an infrared LED developed for rotary encoders. By improving the aspherical lens a more highly collimated beam of near infrared lighthas been achieved. The lead pin of L9437 has no step piece that is usually formed at the lead base brazed to the package, thus eliminating the restriction in printed circuit board design.

External diameter	5.4mm	Lead length	13.5mm
Head diameter	4.65mm	Lead pitch	2.54mm
Height	5.3mm	Operating temperature range	-30°C to +85°C

Current, forward (If)	Power Dissipation	Voltage, Vf (max)	Wavelength (typ)	Mftrs. List No.	Order Code
80mA	150mW	1.75V	870nm	L9437	149-5560

497533

Mftrs. List No.	Order Code	Price Each 1+	10+	25+
L9437	149-5560●	5.58	5.30	4.97

L8957 Infrared LED

HAMAMATSU

Low cost LED ideal for optical encoders

L8957 is an infrared LED using a low-cost lens and available at a lower price than other products up to now.

Features
- Low price – uses low cost lens

Applications
- Optical encoders and optical switches

External diameter	5.4mm	Lead length	13.5mm
Head diameter	4.65mm	Lead pitch	2.54mm
Height	4.7mm	Operating temperature range	-30°C to +85°C

Current, forward (If)	Power Dissipation	Voltage, Vf (max)	Wavelength (typ)	Mftrs. List No.	Order Code
80mA	150mW	1.75V	870nm	L8957	149-5559

497530

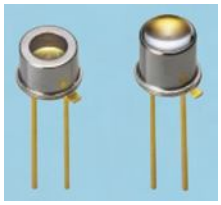
Mftrs. List No.	Order Code	Price Each 1+	10+	25+
L8957	149-5559●	3.23	3.06	2.87

£ € 40,000 PRICES REDUCED

L7850 Infrared LED

HAMAMATSU

Peak emission wavelength: 1.45µm



Features
- High radiant output power

Applications
- Light source for moisture meter
- Light sorce for photosensitive material

L7850 series is a long wavelength LED using as InGaAs chip. Peak emission occurs at 1.45µm, making the L7850 series ideal for detection of water content or moisture.

External diameter	5.4mm	Lead length	13.5mm
Head diameter	4.2mm	Lead pitch	2.54mm
Height	2.3mm	Operating temperature range	-30°C to +85°C

Current, forward (If)	Power Dissipation	Voltage, Vf (max)	Wavelength (typ)	Mftrs. List No.	Order Code
80mA	150mW	1.5V	1450nm	L7850	149-5561

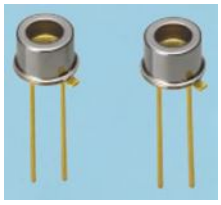
497517

Mftrs. List No.	Order Code	Price Each 1+	10+	25+
L7850	149-5561●	22.32	21.43	20.08

L7866 Infrared LED

HAMAMATSU

Peak emission wavelength: 1.3µm



Features
- High radiant output power

Applications
- Reference light source for moisture meter
- Light source for photosensitive material

L7866 is a long-wavelength LED using an InGaAs chip. The peak emission occurs at 1.3µm, making L7866 ideal for reference light sources when detecting water content or moisture.

External diameter	5.4mm	Lead length	13.5mm
Head diameter	4.7mm	Lead pitch	2.54mm
Height	3.6mm	Operating temperature range	-30°C to +85°C

Current, forward (If)	Power Dissipation	Voltage, Vf (max)	Wavelength (typ)	Mftrs. List No.	Order Code
80mA	150mW	1.5V	1300nm	L7866	149-5564

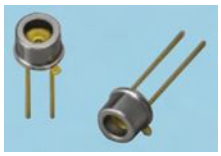
497538

Mftrs. List No.	Order Code	Price Each 1+	10+	25+
L7866	149-5564●	22.32	21.43	20.08

L8245 Infrared LED

HAMAMATSU

Peak emission wavelength: 1.65µm



Features
- High radiant output

Applications
- Light source for methane gas detection

L8245 is a long-wavelength infrared LED using an InGaAs chip. The peak emission occurs at a wavelength near the methane gas absorbtion band, making L8245 ideal for a light source for methane gas detection.

External diameter	5.4mm	Lead length	13.5mm
Head diameter	4.7mm	Lead pitch	2.54mm
Height	3.6mm	Operating temperature range	-30°C to +85°C

Current, forward (If)	Power Dissipation	Voltage, Vf (max)	Wavelength (typ)	Mftrs. List No.	Order Code
80mA	150mW	1.5V	1650nm	L8245	149-5563

497537

Mftrs. List No.	Order Code	Price Each 1+	10+	25+
L8245	149-5563●	22.32	21.43	20.08

L9907 Infrared LED

HAMAMATSU

AlGaInP resonant cavity LED for POF data communication



Features
- High speed response: 70MHz
- Optical output power: 1.1mW
- Emission area diameter: 100µm
- Stable optical output with low temperature dependence: 85°C/25°C=70%

Applications
- POF (Plastic Optical Fiber) comunication
- Light source for optical switches

External diameter	5.4mm	Lead length	13.5mm
Head diameter	4.7mm	Lead pitch	2.54mm
Height	2.7mm	Operating temperature range	-30°C to +85°C

Current, forward (If)	Power Dissipation	Voltage, Vf (max)	Wavelength (typ)	Mftrs. List No.	Order Code
50mA	1.1mW	2.4V	660nm	L9907	149-5565

RL Re-reeling available

Farnell

Emitters and Detectors - continued

L9907 Infrared LED - continued

AlGaInP resonant cavity LED for POF data communication - continued

497539

Mftrs. List No.	Order Code	Price Each 1+	10+	25+
L9907	**149-5565●**	9.94	9.54	8.94

Plastic Infrared Emitting Diode



167-8540



167-8555

TT electronics OPTEK Technology

New

SMD

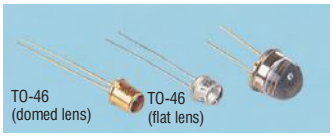
Each device in this series is a high intensity gallium aluminum arsenide infrared emitting diode that is suited for use as a PCBoard mounted slotted switch or an easy mount PCBoard interrupter.

	167-8540	167-8555
Viewing Angle	40°	50°
Power Dissipation	100mW	200mW
Forward Current (typ)	20mA	20mA
Wavelength (typ)	890nm	890nm
Operating Temperature	-40°C to +100°C	-65°C to +125°C

528767

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
OP245A	**167-8540●**	0.74	0.69	0.42	0.40	0.39
OP233W	**167-8555●**	2.27	2.08	1.33	1.27	1.22

Infra-Red Emitters - Sealed Metal Package



TO-46
Lead pitch=2.54,
Tag: Cathode
Anode connected to case.

Light Output mW @ 1_F (mA)	Half Angle	Peak Wavelength	Switching tr,tf (ns)	Mftr.	Mftrs. List No.
TO-46 Narrow Angle (Domed Lens)					
5@100	18°	935nm	1	OPTEK	OP133
7.0@100	20°	880nm	0.6	HONEYWELL	SE5470-3
9	20	880	1.5	QT	F5D2
3.5@100	15°	940nm	1	QT	LED55B
5.4@100	15°	940nm	1	QT	LED55C
TO-46 Wide Angle (Flat Lens)					
12@100	80°	880nm	1.5	QT	F5E1

◆ Power emitted about the mechanica axis of the package into 6.35mm dia. aperture placed 36.3mm from top of flange.

221666

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	1K+
TO-46 Narrow Angle					
OP133	**316-7549●**	2.77	1.37	1.26	1.22
SE5470-3	**327-359●**	3.00	2.86	2.75	2.70
F5D2	**102-1135●**	1.65	1.12	0.81	0.75
LED55B	**102-1136●**	1.81	1.42	1.04	0.77
LED55C	**102-1137●**	2.21	1.68	1.16	0.80
TO-46 Wide Angle					
F5E1	**102-1139●**	1.65	1.12	0.81	0.75

Infra-Red Emitter - Panel Mounting, IP67 Rated

CML INNOVATIVE TECHNOLOGIES WHERE INNOVATION COMES TO LIGHT



Body L=15, Bezel dia.=13, Bezel H=7, Thread=M8 x 0.75, Cathode=Short Lead

- Special optics to give a high radiant intensity: 7.2mW/sr
- 30° viewing angle
- Pulsed forward current: 1.2A
- Pulse width: <10µs
- Wavelength: 940nm
- Operating temperature: -45°C to +80°C
- Duty ratio: 1:100
- Reverse voltage: 5V
- **IP67** Rated

206565

Mftrs. List No.	Order Code	Price Each 1+	10+	25+	50+
19200000	**110-5531●**	4.09	3.86	3.59	2.76

Infra-Red Emitter - Panel Mounting



CQW13 infra-red emitter in bright plated housing with mirror reflector and optical system, giving high radiation intensity (720mW/Sr typ.) and greatly increased transmission distance. Designed for pulse operation (1.5A max).

Body L=18, Bezel dia.=13, Thread=M8#0.75, Short Lead: Cathode

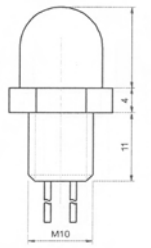
Half Angle	20°typ.	Switching Time	1.0µs
Peak Response	950nm	Temperature Range	-25°Cto +100°C

206222

Mftrs. List No.	Order Code	Price Each 1+	25+	100+
RTM5070	**121-5798●**	8.03	6.55	5.54

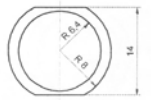
Infrared 'Jumbo' LEDs





- Illumination for CCD Cameras
- Target Designation for Night-vision Systems
- Remote Control
- Optical Communications
- Measurement systems

For applications where high levels of infrared illumination are required. constructed using six chips soldered on a metal stud with either 20° or 40° viewing angle, these devices offer fast switching times and high output powers.
The case conprises of an M10 stud with an integral lens, connections are via flying leads. (red = Anode, white = Cathode).



Lens height = 13mm (20°), 11.8mm (40°)

Peak Wavelength	Forward Voltage @250mA	Radiant Power	DC Forward Current	Viewing Angle	Mftrs List No.	Order Code
810nm	13V dc	225mW	250mA	20°	ELJ810-228B	120-0325
810nm	13V dc	225mW	250mA	40°	ELJ810-248B	120-0326

241025

Quantity Description	Order Code	Price Each 1+	5+	10+	25+	50+
Jumbo IR LED 20°	**120-0325●**	14.70	13.78	13.22	12.47	12.19
Jumbo IR LED 40°	**120-0326●**	14.70	13.78	13.22	12.47	12.19

Ostar Observation

OSRAM

New

SMD





SFH 4730
- Black frame to minimize scattered light
- 3W optical power

SFH 4740
- White frame to achieve high optical power
- 3.6W optical power

- Active chip area 2.1 x 5.4mm2
- Maxinum DC-current 1A
- Low thermal resistance (2.8K/W)
- Spectral emission at 850nm
- ESD save up to 2kV acc. to JESD22-A114-B
- Eye safety precautions given in IEC 60825-1 and IEC 62471 have to be followed
- Applications include infrared Illumination for CMOS cameras, surveillance systems, IR data transmission, driver assistance systems

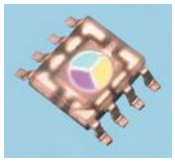
Viewing Angle	Power Output (W)	Power Dissipation (W)	Forward Current (A)	Forward Voltage (V)	Wavelength (typ) (nm)	Mftrs. List No.	Order Code
120°	3	21	1	18	850	SFH4730	160-3324
120°	3.6	21	1	18	850	SFH4740	160-3325

523953

	Mftrs. List No.	Order Code	Price Each 1+	5+	10+	25+
3W	SFH4730	**160-3324●**	45.43	41.30	37.86	36.64
3.6W	SFH4740	**160-3325●**	45.43	41.30	37.86	36.64

MCS3 Colour Sensors

JEN-COLOUR



1200316



1200319

Mftrs. List Nos: MCS3AS = 120-0316
MCS3BT = 120-0319

RL Re-reeling available

Farnell

- Rapid Colour Recognition
- 3 x On-chip Integrated PIN Photodiodes
- Leaded and SMD Package Versions
- Dielectric Filters for the three colour ranges: Red, Green and Blue
- TO5 versions with/without IR-Blocking
- SMD version

Applications:
- Quality Control
- Production Monitoring
- Control of Manufacturing
- Detection of Colour Marks

The **MCS3** colour sensors are made up of 3 x Si-PIN photo diodes integrated onto a single chip. They are constructed as segments of a ring with the diameter of 2,0 mm. The design uses Si-PIN photo diodes which allow signal frequencies up to MHz-range. In order to achieve low cross talk between the photodiodes, the individual sectors are separated from each other by additional structures. Each of the photodiodes are sensitised with a dielectric spectral filter for a specific colour range from the primary colours red, green and blue. The individual outputs are then accessable for processing.
The range is further enhanced by variants with infrared filtering which give considerable attenuation to wavelengths above 725nm.
The **MCSi** colour sensors feature a hexagonal matrix of 3 x 19 Si-PIN photodiodes on one substrate, each photodiode having an individual filter above it. These devices average the colour signal from the whole sensing area and makes the unit less sensitive to images which are not central onto the array.
A development board is available for the evaluation and testing of the sensors for colour recognition. Specific adapter boards allow the TO-5 and SOP8 packages to be utilised. Four white light LEDs illuminate a test surface under an incident angle of 45°(approx.). At a distance of 20 mm along the surface, diffused reflected light is detected and digitised by the MCS colour sensor.
Communication between a PC computer and the MCS-EB1 development board is via an RS232 interface. Through this interface the sensor data may be read and parameters for the sensors set up. The PC software allows manual gain selection for the current-voltage converter. In addition to the 10-bit ADC output values obtained for the various RGB photocurrents, the normalised colour portions and mixed colours are represented on an animated screen in real-time.
To complement the sensors a dedicated four channel SMD transimpedance amplifier is available in a SOP16 package.

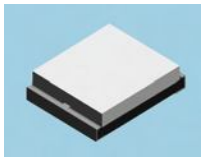
Rev. Voltage (typ)	Dark Current (nA)	Rise / Fall Time (µ)	Crosstalk %	Lead Cap. (pF) V_R=5V	Noise Equ. Pwr. W/√Hz	Package Style	Mftrs List No.
5V	0.1	<1	0.5%	50	$<10^{-13}$	SO-8	MCS3AS
9V	0.1	<1	0.5%	50	$<10^{-13}$	TO-5	MCS3BT
Field of Spectral Sensitivity	λ_B	400 - 510nm					
	λ_G	490 - 610nm					
	λ_R	590 - 750nm					

241023

Description	Order Code	Price Each 1+	3+	5+
Colour Sensor SOP8	SMD 120-0316●	27.89	25.74	24.36
Colour Sensor TO-5 with I/R filter	120-0319●	42.21	38.97	36.18

PIN Photodiode Detector

Miniature Flat Plastic Package



H = 1.1, W = 5, D = 4mm

The TEMD PIN Photodiode is a high speed and high sensitivity device in a miniature flat plastic package. Its top view construction makes it ideal as a low cost replacement of TO-5 devices in many applications. The large active area combined with a flat case gives a high sensitivity at a wide viewing angle

TEMD 5000 - Due to the water clear epoxy the device is sensitive to visible and infrared radiation

TEMD 5100 - The epoxy package itself is an IR filter, spectrally matched to GaAs or GaAs on GaAlAs IR emitters.

Reverse Voltage (Max.)	Dark Current	Diode Capacitance	Wavelength Peak Sens.	Wavelength Range	Half Angle	Mftrs List No.	Order Code
60V	2nA	70 pF	900nm	600 - 1050 nm	±65°	TEMD5000	132-8295
60V	2nA	70 pF	950nm	840 - 1050 nm	±65°	TEMD5100	132-8296

457676

Package Type	Order Code	Price Each 1+	25+	100+	250+	500+
Wide Response IR Filter	132-8295●	1.10	0.83	0.76	0.69	0.66
	132-8296●	1.13	0.85	0.78	0.71	0.68

PIN Photodiode Detector

Silicon Package



- High radiant sensitivity
- Low junction capacitance
- Plastic package with universal IR filter

Side View H (Body) = 6, W = 4.5, D = 5mm
T-1¾ H (Body) = 8.6, Dia. = 5.0, Lead = 26.3mm

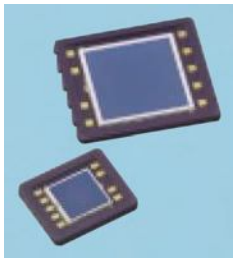
Forward Voltage (Typ/Max)	Dark Current	Diode Capacitance	Wavelength Peak Sens.	Wavelength Range	Half Angle	Mftrs List No.	Order Code
1/1.3 V	1nA	11 pF	940nm	790 - 1050 nm	±20°	BPV10NF	132-8399
1/1.3 V	2nA	70 pF	940nm	790 - 1050 nm	±60°	BPV22NF	132-8400

457652

Package Type	Order Code	Price Each 1+	25+	100+	250+	500+
T - 1¾	132-8399●	0.70	0.53	0.46	0.41	0.34
Side View	132-8400●	0.77	0.58	0.50	0.44	0.36

S5106 / S5107 Si PIN Photodiode

Chip carrier package for surface mounting



S5106 and S5017 are Si PIN photodiodes sealed in chip carrier packages suitable for surface mounting using automated solder reflow techniques. These photodiodes have larger active areas, making them suitable for spatial light transmission where a wide field-of-view angle is required. Other applications include POS scanners, power meters and analytical instruments.

S5106: H=10.6, W=8.80, D=1.26
S5107: H-16.5, W=15.4, D=1.26

Features
- Ceramic chip carrier package for surface mount
- Suitable for solder reflow
- High sensitivity

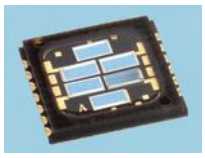
Applications
- Spatial light transmission
- Lasar radar
- Power meter
- Bar-code reader

Active Area	Voltage Vr max	Peak Wavelength	Operating Temperature Range	Mftrs. List No.	Order Code
5mm²	30V	960nm	-40°C to +100°C	S5106	149-5570
10mm²	30V	960nm	-40°C to +100°C	S5107	149-5571

497562

Mftrs. List No.	Order Code	Price Each 1+	10+	25+
S5106	SMD 149-5570●	12.28	11.79	11.04
S5107	SMD 149-5571●	34.99	33.60	31.50

Photodiode



528650

Wavelength (typ)	Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
890nm	OPR2100T	167-8682●	10.25	9.10	5.86	5.54	5.32

S1087 and S1133 Series Si Photodiode

Ceramic package photodiode with low dark current



Applications
- Exposure meter
- Illuminometer
- Camera auto exposure
- Strobescope light control
- Copier
- Display light control
- Optical switch

S1087 / S1133 series are ceramic package photodiodes that offer low dark current. Ceramic package used is light-impervious, so no stray light can reach the active area form the sides or the back. This allows reliable optical measurements in the visible to near infrared range, over a wide dynamic range from low light levels to high light levels.

Order Code	Height	Width	Depth	Lead length	Lead pitch
149-5566	1.5mm	6.0mm	5.0mm	12mm	3.0mm
149-5567	1.5mm	8.0mm	6.0mm	9mm	5.0mm

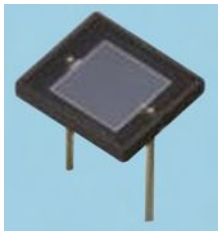
Active Area	Voltage Vr max	Peak Wavelength	Operating Temperature Range	Mftrs. List No.	Order Code
1.3mm²	10V	560nm	-10°C to +60°C	S1087	149-5566
2.4mm × 2.8mm	10V	560nm	-10°C to +60°C	S1133	149-5567

497549

Mftrs. List No.	Order Code	Price Each 1+	10+	25+
S1087	149-5566●	3.45	3.30	3.11
S1133	149-5567●	3.85	3.71	3.47

S2387 Series Si Photodiode

For visible to IR, general-purpose photometry



Features
- High sensitivity
- Low dark current
- High linearity

Applications
- Analytical equipment
- Optical measurement equipment, etc.

Order Code	Height	Width	Depth	Lead length	Lead pitch
149-5569	2.0mm	10.1mm	8.9mm	10.5mm	7.4mm

Active Area	Voltage Vr max	Peak Wavelength	Operating Temperature Range	Mftrs. List No.	Order Code
5.8mm²	30V	960nm	-20°C to +60°C	S2387-66R	149-5569

RL Re-reeling available

Emitters and Detectors - continued

S2387 Series Si Photodiode - continued

For visible to IR, general-purpose photometry - continued

497559

Mftrs. List No.	Order Code	Price Each 1+	10+	25+
S2387-66R	149-5569●	18.46	17.72	16.61

HAMAMATSU

S5971, S5972 and S5973 Series Si PIN Photodiode

High-speed photodiodes



Features
- High sensitivity
- High reliability

Applications
- Optical fiber communications
- High-speed photometry
- Violet laser detection

S5971, S5972 and S5973 series are high-speed Si PIN photodiodes designed for visible to near infrared light detection. These photodiodes provide wideband characteristics at a low bias, making them suitable for optical communications and other high-speed photometry.

Height	External Diameter	Head Diameter	Lead length	Lead pitch
3.6mm	5.4mm	4.7mm	13mm	2.54mm

Voltage Vr max	Peak Wavelength	Operating Temperature Range	Mftrs. List No.	Order Code
20V	900nm	-40°C to +100°C	S5971	149-5572
20V	800nm	-40°C to +100°C	S5972	149-5573
20V	800nm	-40°C to +100°C	S5973	149-5575

497566

Mftrs. List No.	Order Code	Price Each 1+	10+	25+
S5971	149-5572●	4.18	3.96	3.73
S5972	149-5573●	5.23	4.96	4.65
S5973	149-5575●	10.44	9.92	9.31

HAMAMATSU

S2382 Si APD

Low bias operation, for 800nm band



Features
- Stable operation at low bias
- High-speed response
- High sensitivity and low noise

Applications
- Spatial light transmission
- Rangefinder

Temperature operating range -20°C to +85°C

Height	External Diameter	Head Diameter	Lead Length	Lead Pitch	Peak Wavelength	Mftrs. List No.	Oerder Code
3.7mm	5.4mm	4.7mm	13mm	2.54mm	800nm	S2382	149-5582

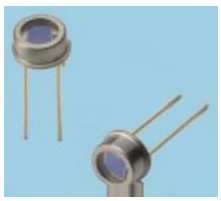
497570

Mftrs. List No.	Order Code	Price Each 1+	10+	25+
S2382	149-5582●	59.64	57.26	53.68

HAMAMATSU

S1223 Series Si PIN Photodiode

For visible to IR, precision photometry



Features
- High sensitivity
- High reliability
- High-speed response
- Low capacitance

Applications
- Optical measurement equipment
- Analytical equipment, etc.

Height	External Diameter	Head Diameter	Lead length	Lead pitch
4.1mm	9.1mm	8.1mm	20mm	5.08mm

Voltage Vr max	Peak Wavelength	Operating Temperature Range	Mftrs. List No.	Order Code
30V	960nm	-40°C to +100°C	S1223	149-5587

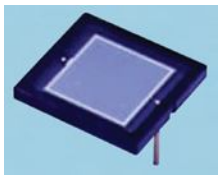
497577

Mftrs. List No.	Order Code	Price Each 1+	10+	25+
S1223	149-5587●	7.76	7.09	5.06

S1337 Series Si Photodiode

HAMAMATSU

For UV to IR, precision photometry



Features
- High UV sensitivity
- Low capacitance

Applications
- Analytical equipment
- Optical measuring equipment

Height	Width	Depth	Lead length	Lead pitch
16.5mm	15.0mm	2.15mm	10.5mm	12.5mm

Voltage Vr max	Peak Wavelength	Operating Temperature Range	Mftrs. List No.	Order Code
5V	960nm	-20°C to +60°C	S1337-1010BR	149-5583

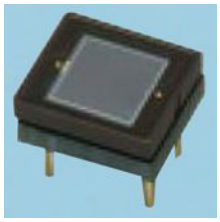
497573

Mftrs. List No.	Order Code	Price Each 1+	5+	10+
S1337-1010BR	149-5583●	40.55	38.93	36.90

S9269 Si Photodiode with Preamp

HAMAMATSU

Photodiode and preamp integrated with feedback resistance and capacitance



Features
- Si photodiode for visible to near IR Si precision photometry
- Small package
- FET input operational amplifier with low power dissipation
- Low noise and NEP

Applications
- Precision photometry
- General-purpose optical measurement

S9269 is a low-noise photosensor consisting of an Si photodiode, op amp and feedback resistance and capacitance, all integrated into a ceramic package. These photosensors are ideal for a wide range of photometric applications including analytical equipment and measurement equipment. The active area of the photodiode is internally connected to the GND terminal making it highly resistant to EMC noise.

Active Area	Current Supply (max)	Peak Wavelength	Operating Temperature Range	Mftrs. List No.	Order Code
5.8mm²	0.6mA	960nm	-20°C to +60°C	S9269	149-5585

497576

Mftrs. List No.	Order Code	Price Each 1+	5+	10+
S9269	149-5585●	99.33	94.74	90.56

PIN Photodiode Detector - Plastic Package

EG & G VACTEC



H=6.0, W=8.0, D=1.8
Cathode indentified by dot on body

- Blue enhanced silicon PIN photodiode
- Excellent for monitoring ambient visible light
- Industry standard in street light control and security lighting markets
- Includes filter which removes sensitivity to unwanted infra-red
- For applications involving visible light
- Active area: 5.16mm²
- Spectral range: 330-720 nm

206513

Mftrs. List No.	Order Code	Price Each 1+	25+	50+	100+	250+
VTB8440BH	118-2340●	2.16	2.12	2.04	1.96	1.75

Photodiode Detectors - High output with filter options

SILONEX



- Standard, IR and BG spectral response
- High output for package size
- Active area: 9.8mm² & 2.0mm²

Housed in epoxy coated ceramic packages, these devices feature high photocurrent output for the package size. Available in standard spectral response, I_R filtered (for daylight rejection applications) and BG filtered (for daylight sensing applications). With two active areas available these devices are an excellent balance of performance and economy.

	Short circuit current typ. @ 25mW/cm²	Breakdown voltage V @ 1_R100µA	Spectral Peak (nm)	T_rT_f	Order Code
SLD-70 BG2A	55µA	50	550(1)	4/6	121-9006
SLD-70 C2A	700µA	50	930(2)	4/6	121-9007

(1)Low $I_R$response,, (2) Standard photodiode response

221721

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+
SLD-70 BG2A	121-9006●	2.64	2.30	2.06	1.56
SLD-70 C2A	121-9007●	1.51	1.31	1.16	0.87

RL Re-reeling available

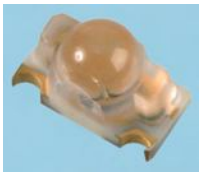
Matched Emitters and Receivers

SHARP

Through Hole Side Emitting and Surface Mount



H=4, W=3, D=2.8mm, Lead length=17mm



H=2.2, W=3, D=1.5mm

Matched emitter and detectors available in both Through Hole side Emitting and Surface Mount versions. The surface mount versions feature 'two-way' mounting, so that they may be attached to a PCB as top or side viewing .
Applications include optoelectronic switches, edge detection, touch panels and process control sensing.

Emitter Units

dc forward voltage	1.2V
dc reverse voltage	6V
Wavelength (peak)	950nm
Half intensity angles	
970-7794	±13°
161-8493	±30°
970-7816	±80°
970-7824	±10°
161-8492	±35°

Detector Units

Collector-emitter voltage	35V max
Dark current	1.0nA (typ)
Collector current 970-7808	1.7mA (typ)
Collector current 970-7832	2.9mA (typ)
Peak Spectral response	
970-7808	800nm
970-7832	910nm

Order Code		Mftrs. List No.	Order Code		Mftrs. List No.
970-7794	=	GL480E00000F	970-7816	=	GL100MD1MP1
161-8493	=	GL480E0000F	970-7824	=	GL100MN1MP1
161-8492	=	PT4800E0000F	970-7832	=	PT100MF0MP1
970-7808	=	PT480E00000F	124-3889	=	PT100MC0MP
124-3890	=	PT480FE0000F			

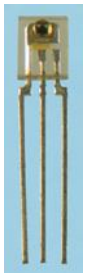
411993

	Order Code	1+	25+	100+	250+	500+
		Price Each				
Matched Pair - Through Hole						
Emitter	**970-7794●**	0.430	0.250	0.174	0.145	0.125
Emitter	NEW **161-8493●**	0.310	0.280	0.250	0.230	0.200
Emitter	NEW **161-8492●**	0.300	0.270	0.250	0.220	0.194
Receiver	**970-7808●**	0.320	0.230	0.174	0.131	0.116
Receiver	**124-3890●**	0.470	0.320	0.240	0.210	0.189
Matched - Surface Mount						
Emitter, Wide Angle	SMD **970-7816●** RL	0.480	0.450	0.430	0.380	0.360
Emitter, Narrow Angle	SMD **970-7824●** RL	0.350	0.340	0.310	0.290	0.270
Receiver	SMD **970-7832●** RL	0.320	0.230	0.174	0.145	0.127
Receiver	SMD **124-3889●** RL	0.320	0.270	0.230	0.189	0.162

Photosensors

optek electronics OPTEK Technology

New



528649

Mftrs. List No.	Order Code	1+	25+	100+	250+	500+
		Price Each				
OPL550A	**167-8676●**	1.59	1.42	0.90	0.86	0.82
OPL550-OCA	**167-8677●**	1.59	1.42	0.90	0.86	0.82
OPL560A	**167-8678●**	1.62	1.44	0.93	0.88	0.85
OPL560-OCA	**167-8679●**	1.62	1.44	0.93	0.88	0.85
OPR5005	**167-8683●**	3.71	3.30	2.13	2.01	1.93

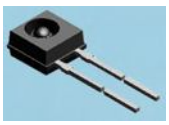
Infrared Emitter and Phototransistor Detector

VISHAY

Flat Sideview Package



Emitter



Detector

- Narrow irradiance/receiving pattern
- Wide operating temperature range
- Sideview moulded plastic package
- Small package size H = 4.9, W = 4.9, D =2.65mm
- Lead spacing = 2.54mm
- Mechanically and spectrally matched

The emitting device is a 950nm gallium aluminium arsenide infrared emitting diode. A small recessed spherical lens provides high radiant intensity in a low profile package.
The detector is an NPN Silicon Phototransistor with a narrow receiving angle providing excellent on-axis coupling making it the ideal partner for the emitter. The package itself is an IR filter, spectrum matched to the emitter.

Emitter

Reverse Voltage	Forward Current	Half Angle	Peak Response	Power Dissipation	Operating Temperature	Mftrs. List No.	Order Code
2.0V	100mA	24°	890nm	150mW	-65 to 125°C	OP224	489-0954

Detector

Voltage C/E	E/C	Collector Current					
70V	7.0V	100mA	920nm	150mW	-40 to 100°C	TEKT5400S-ASZ	133-6590

460613

Order Code	5+	25+	100+	250+	1K+
	Price Each				
Emitter					
489-0954●	2.51	1.51	1.39	1.34	1.23
Detector					
133-6590●	0.46	0.40	0.34	0.28	0.22

High Speed, PIN Photodiodes

OSRAM

SMD



SFH2400-Z
H=1.9, W=2.7, D=1.1



SFH2400FA-Z
H=1.9, W=2.7, D=1.1

- Very short switching time (typ. 5ns)
- SMT package suitable for vapor phase and IR reflow soldering
- Especially suitable for applications from 400nm to 1100nm (SFH2400-Z) and of 880nm (SFH 2400FA)

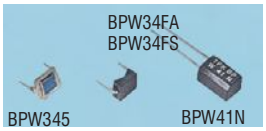
Applications include:
- Industrial Electronics
- For control and drive circuits
- Photointerrupters

Spectral Range Spectral min, max (nm)	Responsivity Rλ	V_F @ 80mA mV	Active Area mm^2	Capacitance, C_T pf	List No.
400, 1100	2.9×10^{-14}	1.3	1	11	SFH2400-Z
750, 1100	2.9×10^{-14}	1.3	1	11	SFH2400FA-Z

453118

Mftrs. List No.	Order Code	1+	25+	100+
		Price Each		
SFH2400-Z	SMD **122-6451●** RL	0.51	0.44	0.37
SFH2400FA-Z	SMD **122-6452●** RL	0.94	0.79	0.67

Photodiode Detectors - Plastic Package



BPW34: H=4.3, W=4.7, D=2.8
BPW34B, BPW34FA: H=4.0, W=4.5, D=2.2
Lead pitch=5.1, Ident=Cathode

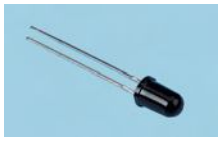
BPW41N (side viewing)
H=6.8, W=5.0, D=4.0
Lead pitch=2.5, Ident=Cathode



SFH206K (side viewing) H=6.8, Dia=5.0 Lead pitch=2.54 Chamfer=Cathode

SFH203P, SFH203PFA 5mm/T1¾ flat top, H=4.2 Lead pitch=2.54 Flat=Cathode

SFH213 5mm/T1¾ Lead pitch=2.54 Flat=Cathode



SFH203-FA, SFH213-FA 5mm/T1¾ Lead pitch=2.54 Flat Cathode

Sensitivity @ λ=850nm	Active Area	Half Angle	Peak Response	Response t_r, t_f(μs)	Mftr.	Mftrs. List No.
0.62A/W @ 850nm	$7.5mm^2$	60°	900nm	0.05	VISH	BPW34
75nA/lx @ 850nm	$7.45mm^2$	60°	850nm	25	OSRAM	●BPW34-B
0.59A/W @ 850nm	$7mm^2$	60°	880nm	0.4	OSRAM	◆BPW34-FA
0.62A/W @ 850nm	$7mm^2$	60°	850nm	0.001	OSRAM	BPW34S
0.59A/W @ 850nm	$7mm^2$	60°	950nm	0.002	OSRAM	◆BPW34FS
0.6A/W @ 850nm	$7.5mm^2$	65°	940nm	0.05	VISH	◆BPW41N
0.62A/W @ 850nm	$1mm^2$	20°	850nm	0.005	OSRAM	SFH213
0.59A/W @ 850nm	$1mm^2$	20°	900nm	0.005	OSRAM	◆SFH213-FA
0.62A/W @ 850nm	$7mm^2$	70°	850nm	0.35	OSRAM	SFH206K
0.62A/W @ 850nm	$1mm^2$	60°	850nm	0.002	OSRAM	SFH203P
0.59A/W @ 850nm	$1mm^2$	60°	900nm	0.002	OSRAM	◆SFH203PFA
0.59A/W @ 850nm	$1mm^2$	20°	900nm	0.002	OSRAM	◆SFH203-FA
0.7 A/W @ 950nm	$4.84mm^2$	60°	950nm	0.02	OSRAM	BP104FS-Z
0.7 A/W @ 950nm	$2.2mm^2$	60	60nm	0.02	OSRAM	BP104S-Z

◆with IR filters (filters out daylight). ●Blue enhanced response-sensitivity at λ = 400nm.

206259

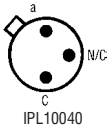
Mftrs. List No.	Order Code	1+	25+	100+	250+
		Price Each			
BPW34	**104-5425●**	1.01	0.75	0.55	0.41
BPW34-B	**121-2739●**	3.43	2.89	2.46	2.07
BPW34-FA	**121-2740●**	0.58	0.48	0.42	0.35
BPW34S	**121-2745●**	0.54	0.48	0.41	0.35
BPW34FS	**121-2747●**	0.64	0.54	0.46	0.39
BPW41N	**104-5426●**	0.85	0.59	0.47	0.39
SFH213	**121-2761●**	0.48	0.40	0.35	0.29
SFH213-FA	**121-2763●**	0.46	0.38	0.33	0.28
SFH206K	**121-2741●**	0.69	0.59	0.50	0.43
SFH203P	**121-9691●**	0.71	0.68	0.63	0.56
SFH203PFA	**121-2742●**	0.58	0.49	0.42	0.35
SFH203-FA	**121-2743●**	0.43	0.36	0.31	0.26
BP104FS-Z	SMD **122-6436●** RL	0.75	0.63	0.54	0.48
BP104S-Z	SMD **122-6437●** RL	0.99	0.82	0.70	0.62

RL Re-reeling available

Emitters and Detectors - continued

Photodiode Detectors - Sealed Metal Package





IPL10040

BPX65, IPL10020

BPX65, IPL10020 (TO-18 flat lens) Lead pitch=2.5 Tag: Anode

BPW21R (T039) H=3.0, Dia=8.0 Lead pitch=5.0 Tag: Anode

IPL10040 (TO-5 flat lens) H=3.9, Dia=8.25

Sensitivity (typ.)	Active Area	Half Angle	Peak Response	Response t_r, t_f (µs)	Mftr.	Mftrs. List No.	Order Code
0.55A/W	1mm²	40°	850nm	0.0035	CENT.	BPX65.	327-451
7nA/lux	7.5mm²	50°	565nm	3.5	IPL ■	BPW21R	104-5427

■ with colour correction filter (visible radiation)

206217

Order Code	Price Each 1+	25+	50+	100+	1K+
327-451●	6.42	6.29	5.97	3.75	– –
104-5427●	7.55	5.63	4.25	3.31	3.23

Silicon Avalanche Photodiode (APD) - Hermetically Sealed Metal Package — EG & G



H=3.89, Dia.= 5.41, Lead Pitch=1.27, Lead Length=12.7 x 0.46 dia. Centre pin Cathode

- Offers internal photoelectric gain
- Used to detect extremely low light levels - 400 - 1150nm region
- Provides greater detection sensitivity than a PIN photodiode, the latters sensitivity is limited by pre-amplifier noise
- 0.5mm active diameter
- Fast response time - 0.5ns typically
- Wide operating temperature: -40°C to +70°C

206516

Mftrs. List No.	Order Code	Price Each 1+	3+	5+	10+	25+
C30902EH	118-2339●	106.35	90.87	79.33	75.23	67.80

Photodiode Detectors - Sealed Metal Package — CENTRONIC



OSD1-5T (TO18): H=5.1, Dia.=4.7, Lead pitch=2.54, Tag: Anode

OSD5-5T, OSD15-5T (TO5): H=3.1, Dia.=8.1, Lead pitch=5.1, Tag: Anode

Silicon photodetectors for low light level and high signal to noise ratio applications.



H=5.1, Dia.=4,7
Lead pitch=3.0 Tag: Anode



H=3.67, Dia.=4,68

High sensitivity chip suitable for fibre applications and encoder designs

Responsivity (typ.)	Active Area	Dark Current (max.)	NEP W/Hz½	Cap. (V_r=12V) pF (max.)	Shunt Res. MΩ (min.)	Risetime ns (Typ.)	Mftrs. List No.
0.21A/W	1mm²	1nA	$2.5x10^{-14}$	7	250	7	OSD1-5T.
0.21A/W	5mm²	2nA	$3.3x10^{-14}$	35	100	9	OSD5-5T.
0.21A/W	15mm²	5nA	$5.5x10^{-14}$	80	50	12	OSD15-5T.
0.55A/W	1mm²	5nA	$3.3x10^{-14}$	3.5	—	8	BPX65RT.
0.35A/W	0.55mm²	10nA	$6.8x10^{-14}$	8	—	1	AEPX65.

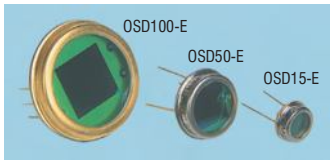
*V_F = 5V, **V_F = 20V

206318

Mftrs. List No.	Order Code	Price Each 1+	5+	10+	25+	50+
OSD1-5T.	548-716●	6.75	5.88	5.00	4.50	4.31
OSD5-5T.	548-728●	8.29	7.22	6.81	6.40	6.09
BPX65RT.	548-789●	4.53	3.00	2.70	2.45	2.39
AEPX65.	548-777●	13.47	11.59	10.78	9.00	7.00
		1+	10+	25+	50+	
OSD15-5T.	548-730●	16.99	14.00	11.00	9.00	

Photodiode Detectors - Sealed Metal Package — CENTRONIC

Eye Response Detectors



- Silicon photodetectors with colour correcting filters
- Spectral response approximating that of the human eye
- Ideal for photometric applications

Responsivity nA Lux⁻¹ (typ.)	Active Area	Dark Current (max.)	NEP W/Hz½	Cap. (V_r=12V) pF (max.)	Shunt Res. MΩ (min.)	Risetime ns (Typ.)	Mftrs. List No.
22	15mm²	10mA	$5.2x10^{-14}$	80	5	12	OSD15-E.
30	50mm²	40mA	$9.3x10^{-14}$	270	1.5	26	OSD50-E.
60	100mm²	100mA	$1.2x10^{-13}$	520	1	45	OSD100-E.

206310

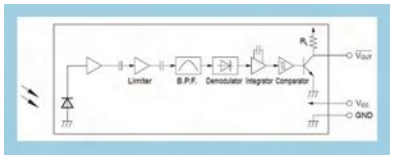
Mftrs. List No.	Order Code	Price Each 1+	5+	10+	25+	50+
OSD15-E.	548-741●	18.59	16.17	14.00	12.00	11.50
OSD50-E.	548-753●	44.34	39.91	37.70	35.47	33.64
OSD100-E.	548-765●	98.17	88.35	83.44	78.80	74.42

GP1US30XP Series — SHARP

For Remote Control Applications



3-pin Thru-hole



Internal Block Diagram

Supply Voltage: 2.4 to 5.5V
Op Temp:-30 to 85°C
Soldering Temp Max:255°C

- Compact type
- Low dissipation current: MAX 0.6mA(@ Vcc=3V)
- SMD type applicable for reflow

B.P.F Centre Frequency	Order Code	Package	Dimensions (HxWxD)	
36 kHz	GP1UX310QS	3-pin side emitting	8.8 x 5.5 x 3.2	124-3867
38 kHz	GP1US301XP	SMT-4	3.95 x 4.1 x 0.95	124-3865
38 kHz	GP1UX301QS	3-pin side emitting	8.8 x 5.5 x 3.2	124-3866
38 kHz	GP1UX511QS	3-pin side emitting	8.8 x 5.5 x 3.2	124-3868

492501

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
GP1US301XP	SMD 124-3865● RL	1.39	0.99	0.77	0.65	0.59
GP1UX301QS	SMD 124-3866●	0.62	0.43	0.35	0.33	0.32
GP1UX310QS	124-3867●	0.43	0.31	0.26	0.25	0.24
GP1UX511QS	124-3868●	0.85	0.61	0.47	0.35	0.31

Infrared Modulated Detector — SHARP

Signal processing output circuit



H=4, W=3, D=2.8mm

- Compact Integrated I/R detector
- Use with any external I/R LED emitter
- High Rejection of External Emissions
- Wide Voltage range (4.5V to 16Vdc)

This is an infrared detector with an integral modulation drive. An external infrared emitter is sync-modulated using a two-wire system. External interference is eliminated by use of a comparator and sync-detector circuit, the resulting signal then being demodulated and output as TTL.

The elimination of unwanted signals being detected make this device ideal for use in high ambient light conditions.

Suitable for use with all infrared LED emitters.

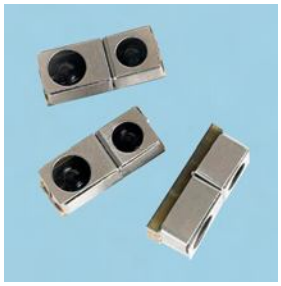
Acceptance Angle (50%) sense	Wavelength Peak Sense	Rise / Fall time	Nominal V_O(max)	I_{CC} (typ)	V_{CC}	Order Code
115°	940nm	400µs	16V dc	3.5mA	4.5V dc - 16Vdc	970-7840

411994

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
IS471FE	970-7840●	2.43	1.70	1.32	1.19	1.01

Proximity Sensor — AVAGO TECHNOLOGIES

Miniature Surface Mount



- Excellent optical isolation resulting in near zero optical cross-talk
- High efficiency emitter and high sensitivity photodiode for high signal-to-noise ratio
- Detects objects from near zero to 60mm
- Low dark current
- Guaranteed temperature performance

H = 2.7, W = 6.9, D = 2.35mm

RL Re-reeling available

Farnell

The HSDL-9100 is an analog-output reflective sensor with an integrated high efficiency infrared emitter and photodiode housed in a small form SMD package. The small size makes it ideal for space-constrained mobile applications such as mobile phones and PDAs. It provides a long detection range (60mm) and offers programmability for easy design into a variety of portable devices. This innovative Proximity Sensor performs reliably within the temperature range of -25°C to 85°C.

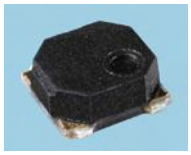
Recommended operating conditions	Min.	Max.
Operating Temperature (°C)	-40	85
Forward Voltage (V) - Emitter	1.5 (Typ.)	1.65
Reverse Voltage (V) - Emitter	5	
Peak Wavelength (nm)	940 (Typ.)	
Dark Current (nA) - Detector	2	10
Forward Voltage (V) - Detector		1.3
Reverse Voltage (V) - Detector		35

417936

Mftrs. List No.	Order Code	Price Each 1+	10+	25+	100+
HSDL-9100-021	961-3846● RL	0.97	0.89	0.82	0.72

Positional Sensor

OSRAM



L=4.6, W=4.6, D=2

New

SMD

Output Current	Output Voltage min	Output Voltage max	Supply Voltage min	Supply Voltage max	Operating Temperature
10mA	1.7V	3.6V	2.3V	3.6V	-20°C to +65°C

- Optical detection of orientation by gravity dependent position of a steel ball
- Low current consumption
- Digital output, open drain
- Defined range of switching angle
- Very small SMD package
- IC controlled sensor
- Applications include digital cameras, camcorders, mobile phones, computer peripherals

516809

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+
SFH7710	SMD 157-3497● RL	1.46	1.14	1.02	0.91

S3931 and S3932 One-Dimensional PSD

HAMAMATSU

PSD for precision distance measurement



Height	9.2mm	Width	4.8mm
Depth	1.5mm	Lead length	4.0mm

Applications

- Displacement sensing
- Distance measuring
- Proximity switching

Features

- Superior position detection ability
- High reliability
- Easy to use 4-pin small ceramic package

Resolution	Peak Wavelength	Operating Temperature Range	Mftrs. List No.	Order Code
0.2µm	920nm	-10°C to +60°C	S3931	149-5576
0.3µm	920nm	-10°C to +60°C	S3932	149-5577

497545

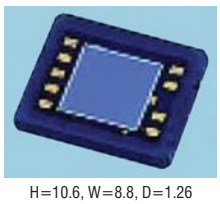
Mftrs. List No.	Order Code	Price Each 1+	10+	25+
S3931	149-5576●	23.73	22.78	21.36
S3932	149-5577●	38.24	36.71	34.41

S5990-01 Two-Dimensional PSD

HAMAMATSU

Improved tetra-lateral type for surface mounting

SMD



H=10.6, W=8.8, D=1.26

Features

- Large active area: 4mm × 4mm
- Chip carrier package for surface mounting (automatic mounting with solder reflow)
- Thin package: 1.26mm

Applications

- Spot light detection
- Pointing device (computer mouse, track ball)
- Position measurement

Resolution	Peak Wavelength	Operating Temperature Range	Mftrs. List No.	Order Code
0.7µm	960nm	-20°C to +80°C	S5990-01	149-5578

497546

Mftrs. List No.	Order Code	Price Each 1+	10+	25+
S5990-01	SMD 149-5578●	15.52	14.90	13.96

Silicon Phototransistor



The OP580 is an NPN silicon phototransistor mounted in a miniature SMD package. The device has a flat window lens, which enables a wide acceptance angle. It is packaged in a plastic leadless chip carrier that is compatible with most automated mounting equipment.

Dark Current Time, Rise	100nA 15µs	Breakdown Voltage Operating Temperature	30V -25°C to +85°C

528471

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
OP580	167-8557●	0.350	0.290	0.230	0.194	0.171

Phototransistors - 1.9mm



Axial

New

Transistor Type	Photo
Viewing Angle (Half)	25°
Current I_C (typ)	2.5mA
Wavelength	935nm
Operating Temperature	-25°C to +85°C



Gull



Yoke



Reverse Gull

Each device in this series is an NPN silicon phototransistor mounted in an opaque plastic SMD package, with an integral molded lens that enables a narrow acceptance angle and a higher collector current than devices without a lense. The OP570 series has four lead configurations and is compatible with most automated mounting equipment.

528467

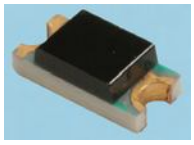
Lead Configuration	Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
Axial	OP570	167-8550●	0.260	0.230	0.197	0.167	0.137
Gull	OP571	167-8551●	0.270	0.220	0.171	0.149	0.137
Yoke	OP572	167-8552●	0.230	0.171	0.149	0.125	0.114
Reverse Gull	OP573	167-8554●	0.270	0.220	0.171	0.149	0.137

NPN Phototransistors

Small Package







Case Style	Current (ON) IC (mA) Min	Power Dissipation (mW)	Wavelength (nm)	Mftrs List No.	Order Code
T-1	4.3	100	935	OP505A	149-7878
T-1	2.15	100	935	OP505B	149-7879
T-1	4.3	100	935	OP506A	149-7880
T-1	2.15	100	935	OP506B	149-7882
1206	0.25	75	935	OP520	149-7883
Side Emitting	2.55	100	935	OP550A	149-7884
Side Emitting	1.30	100	935	OP550B	149-7885
TO-18	3.0	250	890	OP593A	149-7886
TO-18	7.5	250	890	OP598A	149-7887
TO-18	5.0	250	890	OP598B	149-7888
T-1 3/4	2.35	100	890	OP599A	149-7889
TO-18	2.5	250	890	OP802WSL	149-7890
TO-18	4.0	250	890	OP803SL	149-7891
TO-18	15.0	250	890	OP805SL	149-7892

497416

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+
OP505A	149-7878●	0.500	0.360	0.340	0.330
OP505B	149-7879●	0.500	0.360	0.340	0.330
OP506A	149-7880●	0.650	0.460	0.430	0.410
OP506B	149-7882●	0.650	0.460	0.430	0.410
OP520	SMD 149-7883●	0.340	0.191	0.157	0.139
OP550A	149-7884●	0.590	0.420	0.390	0.370
OP550B	149-7885●	0.590	0.420	0.390	0.370
OP593A	149-7886●	0.590	0.420	0.390	0.370
OP598A	149-7887●	0.590	0.420	0.390	0.370
OP598B	149-7888●	0.580	0.420	0.390	0.370
OP599A	149-7889●	0.580	0.400	0.370	0.360
OP802WSL	149-7890●	2.460	1.690	1.550	1.500
OP803SL	149-7891●	2.710	2.330	2.170	2.030
OP805SL	149-7892●	1.860	1.310	1.200	1.150

Phototransistors - 1206



OPI521



OPI522

New

The OP520 and OP521 are NPN silicon phototransistor mounted in miniature SMT packages. Both the OP520 and OP521 have a flat lens however, the OP520 lens is opaque to shield the device from stray light. These sensors are packaged in 1206 size chip carriers that are

Emitters and Detectors - continued

Phototransistors - 1206 - continued

compatible with most automated mounting equipment. The OP520 and OP521 are mechanically and spectrally matched to the OP250 series infrared LEDs.

Transistor Type	Viewing Angle (Half)	Current I_C (typ)	Time (Rise)	Wavelength	Operating Temperature	Mftrs. List No.	Order Code
Photo	160°	0.25mA	15µs	935nm	-25°C to +85°C	OP521	167-8548
Photo	105°	0.5mA	15µs	935nm	-25°C to +85°C	OP522	167-8549

528464

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
OP521	167-8548●	0.250	0.194	0.160	0.137	0.125
OP522	167-8549●	0.250	0.194	0.160	0.137	0.125

Infrared Emitter and Phototransistor Detector

Hermetically Sealed - Pill Package



The emitting device is a 890nm gallium aluminium arsenide infrared emitting diode. The narrow irradiance pattern provides high on-axis intensity for excellent coupling efficiency. The NPN Silicon Phototransistor has a narrow receiving angle providing excellent on-axis coupling making it the ideal partner for the emitter.

- Narrow irradiance/receiving pattern
- Wide operating temperature range
- Small package size
- Mechanically and spectrally matched

Infrared Emitting Diode

Reverse Voltage	Forward Current	Half Angle	Peak Response	Power Dissipation	Operating Temperature	Mftrs. List No.	Order Code
2.0V	100mA	24°	890nm	150mW	-65 to 125°C	OP224	489-0954

NPN Silicon Phototransistor

Voltage C/E	Voltage E/C	Collector Current	Peak Response	Power Dissipation	Operating Temperature	Mftrs. List No.	Order Code
25V	5.0V	50mA	890nm	50mW	-65 to 125°C	OP644SL	489-0980

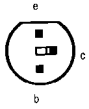
336917

Order Code	Price Each 5+	25+	100+	250+	1K+
Infrared Emitting Diode					
489-0954●	2.51	1.51	1.39	1.34	1.23
NPN Silicon Phototransistor					
489-0980●	2.42	1.41	1.30	1.25	1.15

Phototransistor Detectors -

Plastic Package



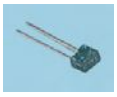


3mm/T1
BPW85B, SFH309-FA-4:
Lead pitch=2.54
Short lead: Collector

Others:
Lead pitch=1.3
Flat: Collector

5mm/T1¾
BPV11F: 3 lead, pins on 2.54 PCD

Side Viewing
SDP8406-3
5.7 x 4.5 x 2.3
Lead pitch=2.54



Side Viewing
SDP8436-3
3.3 x 4.57 x 4.29
Lead pitch=2.54



1.8mm/T¾
BPW17N
L=2.9, Lead pitch=2.54
Flat: Collector

Sensitivity (mA)/(mW/cm²) min	Half Angle	Peak Response	Response t_r t_f (µs)	Mftr.		Mftrs. List No.
5mm/T1¾						
3.0-10.0 @ 1mW/cm²	15°	950nm	3.8	VISH		BPV11
9.0 (typ) @ 1mW/cm²	30°	900nm	3.3	VISH	◆	BPV11F
3mm/T1						
1.0-2.0 @ 0.5mW/cm²	32°	900nm	10		◆	SFH309FA-4
1.5-4.0 @ 1mW/cm²	50°	830nm	1.5	VISH		BPW85
3.0-8.0 @ 1mW/cm²	25°	950nm	1.5	VISH		BPW85C
0.8-3.2 @ 1mW/cm²	30°	950nm	1.5	VISH		TEFT4300
4.0 (min) @ 20mW/cm²	16°	840nm	5	OPTEK		OP505D
12.0-24.0 @ 5mW/cm²	40°	880nm	12	HWL		SDP84053
1.8mm/T¾						
0.5-1.0 @ 1mW/cm²	12°	950nm	3.7	VISH		BPW17N
Side Viewing						
3.4-6.5 @ 1mW/cm²	50°	935nm	8	HWL		SDP8406-3
7.0-17.5 @ 1mW/cm²	18°	880nm	10	HWL		SDP8436-3

◆ with IR filter (filters out daylight)

206219

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	500+	1K+
5mm/T1¾						
BPV11F	104-5379●	1.110	0.710	0.550	0.320	0.270
BPV11	104-5525●	0.960	0.620	0.450	0.320	0.260
3mm/T1						
SFH309FA-4	121-2744●	0.480	0.430	0.360	0.270	0.178
OP505D	178-946●	1.200	1.030	0.960	0.870	0.510
SDP84053	120-1205●	0.830	0.790	0.740	0.730	0.680

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	500+	1K+
3mm/T1						
BPW85	104-5380●	0.690	0.440	0.330	0.260	0.200
BPW85C	104-5524●	0.530	0.300	0.260	0.156	0.145
TEFT4300	104-5526●	0.550	0.440	0.330	0.260	0.210
1.8mm/T¾						
BPW17N	104-5523●	0.740	0.490	0.360	0.310	0.240
Side Viewing						
SDP8406-3	120-1206●	0.670	0.640	0.580	0.570	– –
SDP8436-3	120-1210●	0.940	0.880	0.840	0.820	– –

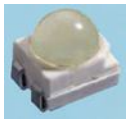
Phototransistor Detectors -

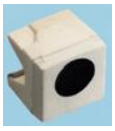
Plastic Packages

OSRAM


1226438


1226442


1226441


1226444


1226443


1226439

- High quality phototransistors
- Human eye response option (SFH3410-Z)
- SMD and though-hole options

Peak Response	λ_{Range} min	Half Angle	V_{CE} max (V)	Mftrs. List No.
570nm	350 to 970nm	60°	5.5	SFH3410-Z**
920nm	840nm to 1080nm	14°(side)	30	SFH3100F-1-Z
980nm	380nm to 1180nm	60°	35	SFH320-Z
990nm	430nm to 1150nm	25°	35	SFH3219-Z
980nm	450nm to 1120nm	60°	35	SFH325-Z
980nm	750nm to 1120nm	60°	35	SFH325FA-Z

** Vλ design, approximates human eye response

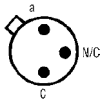
492398

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
SFH3410-Z	SMD 122-6438● RL	0.550	0.460	0.390	0.330	0.320
SFH320-Z	SMD 122-6440● RL	0.390	0.330	0.270	0.240	0.210
SFH3219-Z	SMD 122-6441● RL	0.310	0.260	0.220	0.190	0.181
SFH325-Z	SMD 122-6442● RL	0.250	0.220	0.186	0.153	0.139
SFH3100F-1-Z	SMD 122-6443● RL	0.430	0.360	0.310	0.270	0.240
SFH325FA-Z	SMD 122-6444● RL	0.420	0.350	0.290	0.260	0.230

Phototransistor Detectors -

Sealed Metal Package


TO-18 (domed lens) TO-18 (flat lens)



Pins on 2.54 PCD

Sensitivity IC (mA) / (mW/cm²)	Half Angle	Peak Response	Response t_r t_f (µs)	Mftr.	Mftrs. List No.
Narrow Angle (Domed Lens)					
7-22mA @ 5mW/cm²	15°	850nm	7	OPTEK	OP804SL
8mA @ 5mW/cm²	18°	880nm	6	HWL	SD5443-3
12mA @ 10mW/cm²	15°	850nm	75	QT◆	L14F1
7-22mA @ 5mW/cm²	15°	850nm	5	QT	L14G1
8mA @ 5mW/cm²	15°	850nm	5	QT	L14G3

◆ Photo Darlington

206218

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	1K+
OP804SL	316-7513●	2.19	1.31	1.20	1.15
SD5443-3	327-578●	1.81	1.71	1.60	1.57
L14F1	102-1141●	1.34	0.91	0.65	0.61
L14G1	102-1142●	1.06	0.75	0.54	0.53
L14G3	102-1143●	1.34	0.91	0.65	0.61

Photologic Plastic Detector



OP551 is mechanically and spectrally matched to OP240B, order code 316-7537

Side Viewing 5.71 x 4.44 x 2.35

Irradiance @ 935nm	Positive Going Threshold Irradiance	V_{cc}	t_r, t_f (typ.)	V_{OH} (V) min.	typ.	V_{OL} (V) typ.	max.	Mftrs. No.
10mW/cm²	0.25 - 2.4mW/cm²	5.5-316-7525	25ns	2.4	3.3	0.25	0.4	OPL551

206621

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+
OPL551	316-7525●	2.23	1.87	1.69	1.24

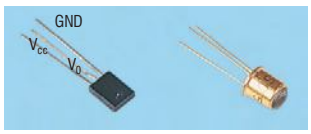
£ € 40,000 PRICES REDUCED

RL Re-reeling available

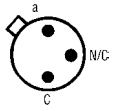
Farnell

Schmitt Trigger Output

Honeywell



120-1208
Pins on 2.54 PCD
Plastic side viewing
5.7 x 4.5 x 2.3



Pins on 2.54 PCD

327-610
Metal TO-18 (domed)
Pins on 2.54 PCD

Schmitt detectors include amplifier, voltage regulator, Schmitt trigger output stage for low bounce/ringing direct interfacing to TTL/LSTTL/CMOS. Light interruption below release point sends output low.

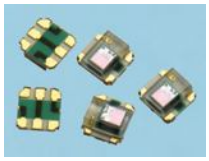
Supply Voltage	4.5V – 16V dc
Output Sink Current	18mA max.
Supply Current	6mA typ at zero irradiance, 4mA typ at 3mW/cm^2 irradiance
Rise / Fall Time	t_r 50µs, t_f 6µs
Operate Point (max)	1.2mW/cm^2 (SDP8600-1), 0.25mW/cm^2 (SD5620-1)
Release Point	2.35mW/cm^2 (max.), 0.45mW/cm^2 (typ.)

206235

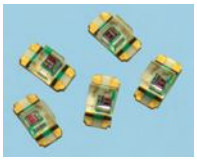
Type	Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+
Side Viewing	SDP86001	**120-1208●**	2.11	2.00	1.93	1.85
TO-18 Sealed	SD5620-1	**327-610●**	4.63	4.40	4.24	4.12

Ambient Light Sensors

AVAGO TECHNOLOGIES



1339013
L = 0.55, W = 1.6, D = 1.5



1339014
L = 1.1, W = 3.2, D = 1.6

A low cost analog output ambient light sensor in miniature chipLED lead-free surface mount package. It consists of a spectrally suited photo sensor, which provides excellent responsivity that is close to the human eyes.
Ideal for applications in which the measurement of ambient light is used to control display-backlighting. Mobile applications such as the mobile phones and PDAs that draw heavy current from display backlighting will benefit from these photo sensor products in their deisgns by reducing power consumption significantly.

Sensitivity	Peak Wavelength λ_d (nm)	Case Style	Mftrs List No.
276µA @ 100 Lux (3V), CIE Incandescent Light Source	620	6 Pin ChipLED	APDS-9003-020
276µA @ 100 Lux (3V), CIE Incandescent Light Source	620	4 Pin ChipLED	APDS-9004-020

498339

Mftrs. List No.	Order Code	Price Each 1+	10+	25+
APDS-9003-020	**133-9013●**	0.51	0.42	0.37
APDS-9004-020	**133-9014●**	0.49	0.40	0.36

IR Emitter

New

ROHM SEMICONDUCTOR

Viewing Angle	15°	Forward Voltage (max)	1.6V
Power Dissipation	80mW	Wavelength (typ)	950nm
Forward Current	50mA	Operating temperature	-25°C to +85°C

528845

Mftrs. List No.	Order Code	Price Each 1+	10+	100+	250+	500+
SIM-20ST	**168-5000●**	0.69	0.40	0.27	0.24	0.22

OPIC™ Optical Light Detector

SHARP

New



1618433, 1618491



1618434



1618435

- Linear output, suitable for indoor or outdoor use
- Stable over specified temperature range
- Light sensitivity and response curve similar to that of the human eye
- OPIC light detector: integrated photodiode and signal processing circuit
- Applications include auto-dimming circuits, office automation equipment, audio visual equipment, home appliances, touch panels[LineBreak]

Voltage Supply (min)	(max)	Dimensions Height	Depth	Width	Mftrs. List No.	Order Code
2.3V	3.2V	0.6mm	1.6mm	2mm	GA1A1S201WP	161-8433
2.7V	3.6V	4.3mm	1.8mm	3mm	GA1A2S100LY	161-8434
2.7V	3.6V	4.3mm	1.7mm	3mm	GA1A2S100SS	161-8435
2.7V	3.6V	0.6mm	1.6mm	2mm	GA1A1S100WP	161-8491
4.5V	5.5V	1.5mm	5.2mm	9.2mm	GA220T2L1IZ	161-8494

518952

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+
GA1A1S201WP	SMD **161-8433●** RL	0.60	0.54	0.48	0.44
GA1A2S100LY	**161-8434●**	0.72	0.65	0.59	0.52
GA1A2S100SS	**161-8435●**	0.72	0.65	0.59	0.52
GA1A1S100WP	SMD **161-8491●** RL	0.60	0.54	0.48	0.44
GA220T2L1IZ	**161-8494●**	1.71	1.54	1.39	1.24

Ambient Light Photo Sensors

Miniature Surface Mount

AVAGO TECHNOLOGIES



Operating temperature: -40°C to +85°C

The APDS series of analogue-output ambient light photo sensors are miniature chipLED surface mount packages. They consist of a spectrally suited phototransistor, which peaks in the human luminosity curve. Hence, it provides an excellent responsivity that is close to that of human eye.
This series is ideal for applications in which the measurement of ambient light is used to control display backlighting. Mobile appliances such as mobile phones and PDAs that draw heavy current from display backlighting will benefit from incorporating this photo sensor in the design by reducing power consumption significantly.

- Close responsivity to the human eye
- Good output linearity across wide illumination range
- Low sensitivity variation across various light sources
- Guaranteed temperature performance

Dimensions Active Area	Length	Width	Depth	Dark Current	Voltage, Vcc Min	Max	Order Code
—	0.8mm	2.0mm	1.25mm	50nA	2.4V	5.5V	961-3854
0.1133mm^2	0.55mm	1.60mm	1.50mm	300nA	1.8V	5.5V	154-8110
0.1133mm^2	1.10mm	3.20mm	1.60mm	300nA	2.4V	5.5V	154-8111
0.1540mm^2	0.8mm	2.4mm	2.0mm	—	2V	3.6V	154-8112
—	0.55mm	2.6mm	2.2mm	5000nA	—	—	163-4724
0.1133mm^2	0.55mm	1.6mm	1.5mm	300nA	1.6V	5.5V	163-4726

417937

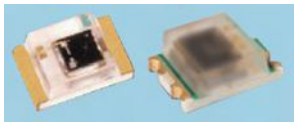
Mftrs. List No.	Order Code	Price Each 1+	10+	25+	100+
APDS-9002-021	SMD **961-3854●** RL	0.39	0.36	0.34	0.30
APDS-9005-020	NEW SMD **154-8110●**	0.55	0.43	0.39	0.35
APDS-9006-020	NEW SMD **154-8111●**	0.62	0.48	0.43	0.40
APDS-9007-020	NEW SMD **154-8112●**	0.41	0.33	0.30	0.27
APDS-9300-020	NEW SMD **163-4724●**	0.73	0.54	0.47	0.42
APDS-9008-020	NEW SMD **163-4726●**	1.47	1.07	0.94	0.83

Surface Mount Ambient Light Sensors

OSRAM

SMD

New



Operating Temperature: -40°C to +100°C

SFH3710: L=2.1, W=1.35, D=0.95
SFH5711: L=2.95, W=2.35, D=1.25

SFH3710

Angle (half)	Current (dark)	Current, Ic (max)	Sensitivity	Voltage, Vce sat (max)	Wavelength* (peak)	Mftrs. List No.	Order Code
60°	3nA	20mA	350nm to 950nm	100mV	570nm	SFH3710	157-3490

* Spectral response

Order Code	Price Each 1+	25+	100+	250+	500+
SMD **157-3490●** RL	0.45	0.35	0.32	0.28	0.27

SFH5711-2/3

Sensitivity	Supply Voltage (max)	Wavelength* (peak)	Mftrs. List No.	Order Code
475nm to 650nm	6V	570nm	SFH5711-2/3	157-3496

* Spectral response

511518

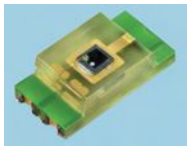
Order Code	Price Each 1+	25+	100+	250+	500+
SMD **157-3496●** RL	1.25	0.96	0.86	0.78	0.75

Ambient Light Photo Sensor

Miniature Surface Mount

VISHAY

SMD



H = 1.05, W = 4, D = 2mm

Ambient light sensors play a key role in power saving strategies by controlling LCD display intensity and keypad backlighting of mobile devices and in industrial on/off lighting operation.
The TEMT600 is sensitive to visible light much like the human eye and has peak sensitivity set at 570nm. The device has an analog output and is packaged in a small surface mount case.

- High sensivity
- Adapted to the human eye responsivity
- Wide angle of sensitivity
- Suitable for IR reflow soldering

Operating Temperature	-40°C to +85°C	Total Power Dissipation	100mW
Collector Emitter Voltage V_{CEO}	6V (max)	Peak Sensitivity Wavelength	570nm (typ)
Emitter Collector Voltage V_{ECO}	1.5V (max)	Viewing Angle (half)	60°
Collector Current I_C	20mA (max)		

RL Re-reeling available

Farnell

Emitters and Detectors - continued

Ambient Light Photo Sensor - continued

Miniature Surface Mount - continued

460614

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	500+	1K+
TEMT6000	SMD 132-8401●	0.62	0.44	0.41	0.37	0.36

Ambient Light Sensors



149-7671
1497672



149-7673
149-7675
149-7676

Ambient light sensors are used to detect light or brightness in a manner similar to the human eye. They are most commonly found in industrial lighting, consumer electronics and automotive systems, where they allow settings to be adjusted automatically in response to changing ambient light conditions. By turning on, turning off, or adjusting features, ambient light sensors can conserve battery power or provide extra safety while eliminating the need for manual adjustments.

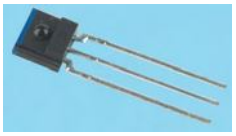
Half Angle	Dark Current	Peak Response	Sensitivity	Package	Mftrs. List No.	Order Code
20°	3nA	570nm	200µA	T1	TEPT4400	149-7675
30°	3nA	570nm	75µA	T-1 3/4	TEPT5700	149-7676
50°	3nA	570nm	—	T-1 3/4	TEPT5600	149-7673
60°	3nA	570nm	50µA	SMD	TEMT6000X01	149-7671
60°	3nA	550nm	—	SMD	TEMT6200FX01	149-7672

496053

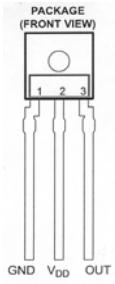
Package	Mftrs. List No.	Order Code	Price Each 1+	10+	25+	100+	+
T1	TEPT4400	149-7675●	0.57	0.35	0.30	0.26	– –
T-1 3/4	TEPT5700	149-7676●	0.49	0.31	0.28	0.25	– –
T-1 3/4	TEPT5600	149-7673●	0.45	0.28	0.25	0.22	– –
SMD	TEMT6000X01	SMD 149-7671●	0.68	0.42	0.38	0.34	– –
SMD	TEMT6200FX01	SMD 149-7672●	0.91	0.55	0.50	0.45	– –

Light to Voltage Optical Sensors

Infrared or Visible light Responsivity



H = 4.6, W = 4.6, D = 1.64mm
Lead length = 14.75mm



These devices are light-to-voltage optical sensors, each combining a photodiode and a transimpedance amplifier (feedback resistor = 16MΩ, 8 MΩ and 2.8MΩ respectively) on a single monolithic IC. Output voltage is directly proportional to the light intensity (irradiance) on the photodiode. They are supplied in a 3 lead plastic sidelooker package with integral lens. The TSL260 series of infrared devices also contain an integral visible light cutoff filter

- Contains photodiode, operational amplifier and feedback components
- High irradiance responsivity
- Low dark(offset) voltage
- Low supply current

Supply voltage (Recommended)	2.7 to 5.5V
Supply voltage (Absolute max.)	6V
Offset (dark) voltage	10mV
Supply current	1.1mA
Operating temperature (Recommended)	0 to 70°C
Operating temperature (Absolute max.)	-25 to 85°C

Irradiance Responsivity	Sensitivity (typ.)	Active Area	Peak Response	Output pulse Rise/Fall Time	Mftrs. List No.	Order Code
TSL250 Series						
137mV	14.6µW/cm²	1mm²	635nm	260µs	TSL250R-LF	118-2346
137mV	38.5µW/cm²	0.5mm²	635nm	70µs	TSL251R-LF	118-2347
137mV	196µW/cm²	0.26mm²	635nm	7µs	TSL252R-LF	118-2348
TSL260 Series						
111mV	18µW/cm²	1.0mm²	940nm	260µs	TSL260R-LF	118-2349
111mV	46µW/cm²	0.5mm²	940nm	70µs	TSL261R-LF	118-2350
111mV	220µW/cm²	0.26mm²	940nm	7µs	TSL262R-LF	118-2351

336918

Order Code	Price Each 1+	25+	100+	250+	+
118-2346●	1.54	1.31	1.22	1.15	– –
118-2347●	3.09	1.85	1.62	1.52	– –
118-2348●	3.09	1.85	1.62	1.52	– –
118-2349●	1.54	1.32	1.22	1.14	– –
118-2350●	3.09	1.85	1.62	1.52	– –
118-2351●	1.54	1.31	1.22	1.15	– –

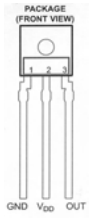
Light to Voltage Optical Sensors

High Sensitivity



H = 4.6, W = 4.6, D = 1.64mm
Lead length = 14.75mm

- Converts light intensity to output voltage
- Integral colour filter
- High sensitivity
- Low noise (200 µV rmsTyp. to 1 kHz)
- Rail to rail output
- High power supply rejection (35dB at 1 kHz)



These devices are high sensitivity low noise light to voltage optical converters that incorporate onboard colour filters. The devices combine a photodiode and a transimpedance amplifier on a single monolithic CMOS integrated circuit with a colour filter over the photodiode. Output voltage is directly proportional to light intensity (irradiance) on the photodiode. Each device has a transimpedance gain of 320 MΩ with improved offset voltage stability and low power consumption and is supplied in a clear plastic sidelooker package with integral lens.

Supply voltage (Recommended)	4.5 to 5.5V	Output pulse rise time (typ)	160µs
Supply voltage (Absolute max.)	6V	Output pulse fall time (typ)	150µs
Offset (dark) voltage	15mV	Operating temperature (Recommended)	0 to 70°C
Supply current	1.9 to 3.5mA	Operating temperature (Absolute max.)	-25 to 85°C
Output current	±10mA		

Responsivity Irradiance	Illuminance	Peak Response	Onboard Filter colour	Mftrs. List No.	Order Code
V/(µW/cm²)	**V/Lx**				
1.18 @ 428nm	—	790 nm	None	TSL257-LF	122-6886

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Order Code	Price Each 1+	25+	100+	250+	+
122-6886●	1.73	1.39	1.20	1.11	– –

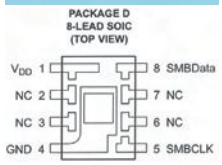
Ambient Light Sensor

With SMBus Interface



Evaluation Module





- Converts light intensity to digital signal
- Infrared compensation to approximate the human eye response
- Companding A/D for wide dynamic range
- Rejects 50/60 Hz lighting ripple
- Two wire SMBus interface
- Power down mode

The **TSL2550** device is a digital light sensor with a two wire SMBus serial interface. It combines two photodiodes and a companding Analog to Digital Converter (ADC) on a single CMOS integrated circuit to provide light measurements over an effective 12 bit dynamic range. The device is designed for use with a broad wavelength light sources. One of the photodiodes (Chan. 0) is sensitive to visible and infrared light. The other (Chan. 1) is sensitive primary to infrared light. An integrating ADC converts the photodiode currents to Chan. 0 and Chan. 1 digital outputs. Chan. 1 digital output is used to compensate for the effects of the infrared component of ambient light on Chan. 0 digital output. The ADC digital outputs of the two channels are used to obtain a value that approximates the human eye response in the commonly used units of Lux.

The **TSL2550RS232 Evaluation Module** consists of a motherboard in a DB9 connector shell and a daughter board connected by a flex cable. The DB9 connector plugs into an available RS232 port on the host PC. If required a straight through 9-pin male to female extender may be used between the PC and the EV Module (not supplied).

Supply voltage (Recommended) V_{DD}	2.7 to 5.5V
Supply voltage (Absolute max.)	6V
Supply current	0.35 to 0.6mA
Digital output voltage range	-0.3 to +6 V
Digital output current	±10 mA
SMBus operating frequency	10 to 100 kHz
SMBus input high voltage	2.1 V
SMBus input low voltage	0.8 V
Operating Temperature (Absolute max.)	-25 to 85°C
Operating Temperature (Recommended)	0 to 70°C

336923

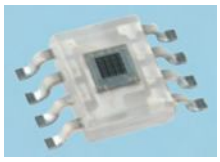
Mftrs. List No.	Order Code	Price Each 1+	5+	25+	100+
TSL2550D.	SMD 804-0915●	3.09	2.83	2.47	2.31

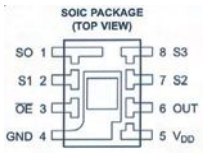
Over 480,000 products online QGO

Colour Light to Frequency Converter

TAOS

Programmable





- High resolution conversion of light intensity to frequency
- Programmable colour and full scale output frequency
- Communicates directly with a microcontroller
- Nonlinearity error typically 0.2% at 50 kHz
- Stable 200 ppm/°C temperature coefficient
- Power down mode

The **TSC230** device combines configurable silicon photodiodes and a current to frequency converter on a single monolithic CMOS integrated circuit. The output is a square wave (50% duty cycle) with frequency directly proportional to light intensity. The full scale output frequency can be scaled by one of three preset values via two control input pins. Digital inputs and outputs allow direct interface to a microcontroller or other logic circuitry. Output enable places the output in the high impedance state for multiple unit sharing of a microcontroller input line. The converter contains an 8 x 8 array of photodiodes with 16 parallel connected photodiodes each for red, green, blue or unfiltered colour sensing. The colour to be converted to a frequency is pin selectable. Photodiodes are 120µm x 120µm in size and are on 144µm centres.

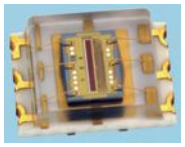
Supply voltage (Recommended) V_{DD}	2.7 to 5.5V
Supply voltage (Absolute max.)	6V
Supply current	2 to 3mA
Digital output voltage range	-0.3 to +6 V
Digital output current	±10 mA
SMBus operating frequency	10 to 100 kHz
SMBus input high voltage	2.1 V
SMBus input low voltage	0.8 V
Operating Temperature (Absolute max.)	-25 to 85°C
Operating Temperature (Recommended)	0 to 70°C

337171.343634

Mftrs. List No.	Order Code	Price Each 1+	5+	25+	100+
TCS230	SMD 489-1211●	4.61	4.20	3.68	3.43

Light to Digital Convertor

TAOS



- Approximates Human Eye Response
- Precisely Measures Illuminance in Diverse Lighting Conditions
- Programmable Interrupt Function with User-Defined Upper and Lower Threshold Settings
- 16-Bit Digital Output with SMBus (TSL2560) or I2C (TSL2561) Fast-Mode at 400 KHz
- Programmable Analog Gain and Integration
- Time Supporting 1,000,000-to-1 Dynamic Range
- Available in Ultra-Small 1.25 mm x 1.75 mm
- Automatically Rejects 50/60-Hz Lighting Ripple
- Low Active Power (0.75 mW Typical) with Power Down Mode

490891

Mftrs. List No.	Interface	Order Code	Price Each 1+	25+	100+
TSL2560T	SMBus	122-6887●	1.35	1.28	1.20
TSL2561T	I²C	122-6888●	1.35	1.28	1.20

Colour Sensor

TT electronics OPTEK Technology

New



Operating Temperature -30°C to +85°C

Angle (half)	Voltage (Vcc) (min)	(max)	Dimensions Height	Width	Depth	Mftrs List No.	Order Code
60°	2.7V	5.5V	6.6mm	9.4mm	21.41mm	OPB780Z	165-2218

528861

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+
OPB780Z	165-2218●	19.28	15.42	13.28	12.24

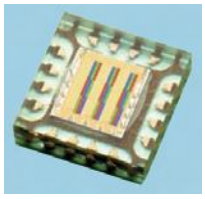
REACH - SVHCs

Products containing **Substances** of **Very High Concern** under REACH can now be easily identified online. Look for this logo to access supporting safety datasheets at **www.farnell.co.uk**

Colour Sensor

AVAGO TECHNOLOGIES

Light to Voltage Converter



H=1.0, W=5, D=5mm

This sensor combines a photodiode array and three trans-impedance amplifiers in a single monolithic CMOS IC solution. With Red (R), Green (G) and Blue (B) colour filters coated over the photodiode array, the sensor converts R, G, and B light to analogue voltage outputs, denoted by VR_{OUT}, VG_{OUT} and VB_{OUT} respectively. The sensor is packaged in a small surface mount QFN-16 package.
The sensor is ideal open-loop colour identification and closed-loop colour point control. It is designed for low luminance applications including colour detection, environment lighting, industrial process etc.

Supply Voltage	4.5V dc to 5.5V dc	Rise Time	5µs
Output Voltage	4.8V	Fall Time	5µs
Dark Voltage	15mV	Operating Temperature	-40°C to +85°C
Supply Current	2.5mA		

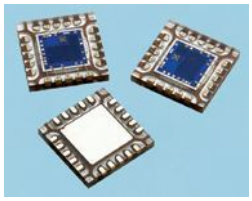
418550

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
HDJD-S722-QR999	SMD 105-8376●	11.94	9.29	7.61	6.53	5.94

Colour sensor

AVAGO TECHNOLOGIES

RGB, CMOS



H=5, W=5, D=0.75

SMD

- Fully integrated RGB digital colour sensor
- 2 wire serial interface
- Industries smallest form factor
- Uniformally distributed RGB photodiode array
- 7 bit resolution per channel output
- Intelligent power management
- Built in internal oscillator
- 0 ° to 70 °C operating temperature range.

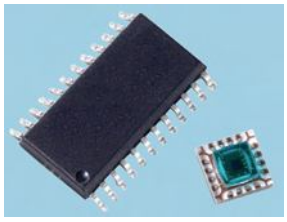
Designed to cater for a wide dynamic range of illumination level and is ideal for applications like portable or mobile devices which demand higher integration, smaller size and low power consumption. Sensitivity controlled is performed by the serial interface and can be optimized individually for the different colour channels. This sensor can also be used in conunction with a white LED for reflective colour management.

446153

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	+
ADJD-S313-QR999	SMD 124-1250●	5.74	3.84	3.13	2.74	– –

Colour Management

AVAGO TECHNOLOGIES



SMD

- CMOS-Schmitt input
- Multiple Colour Formats, CIE, XYZ, Yxy, Yu'v' and RGB
- 3-Channel analogue interface to colour sensor - X, Y, Z channels
- 3-Channel, 12-bit PWM output - Red, Green, and Blue LED channels
- Internal computation of calibration data
- Internal reference voltage generator
- Error flag output
- External push button interface for brightness and colour

This colour detection system includes a CMOS mixed signal IC which when combined with the colour sensor, interfaces via the I²C interface.
The IC integrates a high-accuracy 10 bit ADC front end, a colour data processing logic core and a high resolution 12-bit PWM output generator.The output PWM signals are connected directly to the LED drivers as enable signals. The PWM signals control the on-time duration of the Red, Green and Blue LEDs.
That duration is continually adjusted in real-time to match the light output from the LED array to the specified colour.
This colour feedback system has applications in colour duplication, colour management and real time colour adjustment.

Applications include: Backlighting, General illumination, Mood/accent lighting, Colour context sensitive applications.

Type	Mftrs List No.
Colour Controller	HDJD-J822-SCR00
Colour Sensor	HDJD-S831-QT333

446128

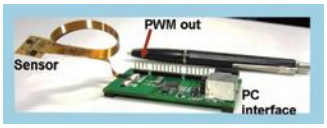
Mftrs. List No.	OrderCode	Price Each 1+	25+	100+	250+
HDJD-J822-SCR00	SMD 124-1251●	19.91	13.28	10.86	9.48
HDJD-S831-QT333	SMD 105-8377●	19.91	15.26	12.49	10.71

RL Re-reeling available

Farnell

Emitters and Detectors - continued

Colour Controller Development Kit



Kit contains:
- Development board
- FPC Board (Please refer to datasheet)
- CD-ROM containing hardware user guide, ICMv2 operating software manual, application notes

A kit designed to demonstrate the full capabilities of the ADJD-J823 colour controller.
The development kit can be used stand-alone with an auto-load feature or connect direct to an IBM-PC (using a USB port).
Sample programs are provided to demonstrate the unique features of the device.

464367

Mftrs. List No.	Order Code	Price Each 1+	+	+
Development Kit				
HDJD-JD14	**133-9015**●	204.41	– –	– –

Colour Management System Feedback Controller



Kit contains:
- Transmissive sensor kit
- Reflective sensor kit
- A/D board - color reader board
- LPT parallel cable
- USB cable
- Installation software CD

Development Board
A kit designed to demonstrate the full capabilities of the HDJD-S722-QR999 colour controller. The Analogue RGB outputs are input into the interfaces RGB, then real time monitoring is possible using the host application.The LPT and USB cables are pugged into the colour reader board, then the reflective sensor kit or transmissive kit may be connected via the supplied RSK data cable.
Sample programs are provided to demonstrate the unique features of the device.

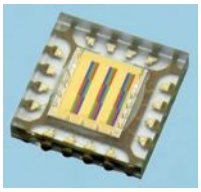
Colour sensor
The colour sensor is a high performance light-to-voltage converting sensor. The sensor combines a photodiode array and 3 trans-impedance amplifiers in a single monolithic CMOS IC solution. With R,G and B color filters over the photodiode array the sensor converts RGB light to analog voltage outputs.

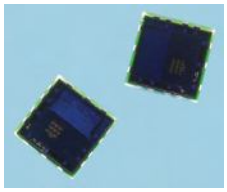
464374

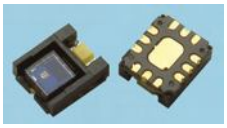
Mftrs. List No.	Order Code	Price Each 1+	+	+
Development Kit				
HDJD-JD02	**124-1253**●	408.13	– –	– –
		1+	25+	100+
Colour sensor				
HDJD-S722-QR999	SMD **105-8376**●	11.94	9.29	7.61

RGB Colour Sensors

New


H=5mm, W=5mm, D=0.75


H=2.2mm, W=2.2mm, D=0.76


H=3.9mm, W=4.5mm, D=1.8

Operating Temperature	Mftrs. List No.	Order Code
-20°C to +85°C	HDJD-S822-QR999	161-8709
0°C to +70°C	ADJD-S311-CR999	161-8710
-20°C to +85°C	ADJD-S371-QR999	161-8712

515806

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+
HDJD-S822-QR999	SMD **161-8709**●	7.04	4.93	3.97	3.62
ADJD-S311-CR999	SMD **161-8710**●	2.11	1.48	1.19	1.09
ADJD-S371-QR999	SMD **161-8712**●	3.37	2.36	1.90	1.73

Need a better price?

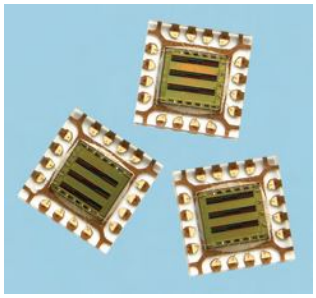


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Phone: **08447 11 11 11**

Integrated Colour Management System

Automotive Grade



- Convert Light to R,G,B voltage output
- Monolithic CMOS IC solution
- Independant gain selection for each R, G, B channel
- 3 x 3 array design to improve accuracy
- Qualified per Automotive AEC-Q100 Standard (Grade 3)
- Robust package in a small footprint, size: 5 x 5 x 0.75 mm

High performace in a small size, this sensor combines a photodiode array each with seperate R,G,B filters and individual gain adjustment for use in tough environments, where colour sensing is required at a low cost.

Automobile applications include: dashboard lighting, interior lighting, infotainment and navigational panels.
Other possible uses such as cabin lighting, decrotive lighting, general colour detection, industrial process etc.

446151

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	+
ADJD-E622-QR999	SMD **124-1248**●	11.93	7.98	6.53	5.69	– –

Colour Sense Module

Internal Voltage Regulator


H = 3, W = 27.6, D = 7mm

Supply Voltage	4.5V dc to 5.5V dc
Output Voltage	3.0V
Dark Voltage	15mV
Supply Current	3mA
Rise Time	15µs
Fall Time	15µs
Operating Temperature	-20°C to +85°C

This sensor combines a 12 x 12 photodiode array and three trans-impedance amplifiers in a single monolithic CMOS IC solution. With Red ®, Green (G) and Blue (B) colour filters coated over the photodiode array, the sensor converts R G B light to analogue voltage outputs, denoted by VR_{OUT}, VG_{OUT} and VB_{OUT} respectively. The sensor is driven by a single 5V supply and incorporates an internal 5V to 3.3V voltage regulator. The spectral sensitivity response of the sensor is optimized for RGB-LED backlight applications. The sensor has good detection ability in light output chromaticity drift, when used with closed loop feedback controller, manages to bring the backlight system to realize good du V performance.
Potential applications include white point control in emissive display, environmental lighting and colour control in industrial process.

418540

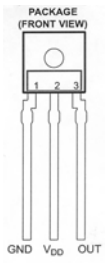
Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
HDJD-S831-QT333	SMD **105-8377**●	19.91	15.26	12.49	10.71	9.76

Light to Frequency Converter

Ultraviolet or Infrared Responsivity


H=4.6, W=4.6, D=1.64mm
Lead length = 14.75mm


H=4.6, W=4.6, D=1.64mm
Lead length = 14.75mm



- High resolution conversion of light to frequency
- No external components required
- Communicates directly with a microcontroller
- Compact 3 lead plastic package
- Single supply operation down to 2.7V

The light-to-frequency converters combine a silicon photodiode and a current-to-frequency converter on a single monolithic CMOS integrated circuit. The output is a square wave (50% duty cycle) with frequency directly proportional to light intensity. The output is TTL compatible and allows direct interfacing to a microcontroller or other logic circuitry.
TSL235R - This device has been temperature compensated for the ultraviolet to visible light range of 320nm to 700nm and responds over the range 320nm to 1050nm. Supplied in a clear plastic side-looker package.
TSL245 - The device responds over the infrared light range of 800nm to 1100nm and is supplied in a plastic side-looker package.

Supply voltage (Recommended)	2.7 to 5.5V	Output Frequency (E_e = 0)	0.25 Hz
Supply voltage (Absolute max.)	6V	Output Frequency (E_e = *)	250 kHz ±50kHz
Full scale frequency	500kHz	* 1182352	E_e = 430µW/cm², λ_p = 635 nm
Supply current	2mA	* 1182354	E_e = 920µW/cm², λ_p = 940 nm

Operating Frequency Range	Output Voltage High-level	Low-level	Mftrs. List No.	Order Code
320 to 700 nm	4.5V	0.25V	TSL235R-LF	118-2352
800 to 1100 nm	4.3V	0.17V	TSL245-LF	118-2354

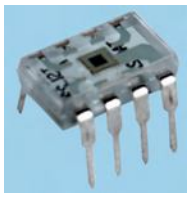
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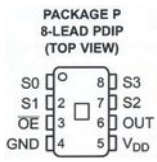
Order Code	Price Each 1+	25+	100+	250+	+
118-2352●	4.42	2.63	2.31	2.16	– –
118-2354●	4.69	2.82	2.46	2.29	– –

Light to Frequency Converter - Programmable

TAOS

Ultraviolet to Visible Light Range





- High resolution conversion of light to frequency
- No external components required
- Programmable sensitivity and full-scale output frequency
- Communicates directly with a microcontroller

The **TSL230LF** light-to-frequency converter combines a configurable silicon photodiode and a current to frequency converter on a single monolithic CMOS integrated circuit.
The device has an absolute output frequency tolerance of ±20%. It has been temperature compensated for the ultraviolet-to-visible light range of 320nm to 700nm and responds over the light range of 320nm to 1050nm.
The output can be either a pulse train or a square wave (50% duty cycle) with frequency directly proportional to light intensity.
Device sensitivity is selectable in three ranges, providing two decades of adjustment. The full-scale output frequency can be scaled by one of four preset values.
All inputs and outputs are fully TTL compatible. An output enable is provided that places the output in a high impedance state for multi unit sharing of a microcontroller input line.

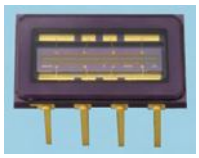
Supply voltage (Recommended)	2.7 to 5.5V	High level output voltage	4.5V
Supply voltage (Absolute max.)	6V	Low level output voltage	0.25V
Full scale frequency	1.1MHz	High level input current	5µA
Supply current	2mA	Low level input current	5µA
High level input voltage	2V	Operating Temperature	-25 to 70°C
Low level input voltage	0.8V		

336920

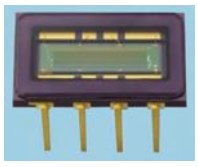
Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+
Sensor TSL230RP-LF	118-2355●	4.90	4.53	4.25	4.16

CMOS Linear Image Sensor

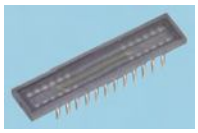
HAMAMATSU



Built-in timing generator and signal processing circuit; single 3.3V supply operation



High-speed readout, simultaneous integration



Digital output, built-in 8/10-bit AD converter, single power supply operation

Peak wavelength 700nm
Operating temperature range -5°C to +60°C

Features
- Built-in timing generator allows operation with only start and clock pulse inputs
- Spectral response range: 400nm to 1000nm

Applications
- Position detecting
- Image reading

Voltage supply Minimum	Maximum	Power Consumption	Height	Dimensions Depth	Width	Mftrs. List No.	Order Code
5.25V	3.3V	25mW	12.0mm	1.5mm	7.87mm	S9226	149-5579
5.25V	4.75V	150mW	12.0mm	1.5mm	7.87mm	S9227	149-5580
5.25V	3.3V	70mW	41.6mm	3.0mm	9.1mm	S10077	149-5581

497514

Mftrs. List No.	Order Code	Price Each 1+	10+	25+
S9226	149-5579●	33.68	32.32	30.31
S9227	149-5580●	39.77	38.17	35.78
S10077	149-5581●	53.65	51.50	48.29

Linear Sensor Array

TAOS

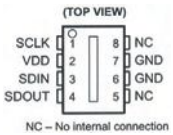
102 x 1 with Analog to Digital Converter





Evaluation Module

- 102 x 1 sensor element organization
- 300 dots per inch pixel pitch
- High sensitivity
- On chip 8-bit analogue to digital conversion
- High speed serial interface
- 1 MHz pixel rate



NC – No internal connection

The **TSL3301** device is a high sensitivity 300 dpi, linear optical sensor array with integrated 8 bit analogue to digital converters. The array consists of 102 pixels, each measuring 85 µm (H) by 77 µm (W) and spaced on 85 µm centres. Associated with each pixel is a charge integrator/amplifier and sample hold circuit. All pixels have concurrent integration periods and sampling times. The array is split into three 34 pixel zones, with each zone having programmable gain and offset levels. Data communication is accomplished through a three wire serial interface.
The **TSL3301 Evaluation Module** allows evaluation of the TSL3301 Linear Optical Sensor Array in a variety of configurations. The module can demonstrate optical edge detection, measurement, document scanning, image functions and provides full control of the internal registers and integration time. The module incorporates a TSL3301 device and comes complete with EE/Flash - may be reprogrammed by user (programmer not included).
The TSL3301 Evaluation Module includes Windows® based host software (and documentation) on CDROM, SELFOC lens array and camera lens.

Supply voltage (Recommended) V_{DD}	3 to 5.5V	High level input voltage	2V to V_{DD}
Supply voltage (Absolute max.)	6V	Low level input voltage	0.8V
Supply current (Typ) - A/D active	11mA	Low level input current	5µA
		Operating Temperature (Absolute max.)	-25 to 85°C
Clock frequency (max.)	10MHz	Operating Temperature (Recommended)	0 to 70°C

336922

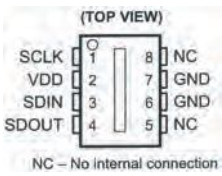
Mftrs. List No.	Order Code	Price Each 1+	5+	25+	100+
TSL3301-LF	118-2356●	5.20	4.89	4.53	4.20
TSL3301EVM.	489-1181	114.52			

Linear Sensor Array

TAOS

128 x 1 with Hold





NC – No internal connection

H x 3.2, W = 11.4, D = 6.35mm

- 128 x 1 Sensor-Element organization
- 400 DPI Sensor pitch
- High linearity and uniformity
- Wide dynamic range - 4000:1 (72 dB)
- Output referenced to ground
- Low image lag - Typically 0.5%
- Operation to 8 MHz
- Single 3V to 5V supply
- Rail-to-Rail output swing (AO)
- No external load resistor required

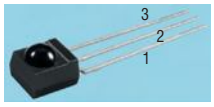
496982

Dimensions (µm) Pixel - H x W	Mftrs. List No.	Order Code	Price Each 1+	5+	25+	100+
63.5 x 55.5	TSL1401R	124-2265●	6.66	6.07	5.29	4.94

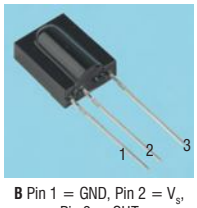
Infrared Receiver Modules

VISHAY

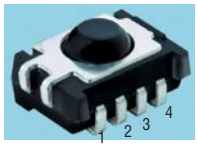
For Remote Control Systems



A1 - Pin 2 = V_s, Pin 3 = GND
A2 - Pin 3 = V_s, Pin 2 = GND
A1 & **A2** Pin 1 = OUT



B Pin 1 = GND, Pin 2 = V_s, Pin 3 = OUT



C1 Pin 1 = GND, Pin 2 = NC, Pin 3 = OUT, Pin 4 = V_s
C2 Pin 1 = GND, Pin 2 = GND, Pin 3 = V_s, Pin 4 = OUT

- Photo detector and preamplifier in one package
- Internal filter for PCM frequency
- Improved shielding against electrical field disturbance
- TTL and CMOS compatible
- Output active low

Supply Voltage	Current (Max)	Burst Data Length (burst)	Gap (between bursts)	Bursts (Rx/sec)	Carrier Frequency	Case Style	Mftrs List No.
High Data Rate PCM (20 kbps)							
2.7 to 5.5	5mA	22µs	26µs	—	455kHz	**A2**	TSOP7000.
2.7 to 5.5	5mA	22µs	26µs	—	455kHz	**C1**	TSOP5700TR.
Short Burst and High Data Rate (4000 bps)							
4.5 to 5.5	5mA	6 cycles/burst	10 cycles	2200 bursts/sec	36kHz	**A2**	TSOP4136.
4.5 to 5.5	5mA	6 cycles/burst	10 cycles	2200 bursts/sec	38kHz	**A2**	TSOP4138.
4.5 to 5.5	5mA	6 cycles/burst	10 cycles	2200 bursts/sec	33kHz	**B**	TSOP1133.
4.5 to 5.5	5mA	6 cycles/burst	10 cycles	2200 bursts/sec	36kHz	**B**	TSOP1136.
4.5 to 5.5	5mA	6 cycles/burst	10 cycles	2200 bursts/sec	38kHz	**B**	TSOP1138.
Standard, supporting all major transmission codes							
2.7 to 5.5	3mA	10 cycles/burst	14 cycles	800 bursts/sec	36kHz	**A1**	TSOP32236.
2.7 to 5.5	3mA	10 cycles/burst	14 cycles	800 bursts/sec	38kHz	**A1**	TSOP32238.
2.7 to 5.5	3mA	10 cycles/burst	14 cycles	800 bursts/sec	36kHz	**A2**	TSOP34836.
2.7 to 5.5	3mA	10 cycles/burst	14 cycles	800 bursts/sec	38kHz	**A2**	TSOP34838.
2.7 to 5.5	3mA	10 cycles/burst	14 cycles	800 bursts/sec	36kHz	**C2**	TSOP36236TR.
2.7 to 5.5	3mA	10 cycles/burst	14 cycles	800 bursts/sec	38kHz	**C2**	TSOP36238TR.
4.5 to 5.5	5mA	10 cycles/burst	14 cycles	800 bursts/sec	36kHz	**A1**	TSOP2236.
4.5 to 5.5	5mA	10 cycles/burst	14 cycles	800 bursts/sec	38kHz	**A1**	TSOP2238.
4.5 to 5.5	5mA	10 cycles/burst	14 cycles	400 bursts/sec	36kHz	**A1**	TSOP2436.

RL Re-reeling available

Farnell

Emitters and Detectors - continued

Infrared Receiver Modules - continued

For Remote Control Systems - continued

Supply Voltage	Current (Max)	Length (burst)	Burst Data Gap (between bursts)	Bursts (Rx/sec)	Carrier Frequency	Case Style	Mftrs List No.
4.5 to 5.5	5mA	10 cycles/burst	14 cycles	400 bursts/sec	38kHz	**A1**	TSOP2438.
4.5 to 5.5	5mA	10 cycles/burst	14 cycles	800 bursts/sec	36kHz	**A2**	TSOP4836.
4.5 to 5.5	5mA	10 cycles/burst	14 cycles	800 bursts/sec	38kHz	**A2**	TSOP4838.
4.5 to 5.5	5mA	10 cycles/burst	14 cycles	800 bursts/sec	36kHz	**B**	TSOP1236.
4.5 to 5.5	5mA	10 cycles/burst	14 cycles	800 bursts/sec	38kHz	**B**	TSOP1238.
4.5 to 5.5	5mA	10 cycles/burst	14 cycles	800 bursts/sec	36kHz	**C2**	TSOP6236TR.
4.5 to 5.5	5mA	10 cycles/burst	14 cycles	800 bursts/sec	38kHz	**C2**	TSOP6238TR.

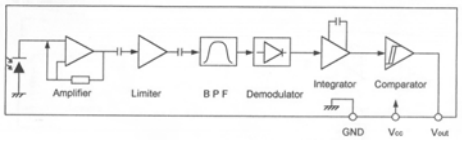
337505

Mftrs. List No.	Order Code	Price Each 1+	10+	50+	100+	250+
TSOP7000.	**491-3231**	2.33	2.19	1.95	1.27	1.17
TSOP5700TR.	SMD **491-3206** RL	2.62	2.32	2.02	1.41	1.37
TSOP4136.	**491-3164**	0.93	0.79	0.69	0.48	0.46
TSOP4138.	**491-3176**	0.96	0.81	0.71	0.49	0.47
TSOP1133.	**491-3012**	0.93	0.79	0.69	0.48	0.46
TSOP1136.	**491-3024**	0.69	0.59	0.52	0.36	0.35
TSOP1138.	**491-3036**	0.96	0.81	0.71	0.49	0.47
TSOP32236.	**491-3103**	0.96	0.81	0.71	0.49	0.47
TSOP32238.	**491-3115**	1.27	1.07	0.87	0.65	0.62
TSOP34836.	**491-3127**	0.69	0.64	0.57	0.39	0.38
TSOP34838.	**491-3139**	0.92	0.85	0.76	0.51	0.50
TSOP36236TR.	SMD **491-3140**	1.40	1.23	1.06	0.73	0.71
TSOP36238TR.	SMD **491-3152**	1.85	1.39	1.14	0.95	0.93
TSOP2236.	**491-3061**	0.66	0.59	0.52	0.36	0.35
TSOP2238.	**491-3073**	0.83	0.75	0.65	0.45	0.44
TSOP2436.	**491-3085**	0.90	0.78	0.69	0.47	0.46
TSOP2438.	**491-3097**	0.68	0.60	0.54	0.37	0.36
TSOP4836.	**491-3188**	0.66	0.59	0.52	0.36	0.35
TSOP4838.	**491-3190**	0.83	0.75	0.65	0.45	0.44
TSOP1236.	**491-3048**	0.83	0.75	0.65	0.45	0.44
TSOP1238.	**491-3050**	0.83	0.75	0.65	0.45	0.44
TSOP6236TR.	SMD **491-3218** RL	1.32	1.15	1.01	0.70	0.68
TSOP6238TR.	SMD **491-3220** RL	1.32	1.15	1.01	0.70	0.68

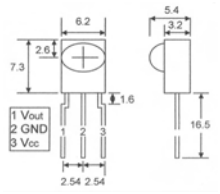
Infrared Remote Control Receivers


HIM602V / 702V

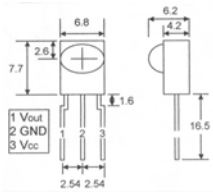

HIM602H / 702H



HIM602 / 702 Schematic



HIM602



HIM702

- Wide Reception Angle
- Long Reception Distance
- Good EMI Protection
- Low power Consumption

Applications Include:
- Audio / Video Control
- Multimedia
- Games
- Remote Control Lighting
- Automotive Alarm Control

A range of infrared remote control receivers featuring an integral I/R photodiode, amplifer, limiter, bandpass filter and demodulator.
These devices can receive a 38kHz carrier transmission signal from an infrared remote controller and output a demodulated logic pulse stream, this data may then be forward directly to a microcontroller for decoding.
The devices are available with a vertical or horizontal mounting configuration and also low power options. The design has built-in lens and integral EMI metal shield.

V_{CC} (min)	V_{CC} (max)	Supply Current (mA)	Reception Distance (typ)	Peak Wavelength	BPF Centre Freq.	Mftrs List No.	Order Code
4.5	5.5	3	16m	940nm	38kHz	HIM602V.	414-2822
4.5	5.5	3	16m	940nm	38kHz	HIM602H	120-0323
2.4	5.5	0.6	15m	940nm	38kHz	HIM702VM	120-0324
2.4	5.5	0.6	15m	940nm	38kHz	HIM702HM.	414-2858

Mftrs. List Nos: HIM602V. = 414-2822 HIM602H = 120-0323 HIM702VM = 120-0324 HIM702HM. = 414-2858

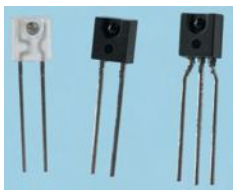
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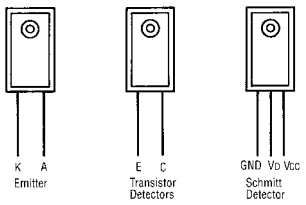
Description	Mftrs. List No.	Order Code	Price Each 1+	5+	10+	25+
Vertical Receiver	HIM602V.	**414-2822**	1.97	1.75	1.60	1.40
Horizontal Receiver	HIM602H	**120-0323**	1.97	1.75	1.60	1.40
Low Pwr Vert. Receiver	HIM702VM	**120-0324**	2.16	1.92	1.76	1.55
Low Pwr Horiz. Receiver	HIM702HM.	**414-2858**	2.16	1.92	1.76	1.55

Planar Photodiodes

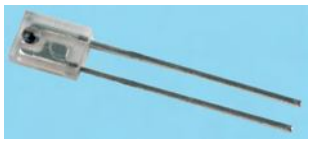
Infra-Red Matched Emitter Detectors

FAIRCHILD SEMICONDUCTOR


Emitter Transistor-Detector Schmitt-Detector




489-0966 Emitter - Matched with 489-0978


489-0978 Phototransistor - Matched with 489-0966

OP245PS Emitter – Amber-tinted epoxy, QSE113 Transistor Detector – Black epoxy
QSE159 Schmitt Detector – Dark Red epoxy, OP550C NPN Phototransistor Detector – Clear epoxy

Emitter

I_F	50mA	λ_{PE}	940nm (Typ)
V_R	5V	Emission Angle	50°
P_D	100mW	Operating Temperature	-40°C to 100°C

Detectors	**Transistor**	**Schmitt**
Operating Temperature	-40°C to 100°C	-40°C to 85°C
Power Dissipation	100mW	100mW
Reception Angle	±25°	±25°

Transistor

Collector Emitter Voltage	30V
Emitter Collector Voltage	5V
Peak Sensitivity	880nm
On-State Collector Current	0.25(Min), 1.50(Max) mA

Schmitt

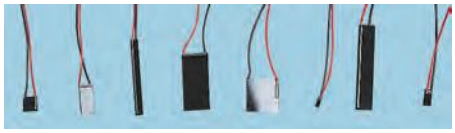
Operating Supply Voltage	4.5(Min), 16.0(Max) V
Sinking Current	50 mA
Voltage at Output	35V
Supply Current	12 mA
High Level Output Current	100 µA
Low Level Output Voltage	400 mV

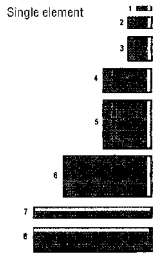
330573

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	1K+
Emitter					
OP245PS	**489-0966**	2.310	1.150	1.050	1.020
QEE113	**102-1146**	0.490	0.400	0.310	0.156
Detector					
OP550C	**489-0978**	0.730	0.420	0.390	0.370
QSE113	**102-1147**	0.410	0.280	0.186	0.139
QSE159	**102-1148**	1.370	1.080	0.820	0.450

Solderable Planar Photodiodes

SILONEX





This range of photodiodes is suitable for a large variety of sensing applications. The large active areas can be used to accurately sense object position such as a paper edge, or as a large target for laser or long-range applications. Devices are supplied with a protective coating and 130mm flying leads.

Mftrs. List No.	Short circuit current (typ) @ 25mW/cm²	Open Circuit Voltage (typ)	Dark Current VR=5V (max) µA	Fig.	Chip size
SLSD-71N100	0.5mA	0.4	1.7	2	2.5 x 5.1mm
SLSD-71N300	2.1mA	0.4	1.7	4	5.1 x 10.2mm
SLSD-71N400	2.3mA	0.4	5	7	2.5 x 25.4mm
SLSD-71N500	4mA	0.4	3.3	5	10.2 x 10.2mm
SLSD-71N600	6mA	0.4	3.3	8	5.1 x 25.4mm
SLSD-71N700	8mA	0.4	5	6	9 x 19.3mm
SLSD-71N800	0.17mA	0.4	1.7	1	1.3 x 3.4mm

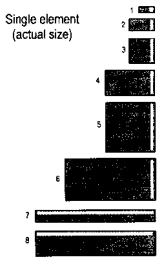
206642

Mftrs. List No.	Order Code	Price Each 1+	25+	100+
SLSD-71N100	**121-8993**	3.64	3.14	2.80
SLSD-71N200	**121-8994**	4.17	3.62	3.22
SLSD-71N300	**121-8995**	7.51	6.52	5.81
SLSD-71N400	**121-8996**	6.12	5.30	4.70
SLSD-71N500	**121-8997**	14.66	12.64	11.26
SLSD-71N600	**121-8998**	16.34	14.11	12.57
SLSD-71N700	**121-8999**	20.28	17.51	15.57
SLSD-71N800	**121-9000**	2.79	2.39	2.07

RL Re-reeling available

Farnell

Solderable Planar Photodiodes - Chip Only — SILONEX



This range of photodiodes is suitable for a large variety of sensing applications. The large active areas can be used to accurately sense object position such as a paper edge, or as a large target for laser or long-range applications. Devices are supplied as a chip for the user to connect to. Arrays, duals and many other sensing configurations are possible.

Mftrs. List No.	Short circuit current (typ) @ 25mW/cm²	Open Circuit Voltage (typ)	Dark Current VR=5V (max) µA	Fig.	Chip size
SLCD-61N1	0.5mA	0.4	1.7	2	2.5 x 5.1mm
SLCD-61N2	1.2mA	0.4	3.3	3	5.1 x 5.1mm
SLCD-61N3	2.1mA	0.4	1.7	4	5.1 x 10.2mm
SLCD-61N4	2.3mA	0.4	5	7	2.5 x 25.4mm
SLCD-61N5	4mA	0.4	3.3	5	10.2 x 10.2mm
SLCD-61N8	0.17mA	0.4	1.7	1	1.3 x 3.4mm

206640

Mftrs. List No.	Order Code	Price Each 1+	25+	100+
SLCD-61N1	121-8986●	0.82	0.72	0.64
SLCD-61N2	121-8987●	1.76	1.53	1.36
SLCD-61N3	121-8988●	4.66	4.03	3.57
SLCD-61N4	121-8989●	5.18	4.48	3.98
SLCD-61N5	121-8990●	11.43	9.88	8.81
SLCD-61N8	121-8991●	1.90	1.67	1.46

IrDA Compliant Products

IrDA Controller ICs

MICROCHIP

The MCP2120 is a stand-alone IrDA Encoder/Decoder designed to fit between a UART and infrared transceiver, this device is capable of the modulation and demodulation of data to the IrDA standard. The MCP2150 is a complete IrDA communications Controller which provides support for the IrDA protocol "stack" plus bit encoding/decoding. Both devices are capable of supporting IrDA communications upto 115.2 kbaud.

234867

Pins	Pkg	Description	Mftrs. List No.	Order Code	Price Each 1+	10+	100+
14	DIP	IrDa Infrared Encoder/Decoder	MCP2120-I/P	108-4304●	1.55	0.86	0.76
14	SOIC	IrDa Infrared Encoder/Decoder	MCP2120-I/SL	SMD 108-4305●	1.55	0.86	0.76
8	DIP	HSDL-7000 Compatible Infrared Encoder/Decoder	MCP2122-E/PG	789-3383●	0.61	0.45	0.40
8	SOIC	HSDL-7000 Compatible Infrared Encoder/Decoder	MCP2122-E/SNG	SMD 789-3395●	0.33	0.33	0.32
18	DIP	IrDa Communications Controller	MCP2150-I/P	975-8518●	5.71	3.20	2.78
18	SOIC	IrDa Communications Controller	MCP2150-I/SO	SMD 975-8526●	5.71	3.20	2.78
18	DIP	IrDA Encoder/Decoder, 9600 Baud	MCP2140-I/P	133-2084●	1.40	1.18	0.78
18	SOIC	IrDA Encoder/Decoder, 9600 Baud	MCP2140-I/SO	SMD 133-2085●	1.40	1.18	0.78
18	PDIP	IrDA® Standard Protocol Stack Controller With Fixed 9600 Baud Communication Rate	MCP2140A-I/P	143-9520●	1.40	1.00	0.78
18	SOIC	IrDA® Standard Protocol Stack Controller With Fixed 9600 Baud Communication Rate	MCP2140A-I/SO	SMD 143-9521●	1.53	1.09	0.85
18	PDIP	115.2 kbaud IR Stack Controller with Signal Encoding/Decoding for Data Comms.	MCP2155-I/P	NEW 155-7426●	4.30	3.26	2.56

Serial Infra-Red IrDA Compliant Transceiver

VISHAY



- IrDA options up to 115.2kbit/s
- Low power consumption
- Low shutdown current
- Compact package

Datarate kbit/s	Distance max.	Compatability	V_{CC} V	Current Shutdown	I_F mA.	List No.
115	50cm	IrPHY 1.4	2.4 - 3.6	10nA	1	TFBS4650
115.2	1m	S.I.R	2.4 - 5.5	10nA	1	TFBS4711
4Mbps	6.5m	S.I.R	2.4 - 3.6	0.01µA	1	TFBS6711
4Mbps	9m	S.I.R	2.4 - 3.6	0.01µA	1	TFDU6300

464896

Mftrs. List No.	Order Code	Price Each 1+	10+	50+	100+	250+
TFBS4650	SMD 132-8403●	3.37	2.41	2.24	2.02	1.94
TFBS4711	SMD 132-8404●	4.49	3.37	3.00	2.69	2.58
TFBS6711	SMD 132-8405●	4.68	3.51	3.12	2.81	2.70
TFDU6300	SMD 132-8406●	6.24	4.67	4.16	3.74	3.60

Infrared Transceiver and Remote Control Modules

For IrDA Applications

VISHAY



IrDA defined Operating Modes

Bit Rate	From	To
Standard InfraRed (SIR)	9600 bps	115.2 kbps
Medium InfraRed (MIR)	576 kbps	1152 kbps
Fast InfraRed (FIR)	4 Mbps	

- Low profile package
- Reduced power consumption
- Directly interface with wide variety of I/O devices
- Compliant with IrDA defined operating modes
- Operating temperature -25 to 85°C
- Evaluation Board available for SIR "4000" Series

Supply Voltage	Supply Current (Rx)	Current (Tx)	IrDA Range	Remote Control Range	Dimensions H x W x D (mm)	Operating Mode	Mftrs List No.
2.4 to 5.5	<3mA	10mA	1.0m	up to 22m	2.5 x 8.5 x 2.9	FIR	TFDU4300-TR3◆
2.7 to 5.5	<3mA	10mA	1.0m	up to 22m	2.5 x 8.5 x 2.9	FIR	TFDU5307-TT3

◆ marked devices have independent IrDA and remote control functions

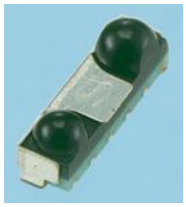
337495

Mftrs. List No.	Order Code	Price Each 1+	10+	50+	100+	250+
TFDU4300-TR3	SMD 104-5444●	4.48	3.44	2.76	2.49	2.18
TFDU5307-TT3	SMD 104-5445●	2.89	2.63	2.38	1.99	1.88

IrDA 1.0 or 1.2 Compliant Modules

Transceivers

SHARP



H=2.75, W=7.2, D=1.85

Features:
- IrDA 1.0 or 1.2 compliant
- Transmission rates of 2.4 to 115Kb/sec
- External metal shield
- Low profile SMD packages

Applications:
- Portable Instrumentation
- Data loggers
- Cellular Phones
- PDA's
- Programming Tools
- Multimedia

A range of SMD style IrDA 1.0 and 1.2 compliant transceiver modules suitable for data exchange between handheld instrumentation and base units. Versions include low power variants and low voltage options, all feature power-down function and incorporate a protective metal shield.

Supply Voltage V_{CC} (min / max)	LED Supply Voltage	Operating Temperature Range	Transmission Rate (kb/s)
2.0 to 3.6V dc	2.0 to 6.0V dc	-40 to 85°C	2.4 to 115.2 kb/s

412005

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
GP2W0116YP0F	SMD 970-8120● RL	1.78	1.33	1.11	1.08	1.05

Infrared Transceiver Module for IrDA® Applications

SIR, 115.2 Kbit/s, -0.5 to 6V Operation

VISHAY

New



L 9.7 mm × W 4.7 mm × H 4.0 mm

Pin Description - TFDUxxxx
1. IRED Anode
2. IRED Cathode
3. Transmit Data Input
4. Received Data Output
5. No Connection
6. Supply Voltage/Shutdown
7. Sensitivity Control
8. Ground

- Split power supply, transmitter and receiver can be operated from two power supplies with relaxed requirements saving costs
- 2.7 to 5.5V wide operating voltage range
- Low power consumption

RL Re-reeling available

Farnell

IrDA Compliant Products - continued

Infrared Transceiver Module for IrDA® Applications - continued

SIR, 115.2 Kbit/s, -0.5 to 6V Operation - continued

- Power shutdown mode
- Low profile (universal) package capable of surface mount soldering to side and top view orientation
- Directly interfaces with various Super I/O and controller devices

The TFDU4101 transceiver is an infrared transceiver module compliant to the latest IrDA physical layer standard for fast infrared data communication, supporting IrDA speeds up to 115.2 kbit/s (SIR), and carrier based remote control modes. Integrated within the transceiver module are a photo PIN diode, an infrared emitter (IRED), and a low-power control IC to provide a total front-end solution in a single package. This device covers the full IrDA range of more than 1 m using the internal intensity control. With one external current control resistor the current can be adjusted for shorter ranges saving operating current operating in IrDA low power mode. The receiver output pulse duration is independent of the optical input pulse duration TFDU4101 has a tristate output and is floating in shutdown mode with a weak pull-up.

V_{CC} V	$I_{IRED\ (DC)}$ mA	$I_{IRED\ (RP)}$ mA	V_{TXD} V	V_{RXD} V
-0.5 - 6	80	400	-0.5 to V_{CC1} +0.5	-0.5to V_{CC} +0.5

496039

Mftrs. List No.	Order Code	Price Each 1+	10+	50+	100+	250+
TFDU4101-TR3	**149-7670●**	4.05	3.15	2.73	2.58	2.43

Encoder/Decoder for IrDA Applications

SO16 Integrated Interface Circuit



- Pulse shaping function
- Directly interfaces to Vishay TFD... SIR tranceiver to RS232 port
- Programmable baud clock generator - 13 baud rates
- 3/16 bit pulse duration or 1.627µs pulse selectable
- 2.7 to 3.6V operating voltage, 5V tolerant inputs
- Low operating current

The Endec provides proper pulse shaping for Standard Infra Red (SIR) IrDA® transceivers. For transmission the device shortens the RS232 output signal to IrDA compatible electrical pulses to drive the infrared transmitter. In the receive mode the device stretches the received infrared pulses to the proper bit width depending on the operating bit rate. The IrDA bit rate varies from 2.4 kbs to 115.2 kbs. The Endec is programmable to operate from 1200 bs to 115.2 kbs by the communication software via the RS232 port.

337290

Mftrs. List No.	Order Code	Price Each 1+	10+	50+	100+	250+
TOIM4232-TR1	SMD **104-5446●**	5.88	5.16	4.52	3.52	3.43

Pyro Detector Modules

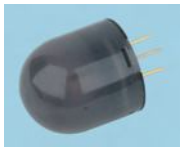
Pyro Detector Modules — Seiko



MS-331



MS-311



MS-401

A Selected range of small Passive Infrared (PIR) modules that combine a pyroelectric infrared detector, sensor circuitry and a lens.
The MS-3xx series have a range of 5 metres, each module has it's own timer and output time can be freely adjusted. They have a choice of two operating modes: one-shot and retriggerable. the output is via an open collector transistor.
The MS-400 sensor is a miniature PIR module without timer, it is designed for mounting directly onto a PCB. This module has a height of only 15.9mm but has a range of 2.5 metres.
Applications include:

- Automatic Light Switches
- Safety Systems
- Intruder Alarms

Max range	Lens Diameter / width	Depth	Supply voltage (min)	Supply voltage (max)	Detection spread angle	Mftrs. List No.	Order Code
5m	23∅	24	2.6	5.5	40°	MS331	120-9947
2.5m	14.3∅	15.9	4.5	5.5	54°	MS401	120-9948

241022

Mftrs. List No.	Order Code	Price Each 1+	5+	10+
MS331	**120-9947**	17.26	15.81	14.62
MS401	**120-9948**	9.79	8.98	8.29

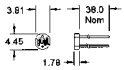
Light Dependent Resistors

SILONEX

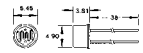


Packaged in either hermetically sealed cans, plastic case or coated in moisture resistant epoxy, light dependant resistors are ideal for daylight sensing and switching applications. They can also be used in position sensing applications. Two active areas are available: TO-8 and TO-18.

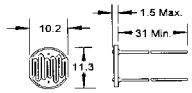
316-8335



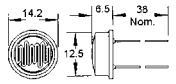
316-8347



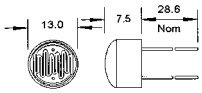
316-8359



316-8360



327-700



Mftrs. List No.	R (Ω) Typ.	R dark (Ω) Min.	Spectral Peak (nm)	V	Order Code
NSL 19M51.	5kohm @ 100 lux	20Mohm(1)	550	100	316-8335
NSL 06S53.	5kohm @ 100 lux	20kohm(1)	550	100	316-8347
NSL 4962.	17kohm @ 1 ftc	1Mohm(2)	515	320	316-8359
NSL 4960.	17kohm @ 1 ftc	1Mohm(2)	515	320	316-8360
NORPS-12	0.4kohm @ 100 ftc	1.0Mohm	515	320	327-700

(1) after 10 seconds, (2) after 5 seconds
ftc = footcandle

206625

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	1K+
NSL 19M51.	**316-8335▲**	0.48	0.43	0.38	0.35
NSL 06S53.	**316-8347▲**	1.51	1.31	1.15	0.89
NSL 4962.	**316-8359▲**	0.70	0.62	0.51	0.42
NSL 4960.	**316-8360▲**	2.01	1.73	1.49	1.17
NORPS-12	**327-700▲**	1.54	1.36	1.11	0.92

Light Dependent Resistor



Cadmium sulphide photoconductive cell in epoxy coated package with a spectral response similar to that of the human eye.

- Low noise
- Wide response
- High resistance
- Wide dynamic range
- High photoelectric sensitivity

Peak Response Min.	Max.	Resistance @10 lux Min.	Max.	Resistance dark Min.	Power dissipation	V_{Max}
550nm	650nm	50kohm	100kohm	5Mohm	50mW	100V

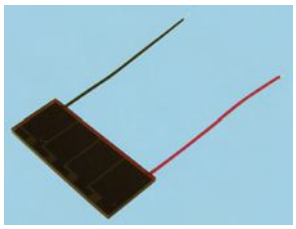
345732

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	1K+
N5AC501085	**748-2280**	0.99	0.83	0.70	0.44

Solar Panels

Amorton Solar Panels

Indoor



New

Benefits of amorphous products include:

- Unlimited energy supply from sunlight free of charge
- Direct conversion of sunlight to electricity in a clean and noise-free manner that does not produce toxic waste or by-products
- Regardless of the size of cells, power is generated at a fixed rate of optimum efficiency
- Power is generated whenever a light source is available, either natural, artificial, or diffused light

Operating Temperature -10°C to +60°C

Dimensions (mm) L	W	D	Open Circuit Voltage	Operating Voltage	Short Circuit Current	Operating Current (typ)	Mftrs. List No.	Order Code
11.8	29.6	1.3	2.4V	1.5V	8.5µA	8µA	AM-1437CA-SCE	167-9073
48.6	58.1	1.3	4.9V	3V	47µA	42µA	AM-1815CA-SCE	167-9074

527762

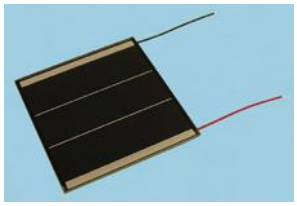
Mftrs. List No.	Order Code	Price Each 1+	10+	25+	100+	250+
AM-1437CA-SCE	**167-9073●**	1.29	1.00	0.90	0.78	0.69
AM-1815CA-SCE	**167-9074●**	4.71	3.67	3.30	2.84	2.54

RL Re-reeling available

Amorton Solar Panels

SANYO

Outdoor



New

Benefits of amorphous products include:

- Unlimited energy supply from sunlight free of charge
- Direct conversion of sunlight to electricity in a clean and noise-free manner that does not produce toxic waste or by-products
- Regardless of the size of cells, power is generated at a fixed rate of optimum efficiency

Operating Temperature -10°C to +60°C

- Power is generated whenever a light source is available, either natural, artificial, or diffused light

Dimensions (mm) L	W	D	Power Output (max)	Open Circuit Voltage	Operating Voltage	Short Circuit Current	Operating Current (typ)	Mftrs. List No.	Order Code
47.2	50.1	1.3	58mW	2.5V	1.7V	35.3mA	31.1mA	AM-5308CAR-SCE	167-9075
41.3	60.1	2.3	59mW	5.1V	3.3V	17.8mA	16.5mA	AM-5608CAR-SCE	167-9076
37	62.3	1.3	63mW	6V	3.9V	15.9mA	14.7mA	AM-5710CAR-SCE	167-9078
60.2	41.2	1.3	55mW	6.8V	4.5V	12.2mA	11.3mA	AM-5813CAR-SCE	167-9079
55.1	60.1	2.3	74mW	7.7V	5V	14.8mA	13.8mA	AM-5913CAR-SCE	167-9080
165	150	2.3	595mW	24V	15.4V	38.4mA	34.5mA	AM-7S03CAR-SCE	167-9081
55.1	57.5	1.3	93mW	6.8V	4.5V	20.4mA	18.9mA	AM-8801CAR-SCE	167-9082

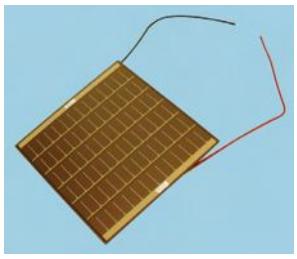
527768

Mftrs. List No.	Order Code	Price Each 1+	10+	25+	100+	250+
AM-5308CAR-SCE	**167-9075●**	8.94	6.96	6.26	5.40	4.82
AM-5608CAR-SCE	**167-9076●**	9.11	7.09	6.38	5.50	4.91
AM-5710CAR-SCE	**167-9078●**	11.23	8.73	7.86	6.78	6.05
AM-5813CAR-SCE	**167-9079●**	9.83	7.64	6.88	5.93	5.29
AM-5913CAR-SCE	**167-9080●**	11.17	8.69	7.82	6.74	6.02
AM-7S03CAR-SCE	**167-9081●**	62.29	48.44	43.60	37.59	33.54
AM-8801CAR-SCE	**167-9082●**	11.17	8.69	7.82	6.74	6.02

Amorton Solar Panel

SANYO

Flexible



New

Benefits of amorphous products include:

- Unlimited energy supply from sunlight free of charge
- Direct conversion of sunlight to electricity in a clean and noise-free manner that does not produce toxic waste or by-products
- Regardless of the size of cells, power is generated at a fixed rate of optimum efficiency
- Power is generated whenever a light source is available, either natural, artificial, or diffused light

Operating Temperature -5°C to +40°C

Formed on a stainless steel substrate, this solar panel features thin and lightweight design that is resistant to cracking.
It can be configured into virtually any shape including holes.

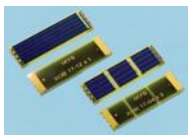
Dimensions (mm) L	W	D	Power Output (max)	Open Circuit Voltage	Operating Voltage	Short Circuit Current	Operating Current (typ)	Mftrs. List No.	Order Code
56	58.4	0.4	58mW	4.7V	3V	19.7mA	17.3mA	AT-7665A-SCE	167-9083

527775

Mftrs. List No.	Order Code	Price Each 1+	10+	25+	100+	250+
AT-7665A-SCE	**167-9083●**	21.06	16.38	14.74	12.71	11.34

IXOLAR™ High Efficiency Solar Cells

IXYS



- Uses XOD17 Solar Cells in SMD packages
- Monocrystalline Silicon Technology
- High Efficiency Outdoor and Indoor
- Reflow Solderable Sealed SMD Package
- High Mechanical Robustness
- Operating Temp: -40 to +85°C

Front-side contact (-)
Back-side contact (+)

IXOLAR™ Solar Cells are IXYS monocrystalline, high efficiency solar cell technology products incorporating an enhanced light trapping surface. The IXOLAR™ Solar Cells are ideal for charging various battery powered and handheld consumer products such as mobile phones, cameras, PDAs, MP3 players and toys. They are also suitable for industrial applications such as wireless sensors, portable instrumentation and for charging emergency backup batteries.With an efficiency of typically 17%, these solar cells give the ability to extend run time even in "low light" conditions and increase battery life and run time in a small footprint, which can be easily accommodated in the design of Portable Products.
IXOLAR products have a very good response over a wide wavelength range and therefore can be used in both indoor and outdoor applications.
The 'Solar Bit' range is the reflow solderable sealed SMD packaged version.

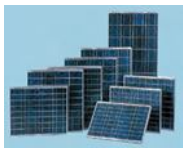
Length (mm)	Width (mm)	Short Circuit Current (mA)	Peak Power (mW)	Mftrs. List No.	Order Code
Solar Cells					
6	6	12	6	XOD17 - 04B	142-6524
6	20	42	20	XOD17 - 12B	142-6525
18.5	18.5	120	56	XOD17 - 34B	142-6528
Solar Bits					
22	7	42	—	XOB17 - 12X1	142-6531
22	7	12.6	—	XOB17 - 04X3	142-6532

Symbol	Cell Parameter	Typical Ratings	Units
V_{OC}	Open circuit voltage	630	mV
J_{SC}	Short circuit current density	35	mA/cm^2
V_{mpp}	Voltage @ max power	505	mV
J_{mpp}	Current density @ max power	32.5	mA/cm^2
P_{mpp}	Maximum peak power	16.6	mW/cm^2
FF	Fill factor	> 75	%
n	Efficiency	17	%
$\Delta V_{OC} / \Delta T$	Open circuit voltage temp. coefficient	-2.1	mV/K
$\Delta J_{SC} / \Delta T$	Short circuit temp. coefficient	0.12	mA/(cm^{2}K)
t	Cell thickness	250	µm

478404

	Order Code	Price Each 1+	25+	100+
Solar Cells				
XOD17 - 04B	**142-6524●**	0.250	0.198	0.168
XOD17 - 12B	**142-6525●**	0.900	0.740	0.620
XOD17 - 34B	**142-6528●**	2.760	2.270	1.930
Solar Bits				
XOB17 - 12X1	**142-6531●**	1.920	1.560	1.340
XOB17 - 04X3	**142-6532●**	2.130	1.750	1.480

5W to 220W Solar Panels



Efficient Mono/Polycrystalline PV solar modules, are ideal for low to medium power output projects, framed in aluminium and environmentally protected for outdoor use.
Solar charger features protection against:

- Overloads
- Reverse polarity
- Over charging
- Short circuits
- Power surges
- Over discharging
- Reverse current

Cell	Weight (Kg)	Pmax (W)	Voltage @ Pmax (V)	Current @ Pmax (A)	Voltage (open circuit) (V)	Current (shorted) (A)	Mftrs. List No.	Order Code
G-mono/Poly	0.8	5	17	0.3	21.6	0.33	SR5-36	146-2491
G-mono/Poly	1.5	10	17	0.59	21.6	0.64	SR10-36	146-2492
156 G-mono/Poly	2.1	20	17	1.18	21.6	1.27	SR20-36	146-2493
125 G-mono/Poly	2.9	30	17	1.77	21.6	1.91	SR30-36	146-2494
125 G-mono/Poly	3.6	40	17	2.36	21.6	2.54	SR40-36	146-2495
125 G-mono/Poly	5.5	60	17	3.53	21.6	3.81	SR60-36	146-2496
125 G-mono/Poly	7.5	80	17	4.71	21.6	5.08	SR80-36	146-2497
156 G-mono/Poly	9.24	100	17	5.89	21.6	6.26	SR100-48	146-2498

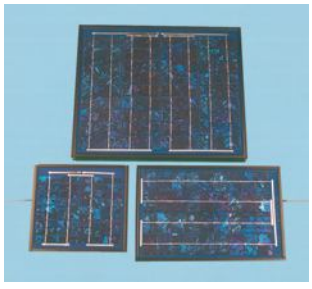
Current max (A)	Rated Voltage (V)	Full charge Cut (V)	Features	Mftrs. List No.	Order Code
10 A	12V / 24V	13.7	Temp comp, analogue circuit	CMP-10A	146-2503
20 A	12V / 24V auto-switch	13.7	Digital, autoswitch	CMP-20A	146-2504
45 A	12V / 24V auto-switch	13.7	Digital, autoswitch + reset button	CMP-45A	146-2505

484380

Mftrs. List No.	Order Code	Price Each 1+	3+	+	+
Solar Panels					
SR5-36	**146-2491●**	36.37	33.07	– –	– –
SR10-36	**146-2492●**	72.74	66.13	– –	– –
SR20-36	**146-2493●**	129.89	118.08	– –	– –
SR30-36	**146-2494●**	181.83	165.30	– –	– –
SR40-36	**146-2495●**	242.40	220.36	– –	– –
SR60-36	**146-2496●**	319.96	303.42	– –	– –
SR80-36	**146-2497●**	415.71	394.21	– –	– –
SR100-48	**146-2498●**	571.59	519.62	– –	– –
SR130-48	**146-2499●**	719.84	654.40	– –	– –
SR185-48	**146-2500●**	931.26	883.09	– –	– –
SR180-72	**146-2501●**	906.09	859.23	– –	– –
SR220-96	**146-2502●**	1,107.45	1,050.17	– –	– –
Solar Charges					
CMP-10A	**146-2503●**	30.37	27.60	– –	– –
CMP-20A	**146-2504●**	79.88	72.62	– –	– –
CMP-45A	**146-2505●**	127.82	116.20	– –	– –

Medium Power Modules

BP Solar



- SX-5, 4.5 watt module
- SX-10, 10 watt module
- SX-20U, 20 watt module
- SX-30U, 30 watt module
- BP-350U, 50 watt module
- 4 metre cable fitted to SX-5 & SX-10
- Large junction box on SX-20, SX-30 & BP-350U
- SX-20 can be configured to 6V or 12V
- Clear-anodised aluminium frame
- Tempered glass/EVA laminate construction

654-024, 654-036, 654-048

The BP350 is a high efficiency photovoltaic module using silicon nitride multicrystaline silicon cells. Designed for high power applications.

RL Re-reeling available

Solar Panels - continued

Medium Power Modules - continued

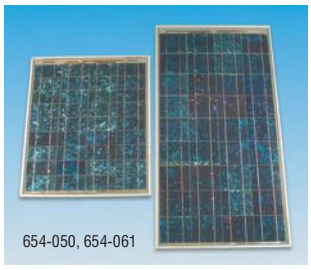
The SX-5 and SX-6 are designed to operate DC loads with small moderate energy requirements. Ideal for charging 6V or 12V batteries efficiently in virtually any climate.Each SX- unit is guarenteed to operate for 90% of the guarenteed minimum for a period of 10 years.
The SX units also incoorporate, a multimount frame which gives it the ability to be side or rear mounted, and installed with just one wrench.

Mftrs. List No.	L	W	D	Nom. Volts	Amps @ pp	Volts @ pp
SX-5M	269	249	23	12	0.27	16.5
SX-20U	423	502	50	12	1.17	17.1
SX-30U	591	500	50	12	1.86	17.2
BP-350U	937	500	50	12	3.08	17.2

452284

Mftrs. List No.	Order Code	Price Each
SX-5M	**654-024**	96.00
SX-20U	**654-048**	195.00
SX-30U	**654-050**	218.50
BP-350U	**654-061**	295.00

Value Line Modules3 — SOLAREX


654-050, 654-061

- VLX-32, 32 watt module
- VLX-53, 53 watt module
- Large junction box
- Can be configured to 6V or 12V
- Clear-anodised aluminium frame
- Tempered glass/EVA laminate construction

Mftrs. List No.	L	W	D	Nom. Volts	Amps @ pp	Volts @ pp
SX-30U	591	500	50	12	1.86	17.2
BP-350U	937	500	50	12	3.08	17.2

221700

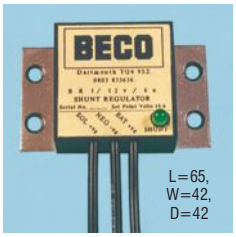
Mftrs. List No.	Order Code	Price Each
SX-30U	**654-050**	218.50
BP-350U	**654-061**	295.00

Beco Solar

The characteristics of BP Solar panels are based on measurements made at Standard Test Conditions (STC) which are - illumination of 1kW/m^2 at spectral distribution of AM 1.5 and a cell temperature of 25°C.

221695

Solar Shunt Regulator — Beco Solar



L=65, W=42, D=42

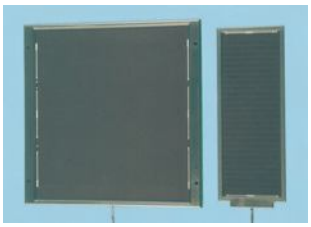
- 12 Volt, 6 amp solid state shunt regulator
- Temperature compensated
- Fully encapsulated
- LED status indication
- Blocking diode included

The BECO Solar Shunt Regulator is designed to limit the voltage to which a lead acid battery can be driven when on charge from a photovoltaic (solar) module or array. The unit is set to regulate at 14.6 volts and operation is indicated by an LED. Suitable for use with any 12 volt (nominal) module(s) up to a maximum of 6 amps.

206361

Mftrs. List No.	Order Code	Price Each
BR1/12/6	**653-925**	42.64

Amorphous — Beco Solar



Framed Amorphous Module
- Aluminium frame
- BA-5, 5.2 watt module
- 3m (BA-5) cable fitted

Unframed Solar Plate
- SA-0640, 0.3 watt plate
- Fitted with 150mm leads
- Suitable for 6V battery charging

Solarex amorphous silicon modules are manufactured using automated processes similar to those used for semiconductor manufacturing. These processes result in a monolithic module of solar-grade glass precision layered with conductive and semiconductive films. These films are laser-scribed into individual solar cells using a patented method which produces superior voltage characteristics and overall performance at low light levels.

Mftrs. List No.	Dimensions L	W	D	Nom. Volts	Amps @ pp	Volts @ pp
SA-0640	152	55	2	6	0.04	7.5

206356

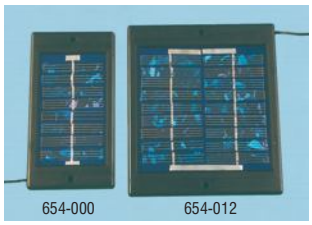
Mftrs. List No.	Order Code	Price Each
SA-0640	**653-937**	10.75

Polycrystalline — BP Solar

The cells in BP Solar polycrystalline modules are manufactured from 0.2mm thick slices of a boron doped silicon crystal block. This P-type material is sprayed on one face with phosphoric acid, passed through a diffusion oven to form an N-type layer and then given an anti-reflective coating. After the addition of conductive layers the resulting cells are connected in series and laminated between tempered glass and ethylene vinyl acetate (EVA) with a Tedlar™ backsheet. The laminates are then fitted into bronze-anodised aluminium frames. Alternatively, glass-less, 'Lite' modules are available where the laminate is backed with a stainless steel sheet for strength and durability.

221696

Low Power Modules — BP Solar


654-000 654-012

- MSX-005F, 0.5 watt module
- MSX-01F, 1.2 watt module
- Impact resistant Lexan™ frame
- 750mm cable fitted
- Stable output and long life

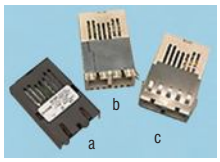
Mftrs. List No.	L	W	D	Nom. Volts	Amps @ pp	Volts @ pp
MSX-005F	147	79	10	3	0.15	3.7
MSX-01F	161	139	10	6	0.15	8.4

221697

Mftrs. List No.	Order Code	Price Each
MSX-005F	**654-000**	18.99
MSX-01F	**654-012**	26.13

Fibre Optics - Transceiver Modules & Chip Sets

Single and Multimode Communication





a: SC, multisourced 1x9 or 2x11
b: SC, Mezzanine 1x9
c[LineBreak]
d: LC, multisourced 2x5

A range of solutions for designers needing to implement fibre optic communication in their projects, single and mutlimode options for high and low speed, trancievers incorporate the transmitter and receiver into a single package housing, offering an easy quality solution for those design projects.

Supply Voltage Max.	Wavelength Peak. (max) nm.	Speed	Mftrs List No.	Features	Package	Order Code
Gigabyte Ethernet						
3.6	850	1.25 GBd	HFBR-53A5VEMZ	Low voltage	b	124-7681
7V	850	1.25 GBd	AFBR-53D5FZ	—	b	124-7609
1x9 package with Duplex LC connectors						
3.63	850	1.25 GBd	HFCT-5911ATLZ		d	124-7718
SFF, Duplex LC						
3.63	850	1.25 GBd	HFBR-5911LZ			124-7689
Single Mode, 100 Base Lx standard						
3.1V(Min), 5.25V	1360	125 Mbps	AFCT-5179AZ	-40 to 85°C	a (1x9)	124-7612
3.1V(Min), 5.25V	1360	125 Mbps	AFCT-5179BZ	0 to 70 °C	a (1x9)	124-7613
3.1V(Min), 5.25V	1360	125 Mbps	AFCT-5179CZ	-40 to 85°C	a (1x9)	124-7614
3.1V(Min), 5.25V	1360	125 Mbps	AFCT-5179DZ	0 to 70 °C	a (1x9)	124-7615
Duplex, LC connectors						
3.63	1308		HFBR-57E0ALZ			124-7684
3.63	1308		HFBR-57E0LZ			124-7686
Multimode, SFF, Duplex LC						
3.63			HFBR-5961ALZ			124-7690
3.63			HFBR-5961LZ			124-7691
Multimode SFF, 2x5 DIP LC						
3.63	1308		HFBR-5963ALZ			124-7692
3.63	1308		HFBR-5963LZ			124-7693

Receivers & Transmitters

Type	Voltage Max.	Peak. (max) nm.	Speed	Mftrs List No.	Order Code
16 pin DIP package with plastic ST connector, 100 Base-FX Fast Ethernet or 100 Mbps FDDI PMD					
Tx		1300	100 Mbps	HFBR-1115TZ	124-7619
Receiver				HFBR-2115TZ	124-7646
Tx		1300	100 Mbps	HFBR-1119TZ	124-7622
Rx				HFBR-2119TZ	124-7648
DIN Package, with ST and SC connectors, OC-3					
Tx		820		HFBR-1412TMZ	124-7624
Rx				HFBR-2412TCZ	124-7649

RL Re-reeling available

DIN Package, with ST and SC connectors, OC-3			
Tx	820	HFBR-1412TZ	124-7625
Rx		HFBR-2412TZ	124-7650
Tx	820	HFBR-1414TZ	124-7627
Tx (Metal Case)		HFBR-1414MZ	124-7626
Rx		HFBR-2414TZ	124-7651
Tx	820	HFBR-1415TZ	124-7628
Tx	820	HFBR-1415Z	124-7629
Rx		HFBR-2416TZ	124-7654
Tx	820	HFBR-14E4Z	124-7632
Rx		HFBR-24E2Z	124-7658
Rx		HFBR-24E6Z	124-7659
Tx		HFBR-1515BZ	124-7636
Rx		HFBR-2515BZ	124-7662
Tx		HFBR-1505CZ	124-7635
Tx		HFBR-1527Z	124-7637
Tx		HFBR-1528Z	124-7638
Rx		HFBR-2528Z	124-7664
Tx		HFBR-1531Z	124-7639
Rx		HFBR-2531Z	124-7665
Tx		HFBR-1532Z	124-7640
Rx		HFBR-2532Z	124-7666
Tx		HFBR-1537Z	124-7642
Tx	7	HFBR-1602Z	124-7643
Rx		HFBR-2452Z	124-7656
Rx		HFBR-2505CZ	124-7661
Rx		HFBR-2526Z	124-7663
Rx		HFBR-2416MZ	124-7652
Rx		HFBR-2416TCZ	124-7653

452823

		Price Each		
Mftrs. List No.	Order Code	1+	10+	25+
Transmitters				
HFBR-53A5VEMZ	124-7681●	47.75	41.17	39.71
HFBR-57E0ALZ	124-7684●	43.36	37.38	34.41
HFBR-57E0LZ	124-7686●	39.76	34.26	31.54
HFBR-5911LZ	124-7689●	50.97	43.95	40.46
HFBR-5961ALZ	124-7690●	40.87	35.22	32.43
HFBR-5961LZ	124-7691●	37.15	32.01	29.47
HFBR-5963ALZ	124-7692●	39.76	34.26	31.54
HFBR-5963LZ	124-7693●	36.14	31.14	28.67
HFBR-1115TZ	124-7619●	49.68	40.06	36.53
HFBR-1119TZ	124-7622●	51.07	41.19	37.55
HFBR-1312TZ	124-7623●	32.25	26.00	23.73
HFBR-1412TMZ	124-7624●	16.29	11.41	9.19
HFBR-1412TZ	124-7625●	18.24	12.78	10.29
HFBR-1414MZ	124-7626●	16.29	11.41	9.19
HFBR-1414TZ	124-7627●	18.24	12.78	10.29
HFBR-1415TZ	124-7628●	16.29	11.41	9.19
HFBR-1415Z	124-7629●	15.84	11.10	8.95
HFBR-14E4Z	124-7632●	17.90	12.56	10.11
HFBR-1505CZ	124-7635●	11.01	7.71	6.21
HFBR-1515BZ	124-7636●	10.02	7.00	5.65
HFBR-1527Z	124-7637●	9.60	6.70	5.43
HFBR-1528Z	124-7638●	10.75	7.51	6.08
HFBR-1531Z	124-7639●	9.36	6.55	5.29
HFBR-1532Z	124-7640●	8.35	5.85	4.72
HFBR-1537Z	124-7642●	8.12	5.68	4.59
HFBR-1602Z	124-7643●	16.29	11.41	9.19
Receivers				
HFBR-2115TZ	124-7646●	45.16	41.40	36.53
HFBR-2119TZ	124-7648●	51.99	47.67	42.05
HFBR-2412TCZ	124-7649●	15.84	10.09	8.16
HFBR-2412TZ	124-7650●	18.24	11.62	9.40
HFBR-2414TZ	124-7651●	15.84	10.09	8.16
HFBR-2416MZ	124-7652●	17.90	11.41	9.21
HFBR-2416TCZ	124-7653●	15.84	10.09	8.16
HFBR-2416TZ	124-7654●	16.29	10.37	8.40
HFBR-2452Z	124-7656●	15.84	10.09	8.16
HFBR-24E2Z	124-7658●	17.42	11.10	8.97
HFBR-24E6Z	124-7659●	16.29	10.37	8.40
HFBR-2505CZ	124-7661●	15.00	9.56	7.72
HFBR-2515BZ	124-7662●	12.01	9.33	7.64
HFBR-2526Z	124-7663●	14.03	8.92	7.21
HFBR-2528Z	124-7664●	16.80	10.70	8.65
HFBR-2531Z	124-7665●	8.35	5.31	4.29
HFBR-2532Z	124-7666●	6.68	4.45	4.33
Transceivers				
HFCT-5911ATLZ	124-7718●	116.14	100.11	92.17
AFBR-53D5FZ	124-7609●	52.26	45.06	41.47
AFCT-5179AZ	124-7612●	69.20	59.65	54.92
AFCT-5179BZ	124-7613●	62.91	54.22	49.93
AFCT-5179CZ	124-7614●	69.20	59.65	54.92
AFCT-5179DZ	124-7615●	62.91	54.22	49.93

Multimode Fibre Transceiver

2 x 5 DIP, with MT - RJ Interface



This family of multimode fibre optic transceivers provide products suitable for FDDI, SONET OC - 3 physical layers for ATM and other services. The transceivers are supplied in industry standard 2 x 5 DIL style packages with an MT - RJ fibre connector.
The ATM versions are fully compliant with the ATM Forum UNI SONET OC-3 specifications.
The FDDI fast ethernet tranceivers are fully compliant with the optical performance requirements of the FDDI PMD and the FDDI LCF-PMD standards. They are also fully compliant with the optical performance requirements of the ATM 100 Mb/s physical layer and of the 100 Base-FX version of IEEE 802.3u.

- Single 3.3V supply
- Wave solder and aqueous wash compatible
- Receiver output squelch function enabled

Supply Voltage (V)	Nominal Wavelength (nm)	Model Type	Operating Temp. (°C)	Shield	Mftrs List No.	Order Code
3.3	1300	FDDI	0 to 70	None	AFBR-5903Z	945-0114

407195

		Price Each		
Mftrs. List No.	Order Code	1+	10+	25+
AFBR-5903Z	945-0114●	36.71	29.38	24.49

ATM OC3& G/Bit Ethernet



This range of fibre optic products covers the needs of applications that are standards-based or general. They offer greater bandwidth capability than wire links, such as twisted pair or coaxial cable, fibre links offer other benefits as well including isolation of current and voltage, it does not radiate, nor is it susceptible to, electromagnetic interference. In addition, fibre cable is not easily tapped, providing secure communication and fibre link eliminates the problems associated with grounding. A fibre signal line may be placed next to noise sources such as motors or power lines without any interference problems because fibre does not generate electomagnetic radiation, it does not induce cross-talk.

Wavelength	Connector Type	Fibre Type	Voltage Supply typ	Voltage Supply min, typ, max	Mfftr List No.
1300nm	SC	Multi Mode	5.0V	4.75V, _, 5.25V	AFBR-5205Z
850nm	MT-RJ	Single/Multimode	3.3V	_, 3.3V, _	HFBR-5912EZ

227388

		Price Each		
Mftrs. List No.	Order Code	1+	10+	25+
AFBR-5205Z	944-9965●	29.42	23.54	19.64
HFBR-5912EZ	117-3151●	120.85	96.70	96.70

Single Mode Transceiver

1 x 9 SIP, SC Duplex



- 1300nm products for 2000m backbone links
- Interchangeable with LED multisourced 1 x 9 transceivers
- Wave solder and aqueous wash process compatibility
- Designed for Fibre backbone and closest to the desktop links

Standard - H=10.35, W=25.4, D=39.12mm
Mezzanine - H=9.8, W=25.4, D=39.6mm

This range of SC fibre transceivers provide a range of products for FDDI, 100 Mb/s ATM and Fast Ethernet or SONET OC-3/SDH STM-1 implementations. Both types are supplied in the industry standard 1 x 9 SIP duplex connector interface package.
The FDDI products are compliant with PMD standard, which is ISO/IEC 9314-3: 1990 and ANSI X3.166 - 1990.
The SONET OC-3 products are fully compliant with ATM forum UNI SONET OC-3 multimode fibre physical layer specification.

Supply Voltage (V)	Height	Model Type	Operating Temp. (°C)	Shield	Mftrs List No.
5.0	Standard	FDDI	-40 to 85	None	AFBR-5103AZ
3.3 or 5.0	Standard	FDDI	0 to 70	None	AFBR-5803Z
5.0	Mezzanine	SONET OC-3	0 to 70	None	AFBR-5205Z

407196

		Price Each		
Mftrs. List No.	Order Code	1+	10+	25+
AFBR-5103AZ	944-9914●	35.64	28.51	23.76
AFBR-5205Z	944-9965●	29.42	23.54	19.64
AFBR-5803Z	945-0025●	29.42	23.54	19.64

Single Mode Transceiver

1 x 9 SIP, ST Duplex



- 1300nm products for 2000m backbone links
- Interchangeable with LED multisourced 1 x 9 transceivers
- Wave solder and aqueous wash process compatibility
- Designed for Fibre backbone and closest to the desktop links

H=12, W=25.4,D(O/A)=42, D(Body)24.8 mm

This range of ST fibre transceivers provide a range of products for FDDI, 100 Mb/s ATM and Fast Ethernet or SONET OC-3/SDH STM-1 implementations. Both types are supplied in the industry standard 1 x 9 SIP duplex connector interface package.
The FDDI products are compliant with PMD standard, which is ISO/IEC 9314-3: 1990 and ANSI X3.166 - 1990.
The SONET OC-3 products are fully compliant with ATM forum UNI SONET OC-3 multimode fibre physical layer specification.

RL Re-reeling available

Farnell

Fibre Optics - Transceiver Modules & Chip Sets - continued

Single Mode Transceiver - continued

1 x 9 SIP, ST Duplex - continued

Supply Voltage (V)	Model Type	Operating Temp. (°C)	Mftrs List No.	Supply Voltage (V)	Model Type	Operating Temp. (°C)	Mftrs List No.
5.0	FDDI	0 to 70	AFBR-5103TZ	3.3 or 5.0	FDDI	-10 to 85	AFBR-5803ATZ
3.3 or 5.0	FDDI	0 to 70	AFBR-5803TZ	3.3 or 5.0	SONET OC-3	-40 to 85	AFBR-5805ATZ

407197

Mftrs. List No.	Order Code	Price Each 1+	10+	25+
AFBR-5103TZ	944-9957●	26.48	21.19	17.68
AFBR-5803ATZ	945-0050●	35.64	28.51	23.76
AFBR-5803TZ	945-0068●	29.42	23.54	19.64
AFBR-5805ATZ	945-0092●	28.51	22.81	19.00

Digital Diagnostic Transceiver for Fast Ethernet

10/100 Mbps with SC-RJ



H=12.85,l=14.6,P=35

- Compatible with electrical and optical performanceof the PO-FAC and ProfiNET recommendations for the Fast Ethernet over Plastic Optical Fiber (POF) and Hard-Clad-Silica fiber (HCS).
- Temp range: -25 °C +85 °C
- DMI [Digital Diagnostics Monitoring Interface,SFF-8472 Rev 9.3], provides real-time monitoring of:
  - Temperature
  - Supply voltage
  - Received Optical Power (Alarm/Warning flag)

Description

This transceiver provides the system designer with the ability to implement Fast Ethernet (100 Mbps) or Ethernet (10 Mbps) over 50 meter standard bandwidth 0.5±0.05 NA POF and 100 meter standard bandwidth 0.37±0.04 NA HCS fiber. The connectivity available for the transceiver is SC-RJ. This product is lead free and compliant with RoHS.

Transmitter

The LED driver operates at 3.3 V. It receives a LVPECL compatible electrical input, and converts it into a modulated current driving the LED. The LED is packaged in an optical subassembly, part of the transmitter section. The optical subassembly couples the output optical power efficiently into POF or HCS fiber.

Receiver

The receiver utilizes a Si PIN photodiode. The PIN photodiode is packaged in an optical sub-assembly, part of the receiver section. This optical subassembly couples the optical power efficiently from POF or HCS fiber to the receiving PIN. The integrated IC operates at 3.3 V and converts the photocurrent into LVPECL compatible electrical output. Package The transceiver package consist of four basic elements; two optical subassemblies, an electrical sub-assembly and the housing.

Supply Voltage typ.	Connector Type	λ_{peak} (max) nm.	Mftrs List No.
3.3V	SC-RJ	650	AFBR-5978Z

456854

Mftrs. List No.	Order Code	Price Each 1+	5+	10+
AFBR-5978Z	132-7489●	46.26	35.89	33.58

Fibre Optics - Plastic Systems

Polymer Fibre, Bare

5 meter Coil



- Non critical alignment of light source and fibre
- Large core size
- Good mechanical properties
- Low attenuation at visible light spectrum

Mftrs. List No.	Diameter (µm) Fibre	Core	Numerical aperture	Refractive index	Temperature range
OMPF1000	1000	980	0.5	1.49	-55 to 70°C
OMPF3000	3000	2944	0.5	1.49	-55 to 70°C

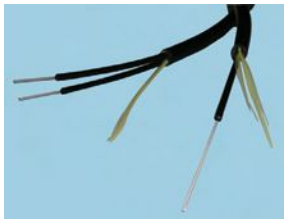
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Description	Mftrs. List No.	Order Code	Price Each 1+	5+
1000µm	OMPF1000	501-4864●	5.58	4.46
3000µm	OMPF3000	501-4888●	24.63	22.39

700 products added online every week

See our pick of the hottest products and latest technologies in '**What's New?**' at **www.farnell.co.uk**

Rugged Polymer Fibre Optic Cable



Rugged-jacket polymer fibres designed for harsher environments. Based on the industry standard 1mm core size with 2.2mm jacket, these cables are far more resistance to abrasion and include a Kevlar® aramid yard strength member which helps prevent longitudinal stretch, which could otherwise cause damage to terminated ends if cables are pulled or dragged during installation or use.

Insulation Colour	Black	Fibre Type	Optical
Insulation Material	PVC	Temperature Range	-40°C to +85°C

528701

Mftrs. List No.	Diameter Core	External	Order Code	1+	5+
Simplex (1 core)					
RPFS	1mm	5mm	168-4460●	64.29	45.00
Duplex (2 core)					
RPFD	1mm	6mm	168-4461●	72.86	51.00

Polymer Fibre Optic Cable



Acrylic optical cable sheathed with special fluorine containing polymer. Being inexpensive it is ideal for the design and development of short distance transmission links and for the demonstration of fibre optic systems.

Single: Dia=1.0 core, 2.2 overall
Twin: 2 x single cable, welded in figure 8 format.

The cable is matched for visible red light in the region of 400 - 700nm.
The cable has a minimum bend radius of 50mm and may be cut with a hot blade.

Attenuation	150dB/km @ 600nm	Single	FDPF 4001 EH
Operating temperature	-30°C to +80°C	Twin	FDPF 4002 EH

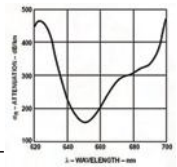
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20m Coils	Order Code	Price Each 1+	5+	10+
Single	120-8838●	26.32	23.28	21.19
Twin	120-8837●	46.01	31.76	26.40
100m Coils		**1+**	**2+**	**5+**
Single	120-8842●	91.19	81.94	77.95
Twin	120-8843●	178.54	164.83	156.12

Plastic Optical Fiber Cable(POS)



Typical POF attenuation vs. wave-length



The HFBR-EXXYYYZ series of plastic fiber opticcables are constructed of a single step-index fibersheathed in a black polyethylene jacket. The duplexfiber consists of two simplex fibers joined with azipcord web.Polyethylene jackets on all plastic fiber cables complywith UL VW-1 flame retardant specification (UL file #E89328).

- 1 mm diameter plastic optical fibre (POF) in two grades: low cost standard POF with 0.22 dB/m typical attenuation, or high peformance extra low loss POF with 0.19 dB/m typical attenuation
- Single step-index fibre
- Black polyethylene jacket (complies with UL VW-1 flame retardant specification (UL file #E89328)
- Single or Duplex options(two simplex fibres joined with zip-cord web)

Propagation Delay	Numerical Aperture, NA	Refractive Index Cladding	Core	Minimum Radius Long Term	Operating Temperature
5ns/m	0.47	1.417	1.492	35mm	-55 to 85

Length	Attenuation per M.	Mftrs List No.	Order Code
100m	0.19dB	HFBR-EUS100Z	124-7698
100m	0.22dB	HFBR-RUD100Z	124-7713
100m	0.22dB	HFBR-RUS100Z	124-7714
500m	0.19dB	HFBR-EUD500Z	124-7697

477894

Mftrs. List No.	Order Code	Price Each 1+	3+	10+	+
100m					
HFBR-EUS100Z	124-7698●	89.12	76.84	68.57	– –
HFBR-RUD100Z	124-7713●	116.14	100.11	89.33	– –
HFBR-RUS100Z	124-7714●	66.87	57.63	51.43	– –
500m					
HFBR-EUD500Z	124-7697●	446.64	414.74	– –	– –

40,000 PRICES REDUCED

Fibre Optic 850nm Reciever Module

TT electronics OPTEK Technology

New



- 850 nm wavelength
- Link distance up to 2 km
- Data rates up to 155 Mbps
- Wide operating temp. range
- Optimized for use with 62.5/125µm and 50/125µm multimode fiber
- ST receptacle
- Wave solderable dual-in-line package

528855

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
Receiver						
OPF2416T	**149-7955●**	9.15	8.32	7.49	6.87	6.44
Conductive Receiver Receptacle						
OPF2416TC	**167-8667●**	15.26	13.57	8.72	8.25	7.93

High Speed Fiber Optic Transmitter

TT electronics OPTEK Technology

New



1497952



1497953

- High speed 840nm GaAlAs LED
- No mounting hardware required
- Wide temperature range
- 100% LED burn-in (96 hours)
- Wave Solderable

528897

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
Receiver						
OPF1414T	**149-7952●**	13.68	9.20	8.46	8.15	7.50
OPF1414	**149-7953●**	9.56	8.70	7.82	6.87	6.73

Fibre Optic Receivers 5MBd

TT electronics OPTEK Technology

New



1678666



1497954



1678673



1678672

- CMOS and TTL compatible
- SMA, ST and plastic cap style
- Wide temperature range
- Optimized for fibre optic applications using 50 to 200 micron fibre
- Can operate from a single +5V supply

528850

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
Receiver						
OPF520	**167-8672●**	5.96	5.30	3.41	3.22	3.10
OPF522	**167-8673●**	19.07	16.94	10.90	10.30	9.90
OPF2412	**149-7954●**	11.95	9.29	8.36	7.59	7.21
OPF2412T	**167-8666●**	12.16	10.81	6.95	6.57	6.32

Digital Audio Emitters and Receivers

SHARP



1243861
1243862
1618495
1618496



1243863
1243864

Range of quality fibre optic receivers and transmitters, especially designed for pulse width modulated digital audio (NRZ). Low pulse width distortion (< 20 ns), and exceptionally low fall and rise times (<15ns, make these the ideal choice for transmitting and receiving audio over long distance or through noisy environments.

- High speed (13.2 Mbps/15.5 Mbps)
- Operating temperature: -20°C to +70°C
- Applications include AV equipment (DVD, CD, MD players etc.)

Type	Data Rate (Mbps)	Peak Wavelength (nm)	T_{FALL} (ns)	T_{RISE} (ns)	Supply Voltage min	max	Mftrs. List No.	Order Code
Rx	15.5	700	8	15	2.7	3.6	GP1FAV31RK0F	124-3861
Tx	15.5	700	—	—	2.7	5.25	GP1FAV31TK0F	124-3862
Rx	13.2	700	7	15	4.75	5.25	GP1FAV50RK0F	124-3863
Tx	13.2	700	—	—	4.75	5.25	GP1FAV50TK0F	124-3864
Tx	13.2	660	—	—	4.75	5.25	GP1FAV51TK0F	161-8495
Tx	—	660	—	—	4.75	5.25	GP1FSV51TK0F	161-8496

455940

Mftrs. List No.	Order Code	Price Each 1+	25+	100+
GP1FAV31RK0F	**124-3861●**	0.97	0.77	0.63
GP1FAV31TK0F	**124-3862●**	0.53	0.45	0.40
GP1FAV50RK0F	**124-3863**	0.77	0.54	0.44
GP1FAV50TK0F	**124-3864**	0.46	0.32	0.28
GP1FAV51TK0F	NEW **161-8495●**	0.70	0.63	0.57
GP1FSV51TK0F	NEW **161-8496●**	1.02	0.91	0.82

Digital Audio Rx and Tx

Additions

Type	Data Rate (Mbps)	Peak Wavelength (nm)	T_{FALL} (ns)	T_{RISE} (ns)	Supply Voltage min	max	Mftrs. List No.	Order Code
Rx	13.2	700	7	15	4.75	5.25	GP1FAV51RK0F	168-5297

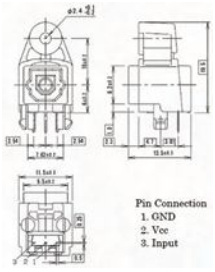
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Mftrs. List No.	Order Code	Price Each 1+	25+	100+
GP1FAV51RK0F	NEW **168-5297●**	0.72	0.56	0.51

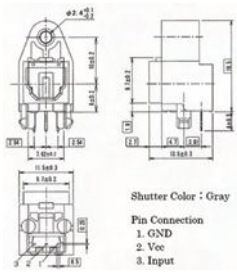
TosLink Receivers and Transmitters

TOSHIBA

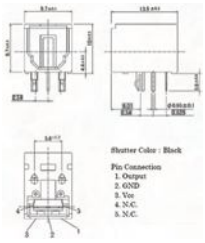
Shuttered and Unshuttered, 15 Mbps



Standard - Unshuttered



Standard - Shuttered



Mini - Shuttered

These High Quality Fibre optic detectors and receiver modules utilise the industry standard ToSlink coupling system, facilitating easy removal and insertion of optic fibres. These adhere to the JEITA standard, CP-1212 (Digital Audio Optical Interface for Consumer Equipment).

Type	Anschluss	Dimensions Width	Length	Depth	Mftrs. List No.
Tx and Rx, 3V					
Rx	Shuttered	11.5	19.5	13.5	TORX147
Tx		11.5	19.5	13.5	TOTX147
Rx	Shuttered	11.5	19.5	13.5	TORX147L
Tx		11.5	19.5	13.5	TOTX147L
Rx	Shuttered	9.7	9.7	13.5	TORX147PL
Tx		9.7	9.7	13.5	TOTX147PL
Tx and Rx, 5V					
Rx	Non Shuttered	11.5	19.5	13.5	TORX177
Tx		11.5	19.5	13.5	TOTX177
Rx	Shuttered	11.5	19.5	13.5	TORX177L
Tx		11.5	19.5	13.5	TOTX177L
Rx	Shuttered	9.7	9.7	13.5	TORX177PL
Tx		9.7	9.7	13.5	TOTX177PL

440396

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+
5V - Rx and Tx					
TORX177	**122-5763●**	1.79	1.39	1.18	1.08
TORX177L	**122-5764●**	2.08	1.62	1.37	1.26
TOTX177	**122-5771●**	1.12	0.88	0.75	0.68
TOTX177L	**122-5772●**	1.79	1.39	1.18	1.08
5V Mini Rx and Tx					
TORX177PL	**122-5766●**	2.28	1.77	1.51	1.38
TOTX177PL	**122-5773●**	1.90	1.47	1.27	1.15
3V - Rx and Tx					
TORX147	**122-5767●**	1.79	1.39	1.18	1.08
TORX147L	**122-5768●**	2.08	1.62	1.37	1.26
TORX147PL	**122-5769●**	2.28	1.77	1.51	1.38
TOTX147	**122-5774●**	1.12	0.88	0.75	0.68
TOTX147L	**122-5775●**	1.79	1.39	1.18	1.08
TOTX147PL	**122-5776●**	1.90	1.47	1.27	1.15

Over 480,000 products online QGO

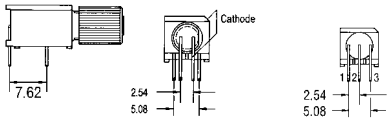
RL Re-reeling available

Farnell

Emitter and Detector Modules –
Plastic 1mm Fibre



H=9.0, W=9.2, D=24.2



Connections	1	2	3
SFH250V	B	C	
SFH350V	B	C	E
SFH551-1-1V	V_{cc}	GND	Data

A range of fibre optic emitters and detectors for use in short distance data transmission using 1mm polymer fibre optic cable. The devices are housed in a plastic connector with a mounting screw permanently attached to the thread. This allows easy direct connection to the fibre without stripping the outer sheath. A moulded microlens in each device improves light coupling efficiency to the fibre.

Emitters	**SFH765V**
Wavelength	660nm (IR)
Output launch power into 1mm plastic fibre @10mA	200µW
Switching time tr, tf	0.1µs

Detectors

SFH250(V): PIN photodiode, photocurrent 3µA @ VR=5V (typ), λ =950nm.

SFH350(V): Phototransistor, photocurrent 0.8mA @ VCE=5V (typ).

SFH 551/1-1(V) Bipolar IC with open-collector, Digital, TTL compatible output. I_o = 50mA. V_{cc} up to 15V

497036

Mftrs. List No.	Order Code	1+	25+	Price Each 50+	100+	250+
Emitters						
SFH756V	**131-7521●**	6.62	5.51	4.81	4.20	3.99
Detectors						
SFH350	**152-6604●**	2.70	1.95	1.62	1.35	1.22
SFH350V	**152-6605●**	7.02	4.97	4.12	3.42	3.06
SFH551/1-1	**152-6606●**	13.65	9.43	7.80	6.43	5.75
SFH 551/1-1V	**133-5305●**	13.04	10.78	9.94	6.74	6.28
SFH250	**152-6602●**	5.22	3.88	3.26	2.65	2.49
SFH250V	**152-6603●**	7.82	5.71	4.79	4.02	3.62

'Versatile Link' Modules —
Plastic 1mm fibre



HFBR4501, HFBR4503, HFBR4506

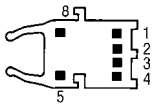
Modules
H=7.7, W=10.2, D=19.6.
Pin spacing=2.5. Row spacing=7.6.

Body colour coding:
Transmitters Grey, Receivers Blue.

Connectors
Simplex: L=25.4, O/D (plug)=3.8.
Simplex latching:
L=33.0, W=8.9, H=8.9, O/D (plug)=3.8
Duplex: L=38.1, H=5.8
O/D (plugs)=3.8, spaced 10.2
Bulkhead feedthrough: L=30, Mtng hole=7.9 dia.

CONNECTIONS: Transmitters:
1–Anode, 2–Cathode, 3, 4, 5, 8–N.C.
Receivers: (excl. HFBR2523)
1–Vo, 2–Gnd, 3–Vcc, 4–RL, 5, 8–N.C.
HFBR2523 Receiver:
1–Vo, 2–Gnd, 4–Vcc, 3,5,8–N.C.

PIN VIEW



The 'Versatile Link' fibre optic system represents a package improvement over the 'Snap-in' modules detailed below, and are compatible with 'Snap-in' connectors. The 'Versatile Link' system features smaller package size, and includes latching connectors. The module housings interlock for use with two-way 'duplex' connector.

Link performance is guaranteed over ambient temperature range 0°C to 70°C. The receivers have logic compatible output levels and have high noise immunity.

The connectors are for terminating 1mm plastic optical cable. A suitable crimp tool is available.

Transmitter Drive Current	60mA	Receiver Supply Voltage	+5V

Guaranteed link length for transmitter/receiver pairs:

HFBR-1521Z/2521	12m @ 5MBd
HFBR-1522Z/2522	24m @ 1MBd
HFBR-1523Z/2523	8m @ 40kBd (for low current $I_{FPK(T+R)}$ = 6mA)
	60m @ 40kBd (for extended distance $I_{FPK(T)}$ = 60mA
HFBR-1524Z/2524	5m @ 1MBd

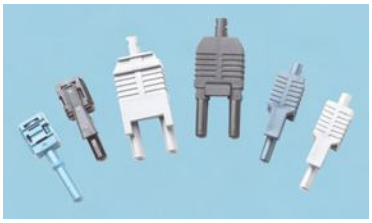
The polishing kit consists of a polishing fixture (which can be used to polish fibres in a 'duplex' connector or two 'simplex' connectors simultaneously), 600 grit abrasive paper and 3µm lapping film.

Mftrs. List No. 249-476=HFBR-4597 (Hewlett Packard), 264-982=HTX-LWL (Weidmuller Klippon)

206501

Mftrs. List No.	Order Code	Price Each 1+	10+	100+
Transmitters HFBR-1521Z	**117-3128●**	8.89	6.13	4.65
Transmitters HFBR-1522Z	**117-3129●**	9.85	6.83	5.30
Transmitters HFBR-1523Z	**117-3126●**	9.77	6.79	5.29
Transmitters HFBR-1524Z	**117-3130●**	8.79	6.08	4.64
Receivers HFBR-2521Z	**117-3131●**	8.89	6.13	4.65
Receivers HFBR-2522Z	**117-3132●**	9.85	6.83	5.30
Receivers HFBR-2523Z	**117-3127●**	8.72	6.06	4.72
Receivers HFBR-2524Z	**117-3134●**	8.79	6.08	4.64
Connectors				
Simplex (grey) HFBR-4501Z	**117-3135●**	0.69	0.59	0.46
Simplex (blue) HFBR-4511Z	**117-3136●**	0.61	0.53	0.41
Simplex, latching (grey) HFBR-4503Z	**117-3137●**	0.68	0.58	0.42
Simplex, latching (blue) HFBR-4513Z	**117-3138●**	0.68	0.58	0.42
Duplex (white) HFBR-4506Z	**117-3139●**	1.00	0.88	0.68
Bulkhead Feedthrough (grey) HFBR-4505Z	**117-3140●**	0.89	0.82	0.60
Bulkhead Feedthrough (blue) HFBR-4515Z	**117-3141●**	0.89	0.82	0.60
Polishing Kit HFBR-4593Z	**117-3142●**	3.91	3.43	2.85
Crimp Tool HFBR4597	**249-476**	224.66	– –	– –

Versatile Link
Components and Accessories



The Versatile Link series is a complete family of fibre link components for applications requiring a low cost solution. The series includes transmitters, receivers connectors and a plastic crimp tool for producing a fully functional optical link. The series of components is ideal for environments where EMI/RFI are a problem. The optical link design is simplified by logic compatible receivers and the complete link is guaranteed from 0°C to 70°C

496700

Description	Mftrs. List No.	Order Code	Price Each 1+	10+
CONNECTOR, DX, FIBRE OPTIC	HFBR-4516Z	**124-7672●**	0.98	0.76
CONNECTOR, FIBRE OPTIC, VLINK	HFBR-4531Z	**124-7674●**	0.53	0.42
CONNECTOR, FIBRE OPTIC, VLINK	HFBR-4532Z	**124-7675●**	0.46	0.37
CONNECTOR, FIBRE OPTIC, VLINK	HFBR-4533Z	**124-7676●**	0.46	0.37
CONNECTOR, FIBRE OPTIC, VLINK	HFBR-4535Z	**124-7677●**	0.46	0.37
FIBRE OPTIC CRIMP TOOL	HFBR-4597Z	**124-7678●**	204.50	188.76

'Versatile Link' Evaluation Kit



The 'Versatile Link' fibre optic kit contains HFBR1524 transmitter, HFBR2524 receiver, 5 metres of cable connected to HFBR4511 and HFBR4513 connectors, spare connectors, adaptor, polishing kit and literature.

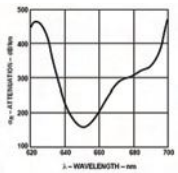
Guaranteed link length	12m @ 5MBd	Receiver supply voltage	+5
Transmitter drive current	60mA		

206500

Mftrs. List No.	Order Code	Price Each
HFBR-0501..	**327-750**	20.94

Plastic Optical Fiber Cable and Accessories for Versatile Link
Single Mode





Typical POF attenuation vs. wavelength

The HFBR-R/EXXYYYZ series of plastic fiber opticcables are constructed of a single step-index fibersheathed in a black polyethylene jacket. The duplexfiber consists of two simplex fibers joined with azipcord web.Standard attenuation and extra low loss POF cablesare identical except for attenuation specifications.Polyethylene jackets on all plastic fiber cables comply with UL VW-1 flame retardant specification (UL file #E89328).

RL Re-reeling available

- 1 mm diameter plastic optical fibre (POF) in two grades: low cost standard POF with 0.22 dB/m typical attenuation, or high peformance extra low loss POF with 0.19 dB/m typical attenuation
- Single step-index fibre
- Black polyethylene jacket (complies with UL VW-1 flame retardant specification (UL file #E89328)
- Single or Duplex options(two simplex fibres joined with zip-cord web)

Applications include:
- Industrial data links for factory automation and plant control
- Intra-system links; board to board, rack-to-rack
- Telecommunication switching systems
- computer-to-peripheral data links, PC bus extension
- Proprietary LANs
- Digitised Video
- Medical instruments
- Reduction of lightning and voltage transient suseptibility
- High voltage isolation

Propagation Delay	Numerical Aperture, NA	Refractive Index Cladding	Refractive Index Core	Minimum Radius Long Term	Operating Temperature
5ns/m	0.47	1.417	1.492	35mm	-55 to 85

Length	Attenuation per M.	Mftrs List No.	Order Code
Standard Simplex Connector			
1m	0.22dB	HFBR-RNS001Z	124-7706
5m	0.22dB	HFBR-RNS005Z	124-7707
10m	0.22dB	HFBR-RNS010Z	124-7708
35m	0.19dB	HFBR-END035Z	124-7696
Latching Simplex Connector			
1m	0.22dB	HFBR-RLS001Z	124-7699
10m	0.22dB	HFBR-RLS010Z	124-7701
Standard Duplex Connector			
1m	0.22dB	HFBR-RMD001Z	124-7702
3m	0.22dB	HFBR-RMD003Z	124-7703
5m	0.22dB	HFBR-RMD005Z	124-7704
10m	0.22dB	HFBR-RMD010Z	124-7705
Latching Duplex Connector			
1m	0.22dB	HFBR-RTD001Z	124-7709
10m	0.22dB	HFBR-RTD010Z	124-7710
45m	0.22dB	HFBR-RTD45DZ	124-7711
Without Connector			
500m	0.19dB	HFBR-EUD500Z	124-7697
100m	0.19dB	HFBR-EUS100Z	124-7698
100m	0.22dB	HFBR-RUD100Z	124-7713
100m	0.22dB	HFBR-RUS100Z	124-7714

447980

Mftrs. List No.	Order Code	Price Each 1+	5+	10+	+
1m					
HFBR-RLS001Z	**124-7699●**	3.94	2.75	2.39	– –
HFBR-RMD001Z	**124-7702●**	7.92	5.53	4.75	– –
HFBR-RNS001Z	**124-7706●**	3.94	2.75	2.39	– –
HFBR-RTD001Z	**124-7709●**	8.13	5.68	4.89	– –
3m					
HFBR-RMD003Z	**124-7703●**	12.18	8.51	7.33	– –
5m					
HFBR-RMD005Z	**124-7704●**	14.53	10.17	8.77	– –
HFBR-RNS005Z	**124-7707●**	7.26	5.10	4.39	– –
10m					
HFBR-RLS010Z	**124-7701●**	11.40	7.99	6.89	– –
HFBR-RMD010Z	**124-7705●**	22.83	15.98	13.78	– –
HFBR-RNS010Z	**124-7708●**	13.13	9.19	7.92	– –
HFBR-RTD010Z	**124-7710●**	18.78	13.15	11.34	– –
35m					
HFBR-END035Z	**124-7696●**	64.51	55.61	49.62	– –
45m					
HFBR-RTD45DZ	**124-7711●**	15.12	10.59	9.13	– –
100m					
HFBR-EUS100Z	**124-7698●**	89.12	76.84	68.57	– –
HFBR-RUD100Z	**124-7713●**	116.14	100.11	89.33	– –
HFBR-RUS100Z	**124-7714●**	66.87	57.63	51.43	– –
500m					
HFBR-EUD500Z	**124-7697●**	446.64	414.74	– –	– –

Optimate™ Connectors and Device Housing



121-8919 is a DNP connector which provides a low cost optical termination for polymer fibre optic cable for data links up to 20 metres in length.
121-140 is a TO-18 housing for PCB mounting.

Mftrs.List No. 228087-1 = 121-8919, 228043-1 = 121-8921

121-8919 L=29.9

121-8921 Device Housing L=25, Fixing centres=14

206492

	Order Code	Price Each 1+	25+	100+
DNP Plug	**121-8919●**	1.27	1.18	1.12
Device Housing (TO-18)	**121-8921●**	2.05	1.70	0.86

Over 480,000 products online QGO

Industrial Transmitters and Recievers

SMA, SERCOS (IEC/EN 61491) compatable



HFBR-2505AZ and HFBR-1505AZ

- Meets Industrial SERCOS standard
- SMA Connectors
- For use with 1 mm plastic optical fibre (POF)
- Auto-insertable and wave solderable
- DC to 10MBd datarate
- -40 °C to +85 °C

Applications include:
- Industrial control data links
- Factory Automation data links
- Voltage isolation applications
- PLC communication
- Motor drives
- Sensor, meter and actuator interfaces

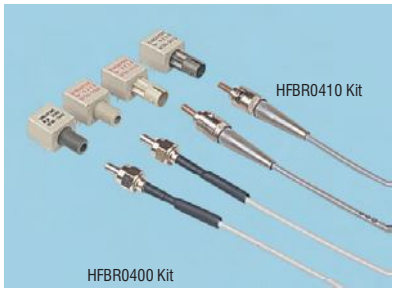
The SERCOS system is the only is the only internationally approved, digital open standard in industry, used to communicate between PLCs and other computer systems, it offers high speed with high noise immunity through standard platic optical fibre. Having the performance required to synchronize multi-axis motion control.
More information may be found at: http://www.sercos.com/
The High attenuation version of the transmitter, has higher dynamic range making it even more robust in noisy environments over longer distances.

448091

Mftrs. List No.	Order Code	Price Each 1+	10+	100+	+
SERCOS, PROFIBUS and INTERBUS-S, Tx and Rx					
HFBR-2505AZ	**124-7660●**	14.60	9.30	7.52	– –
HFBR-1505AZ	**124-7634●**	12.18	8.51	6.88	– –
SERCOS Tx and Rx					
HFBR-2602Z	**124-7671●**	14.23	9.06	7.32	– –
HFBR-1602Z	**124-7643●**	16.29	11.41	9.19	– –

Fibre Optics - Glass Systems

Evaluation Kits



The screw coupling SMA kit contains HFBR1402 transmitter, HFBR2402 5MBd receiver, 2 metres 1000µm plastic core fibre optic cable fitted with SMA connectors, and data.

The bayonet coupling ST kit contains HFBR1412 transmitter, HFBR2412 5MBd receiver, 3 metres 62.5/125µm fibre optic cable fitted with ST connectors, and data.

206493

	Mftrs. List No.	Order Code	Price Each
SMA evaluation kit	HFBR-0400.	**327-980**	45.07
ST evaluation kit	HFBR-0410..	**327-992**	42.13

High Speed ST® Modules



ST Port Bottom View

Body: H=10.2, W=12.7, D=12.7
Pin/row spacing=2.5
Port colour coding:
Transmitter Light Grey
Receiver Dark Grey

Connections:
HFBR1412/4: Pins 2, 6, 7 – Anode, 3 – Cathode
HFRR2412: Pins 3, 7 – Common, 2 – Vcc, 6 Data
HFBR2414: Pins 3, 7 – Common, 2 – Signal, 6 – Vcc
Other pins – no connection

Miniature bayonet coupled transmitter and receiver modules for high performance links up to 4Km, and data rates up to 30 MBd. Auto-insertable and wave-solderable.

Transmitter			HFBR-1412	HFBR-1412	HFBR14-14	HFBR14-14
Coupled Optical Power (dBm)			-6.5	-12.0	-12.0	-16.5
Cable Size (µm)			200 PCS	100/140	62.5/125	50/125
Receiver		**Sensitivity (dBm)**				
HFBR2412	Logic IC	-24.5	5MBd/3.5Km	5MBd/4.1Km	5MBd/4.7Km	5MBd/3.2Km
HFBR2412	PIN	-36	5MBd/5.6Km	5MBd/7.3Km	5MBd/8.6Km	5MBd/7.0Km
HFBR2412	PIN	-33	30MBd/600m	30MBd/3.0Km	30MBd/4.0Km	5MBd/4.0Km

RL Re-reeling available

Farnell

Fibre Optics - Glass Systems - continued

High Speed ST® Modules - continued

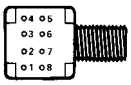
206495

	Mftrs. List No.	Order Code	Price Each 1+	10+	100+
Standard transmitter	HFBR-1412Z	**117-3153●**	18.93	15.65	11.87
High power transmitter	HFBR-1414Z	**117-3164●**	23.64	19.67	15.23
5MBd TTL receiver	HFBR-2412Z	**117-3168●**	17.55	13.04	12.13
25MHz analogue receiver	HFBR-2414Z	**117-3171●**	16.09	11.77	10.34
125MHz analogue receiver	HFBR-2416Z	**117-3150●**	17.49	13.11	11.25

High Speed SMA Modules — (Glass Fibre)

AVAGO TECHNOLOGIES





Bottom View

Thread: ¼"-36 UNS, L=9.5
Body: H=9.5, W=12.7, D=12.7
Pin/row spacing=2.5

SMA Port
Connections:
HFBR1402/4: Pins 2, 6 and 7 – Anode, 3 – Cathode.
HFBR2402/4/6: Pin 2 – Data, 3, 7 – Common, 6 – Vcc (5V)
Other pins – no connection.

Port Colour Coding: Transmitters – Light Grey. Receivers – Dark Grey.

Miniature transmitter and receiver modules in a dual-in-line package of high strength heat resistant plastic. Auto insertable.

The modules have SMA port and interface directly with SMA connectors.

Suitables cables:
100/140µm, 50/125µm, 62.5/125µm, 85/125µm glass fibre, 200µm PCS.

Peak optical power:
HFBR1402: 11.5dBm typ from 1m 100/140µm cable.
HFBR1404: 17.5dBm typ from 1m 50/125µm cable.

Data rate: HFBR2402: DC to 5 MBd (TTL CMOS compatible output).
HFBR2404: 40MBd max, 25MHz analogue output.
HFBR2406 175Mbd, 125MHz analogue output

Receiver supply voltage +5V Operating temperature -40°C to +85°C

Link performance of transmitter/receiver pairs:

HFBR1402/2402,	1300m @ 5MBd	HFBR1404/2402,	1500m @ 5MBd
HFBR1402/2404,	1500m @ 40MBd	HFBR1404/2404,	2000m @ 40MBd
	2100m @ 10MBd		3000m @ 10MBd

206494

Colour	Mftrs. List No.	Order Code	Price Each 1+	10+	100+
Standard transmitter	HFBR-1402Z	**117-3143●**	18.77	13.65	12.10
High power transmitter	HFBR-1404Z	**117-3144●**	24.34	19.16	15.57
5MBd TTL receiver	HFBR-2402Z	**117-3146●**	19.19	15.35	12.31
25MHz analogue receiver	HFBR-2404Z	**117-3147●**	16.12	13.04	10.36
125MHz SMA fibre receiver	HFBR-2406Z	**117-3149●**	17.49	13.11	11.25

Fibre Optic Receivers 125MHz

TT electronics OPTEK Technology

New



1678675



1678674

The receiver is comprised of a high speed, low noise, photo-diode coupled to a transimpe-dance amplifier which pro-duces an output voltage proportional to the input light amplitude.

- Data rates up to 155MBd
- ST and plastic cap style
- Wave solderable

528842

	Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
Receiver							
OPF560		**167-8674●**	8.59	7.63	4.90	4.64	4.46
OPF562		**167-8675●**	17.62	15.66	10.06	9.53	9.15

ST Emitters

Honeywell

Low Cost VCSEL



Body overall, H=9.7, W=12.7, L=31.7, Lead Length=10mm. 2 holes drilled and tapped, 2.56 UNC-2B, Fixing centres=9.5mm



Body overall, H=9.7, W=12.7, L=31.7, Lead Length=10mm. 2 holes drilled and tapped, 2.56 UNC-2B, Fixing centres=9.5mm

- A high radiance 850nm VCSEL packaged in a ST PCB mounting housing
- High speed low cost VCSEL
- Industry standard ST-LP fibre connector
- Designed for drive currents between 5 and 15mA
- Optimised for low temperature dependence

These fibre optic LAN components are high performance Vertical Cavity Surface Emitting Laser (VCSEL) high speed communications devices. The devices produce a circularly symmetric, narrow divergence beam. They are designed to be used with inexpensive silicon or gallium arsenide detectors, but are able to perform as well with some indium gallium arsenide detectors.

Absolute max. ratings:

Operating temperature	0 to 70°C
Forward current	15mA
Reverse voltage	5V @ 10µA

Electro optical characteristics

	(min)	(nom)	(max)
Coupled power	200µW	400µW	
Rise/fall time		400ps/400ps	
Threshold current	1.5mA	3.5mA	
Peak wavelength	820nm	850nm	850nm
7538910			
Optical output power	200µW	500µW	1000µW
Rise/fall time		100ps/300ps	
Threshold current		3.6mA	6mA
Peak operating current current (Adjustable to establish operating power)		12mA	20mA
Peak wavelength	830nm	850nm	860nm

345967

Mftrs. List No.	Order Code	Price Each 1+	10+	100+	+
HFE4083-322/XBA	**753-8910●**	38.99	32.97	29.68	– –

Fibre Optic Detector

Honeywell

TTL Output



Storage Temperature	-55 to 125°C (-67 to 257°F)
Case Operating Temperature	-40 to 85°C (-40 to 185°F)
Lead Solder Temp.	260°C, 10s
Supply Voltage	6V

The HFD3023-500 series is a direct coupled optical receiver designed for short distance 850nm fibre optic systems. The receiver contains a monolithic IC with an integral photodiode and amplification circuit, and an open collector Schottky output. The output allows it to be directly interfaced with standard TTl (Transistor-Transistor Logic) circuits.

Description	Mftrs. List No.	Order Code
5Mb Direct Coupled Receiver	HFD3023-500	108-2182
ST PCB Mount 5Mb Direct Coupled Receiver	HFD3023-500-BBA	108-2186

419438

Mftrs. List No.	Order Code	Price Each 1+	5+	10+	25+
HFD3023-500	**108-2182●**	14.24	11.80	10.32	9.83
HFD3023-500-BBA	**108-2186●**	20.80	20.00	18.96	18.22

PIN Diode reciever

Honeywell

ST PCB Mounting



Body overall, H=9.7, W=12.7, L=31.7, Lead Length=10mm. 2 holes drilled and tapped, 2.56 UNC-2B, Fixing centres=9.5mm

The HFD3065-002/XBA PIN Photodiode is designed for use in high speed fibre optic receivers. It has a large area detector, providing efficient response to 50 - 100 µm diameter fibres at wavelengths of 750 to 950 nanometers. The case is electrically isolated from the anode and cath-ode terminals to enhance the EMI/RFI shielding thus in-creasing the sensitivity and speed characteristics. Works with emitters, HFE4080-321/XBA - Order Code 655089 or HFE4083-322/XBA - Order Code 7538910.

- Low capacitance
- High speed
- High responsivity
- Electrically isolated case

Absolute max. ratings:

Reverse voltage	50V
Forward voltage	1.5V

Electro optical characteristics	Min.	Typ.	Max.
Flux responsivity	0.52	0.55	
Active area		1.0mm²	
Dark current		1.0nA	5 nA
Response time (10-90% & 90-10%)		3.5 ns	
Capacitance		2.0pF VR=0,3.5pF VR=20V	

345949

Mftrs. List No.	Order Code	Price Each 1+	10+	100+	+
HFD3065-002/XBA	**120-1185●**	24.22	23.00	22.00	– –

High Speed PIN Photodiode

TT electronics OPTEK Technology

New



The OPF482 consists of a plastic cap PIN photodiode pre-mounted and aligned in an ST receptacle. This configuration is designed for PC board or panel mounting.

- Pre-mounted and ready to use
- High speed, low capacitance
- Pre-tested with fiber to assure performance
- ST style receptacle
- Electronically isolated from case

528854

RL Re-reeling available

Farnell

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
Receiver						
OPF482	**149-7962●**	13.37	9.31	8.56	8.24	7.59

Fibre Optic GaAlAs LED



- Pre-mounted and ready to use
- Pre-tested with fiber to assure performance
- ST style receptacle

Typical Coupled Power If = 100mA @ 25°C

Fiber	Reflective Index	N.A.	OPF322A	OPF372A
50/125 µm	Graded	0.20	19 µW	29 µW
62.5/125 µm	Graded	0.28	34 µW	89 µW
100/140 µm	Graded	0.29	95 µW	200 µW
200/300 µm*	STEP	0.41	360 µW	750 µW

*PCS-Plastic Clad Silica

528859

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
Receiver						
OPF2416T	**149-7955●**	9.15	8.32	7.49	6.87	6.44
Conductive Receiver Receptacle						
OPF2416TC	**167-8667●**	15.26	13.57	8.72	8.25	7.93

VCSEL, ST Emitter

Vertical Cavity Surface Emitting Laser



The HFE4080-321 is a high performance 850 nm VCSEL (Vertical Cavity Surface Emitting Laser) mounted in an industry standard ST housing. Data rates from DC to greater than 2GB/s dependent on component application. The VCSEL has a low current consumption (5-15mA) which makes design and interfacing to logic gates easier. Specifically designed to connect to 50/125 or 62.5/125 micron multimode fibre.

Body overall, H=21.5, W=12.7, D=9.5,
Lead Length=10, 2 holes drilled and tapped
2.56 UNC, Fixing centres=9.5

Absolute max. ratings:

Case operating temperature range 0°C to -70°C — Reverse voltage 5V @ 10µA
Continuous forward current (heat sinked) — 15mA

Electro optical characteristics	Min.	Typ.	Max.
Output power I_f=10mA	0.8mW	1.5mW	
Threshold current I_{TH}		3.5mA	6mA
Forward voltage I_f=10mA		1.75V	2.1V
Peak wavelength I_f=10mA DC	820nm	850nm	860nm
Spectral bandwidth		0.5nm	
Rise and fall times T_r, T_f (prebias above threshold)		100ps	400ps
Analogue bandwidth I_f=10mA DC		6GHz	

Caution: The VCSEL is a laser and should be treated as a potential eye hazard if handled incorrectly

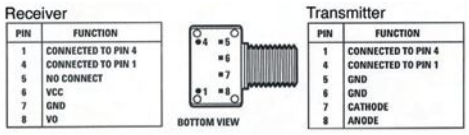
206409

Mftrs. List No.	Order Code	Price Each 1+	5+	10+	25+	50+
HFE4080-321-XBA	**120-1183●**	43.80	42.32	39.90	37.91	35.72

Fibre Optic SMA Transmitters and Receivers

16 MBd SERCOS





Thread: ⁄4"-36 UNS, L=9.5
Body: H=9.5, W=12.7, D=12.7
Pin/row spacing=2.5

- Meets Industrial SERCOS 16MBd standard
- SMA ports
- 650 nm wavelength
- Metal coated plastic packaging
- Specified for use with 1 mm POF and 200 µm HCS
- DC to 16 MBd data rate

Pins 1 & 4 are for mounting and retaining purposes but are electrically connected.Pins 5 & 6 are electrically isolated.It is recommended that pins 1, 4, 5 & 6 are all connected to ground to reduce coupling and electrical noise.

SERCOS is an acronym for SErial Realtime COmmunications Systems. It is a standard digital interface for communication in industrial CNC applications. SERCOS is a European (EN 61491) and international (IEC 61491) standard. The optical interface allows data rates of 2, 4, 8 and 16 MBd and data transfer between numerical controls and drives via fibre optic rings, with voltage isolation and noise immunity. These products have a guaranteed performance up to 16 MBd.

The transmitter and receiver are housed in a dual in line package that is made from high strength, heat resistant, chemically resistant and **UL 94V-0** (file No. E121562) flame retardant plastic. Both devices are coated with a layer of conductive alloy for better air discharge (ESD) performance. The package is designed for auto insertion and wave soldering.

HFBR-1506AM Transmitter Incorporates a 650nm LED in a metal coated plastic housing. The high light output power enables the use of both Plastic Optical Fiber (POF) and Hard Clad Silica (HCS). This transmitter can operate up to 16MBd using a simple driver circuit. Fully compatible with SMA connectors.

HFBR-2506AM Receiver Housed in a metal coated plastic package the receiver consists of a silicon PIN photodiode and digitizing IC to produce a logic compatible output. The IC includes a unique circuit to correct the pulse width distortion of the first bit after a long idle period. This enables operation from DC to 16MBd with low Pulse Width Distortion (PWD) for arbitrary data patterns. The receiver is a "push pull" stage compatible with TTL and CMOS logic. Fully compatible with SMA connectors.

Link performance of transmitter/receiver pair:		**HFBR-1506AM/2506AM**	
Link distance		**Min**	**Max**
POF		0.1m	45m
HCS		0.1m	200m
Temperature	Storage/operating	-40 to	85°C
Transmitter			
Forward voltage		1.8V	2.65V
Peak Emission Wavelength		640nm	660nm
Rise/fall Time (10 - 90%)			15ns
Peak output power POF		-6 dBm	-2 dBm
Peak output power HCS		-18 dBm	-10 dBm
Receiver			
Supply voltage		-0.5V	5.5V
Supply current		27mA (Typ.)	45mA
PWD		-19ns	19ns
Propagation delay			150ns

337871

Mftrs. List No.	Order Code	1+	5+	10+
HFBR-1506AMZ Transmitter	**117-3162●**	14.77	13.78	12.82
HFBR-2506AMZ Transmitter	**117-3158●**	19.11	17.82	16.53

High Power SMA Emitter, 850nm



Body overall L=16.3, W=12.7
2 holes drilled
and tapped 2.56 UNC

Recommended panel
hole size=2.3 dia
2 holes on 9.5 fixing centres
Lead length=9

Connections: Red sleeve=Anode, Black sleeve=Cathode, No sleeve=Ground

High speed GaAlAs infra-red emitter designed for optical communications systems, compatible with FSMA PIN diode or other FSMA detectors, and 50/125µm and 200/250µm glass fibre FSMA terminated leads. It features a very high output launch power, typically 700µW into 200/250µm fibre at 100mA.

The plastic emitter is for PCB mounting with 9mm SMA connection.

221708

Mftrs. List No.	Order Code	Price Each 1+	10+	25+
H22E4020IR	**120-8875●**	20.66	12.95	12.65

SMA Connectors



L=23.5, Nut=9.6A/F

In-line connector for FSMA connected leads. The number of terminated glass fibre leads that can be connected together is limited by the total attenuation of the optical link. Supplied with nut to enable use as single hole fixing bulkhead connector.

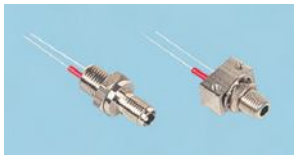
Coupling loss (typ.): 2.0dB (50/125µm fibre), 1.5dB (200/250µm fibre), 1.5dB (1mm polymer fibre)

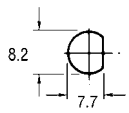
206497

Mftrs. List No.	Order Code	Price Each 1+	10+	20+
FDC20FSMAASS	**120-8876●**	17.58	10.64	10.35

Fibre Optics - Universal System

SMA Emitters and Detectors





Single hole type

Panel, Rear Fitting
Body overall L=20.6
Nut=11 A/F

PCB
Body overall L=16.3, W=12.7
2 holes drilled
and tapped 2.56 UNC

PCB type recommended panel hole size=2.3 dia. 2 holes on 9.5 fixing centres. Lead length=21

Connections: Emitters: Red sleeve – Anode. Detectors: Black sleeve – Anode

Universal 9mm FSMA emitters and detectors are suitable for use with both 1mm polymer fibre and 200/250µm glass fibre cables. This enables low cost polymer cable to be used over shorter distances with the same emitters and detectors as used with 200/250µm cable over longer distances.

The PIN diode photodetectors have 1mm square active area permitting collection of light with high efficiency for all fibres up to 1000µm (1mm) core size, and can be used for frequencies up to and in excess of 100MHz. The spectral range of sensitivity is 400 to 1100nm.

RL Re-reeling available

Fibre Optics - Universal System - continued

SMA Emitters and Detectors - continued

The emitters and detectors are both available in a choice of mounting styles with SMA connection. All have full epoxy primary encapsulation.

206491

Mounting	Order Code	Price Each 1+	10+	25+
Emitters				
Panel, rear fitting	**120-8870●**	15.68	11.28	10.98
PCB	**120-8872●**	15.68	11.28	10.98
Detectors				
Panel, rear fitting	**120-8873●**	12.62	9.09	8.87
PCB	**120-8874●**	12.62	9.09	8.87

Fibre Optic Cable Assemblies and Accessories

OPTRONICS

Fibre Optic Patchcords

Duplex



OM3 50/125 multimode allows for new VSEL based hardware and old legacy LED based hardware to co-exist without the need to implement a full-blown singlemode solution to utilise the new 10Gbs Ethernet protocols.

- Singlemode and Multimode patchcords
- ST, SC, LC, FC and E2000 versions
- Insertion loss <0.35dB typical (multi-mode), 0.2dB typical (singlemode)
- OM3 enhanced 50/125 (10Gigabit) types available

Mftrs. List No.

STST62D0R1	=130-0221	SCSC50D0R1	=130-0267	STST09DYE10	=130-0328
STST62D0R2	=130-0223	SCSC50D0R2	=130-0268	SCST09DYE1	=130-0329
STST62D0R3	=130-0224	SCSC50D0R3	=130-0269	SCST09DYE10	=130-0334
STST62D0R5	=130-0225	SCSC50D0R5	=130-0270	SCSC09DYE1	=130-0335
STST62D0R10	=130-0226	SCSC50D0R10	=130-0272	SCSC09DYE2	=130-0336
SCST62D0R1	=130-0227	LCLC50D0R1	=130-0273	SCSC09DYE3	=130-0338
SCST62D0R2	=130-0228	LCLC50D0R2	=130-0274	SCSC09DYE5	=130-0339
SCST62D0R3	=130-0229	LCLC50D0R3	=130-0275	SCSC09DYE10	=130-0340
SCST62D0R5	=130-0230	LCLC50D0R5	=130-0276	FCFC09DYE1	=130-0341
SCST62D0R10	=130-0231	LCLC50D0R10	=130-0277	FCFC09DYE2	=130-0342
SCSC62D0R1	=130-0232	LCST50D0R1	=130-0278	FCFC09DYE3	=130-0343
SCSC62D0R2	=130-0233	LCST50D0R2	=130-0279	FCFC09DYE5	=130-0344
SCSC62D0R3	=130-0235	LCST50D0R3	=130-0280	FCFC09DYE10	=130-0345
SCSC62D0R5	=130-0236	LCST50D0R5	=130-0281	FCST09DYE1	=130-0346
SCSC62D0R10	=130-0237	LCST50D0R10	=130-0282	FCST09DYE10	=130-0352
LCLC62D0R1	=130-0238	LCSC50D0R1	=130-0284	FCSC09DYE1	=130-0353
LCLC62D0R2	=130-0240	LCSC50D0R2	=130-0285	FCSC09DYE2	=130-0354
LCLC62D0R3	=130-0241	LCSC50D0R3	=130-0286	FCSC09DYE3	=130-0355
LCLC62D0R5	=130-0242	LCSC50D0R5	=130-0287	FCSC09DYE10	=130-0357
LCLC62D0R10	=130-0243	LCSC50D0R10	=130-0288	LCLC09DYE1	=130-0358
LCST62D0R1	=130-0244	STSTOM3DPU1	=130-0289	LCLC09DYE2	=130-0359
LCST62D0R2	=130-0245	STSTOM3DPU2	=130-0290	LCLC09DYE3	=130-0360
LCST62D0R3	=130-0247	SCSCOM3DPU10	=130-0306	LCLC09DYE5	=130-0361
LCST62D0R5	=130-0248	LCLCOM3DPU1	=130-0307	LCLC09DYE10	=130-0363
LCST62D0R10	=130-0249	LCLCOM3DPU2	=130-0308	LCST09DYE1	=130-0364
LCSC62D0R1	=130-0250	LCLCOM3DPU3	=130-0309	LCST09DYE10	=130-0368
LCSC62D0R2	=130-0251	LCLCOM3DPU5	=130-0310	LCSC09DYE1	=130-0369
LCSC62D0R3	=130-0252	LCLCOM3DPU10	=130-0311	LCSC09DYE2	=130-0370
LCSC62D0R5	=130-0253	LCSTOM3DPU2	=130-0314	LCSC09DYE3	=130-0371
LCSC62D0R10	=130-0254	LCSCOM3DPU2	=130-0319	LCSC09DYE10	=130-0373
STST50D0R1	=130-0255	LCSCOM3DPU3	=130-0320	E2000SC09DYE1	=130-0375
STST50D0R2	=130-0256	LCSCOM3DPU5	=130-0321	E2000E200009DYE1	=130-0385
STST50D0R3	=130-0257	LCSCOM3DPU10	=130-0322	SCASCA09DYE2	=130-0392
STST50D0R5	=130-0259	STST09DYE1	=130-0323	SCASCA09DYE3	=130-0393
STST50D0R10	=130-0261	STST09DYE2	=130-0324	SCASCA09DYE5	=130-0394
SCST50D0R1	=130-0262	STST09DYE5	=130-0327	SCASCA09DYE10	=130-0395
SCST50D0R2	=130-0263				

450862

Connectors A & B and core & cladding	Core diameter	Core	Cable		Order Code	Price Each 1+	10+	25+
Multimode								
ST - ST, 62.5/125	62.5	125	Orange	1m	**130-0221●**	10.25	7.69	6.16
ST - ST, 62.5/125	62.5	125	Orange	2m	**130-0223●**	11.50	8.62	6.90
ST - ST, 62.5/125	62.5	125	Orange	3m	**130-0224●**	12.73	9.56	7.64
ST - ST, 62.5/125	62.5	125	Orange	5m	**130-0225●**	15.21	11.41	9.13
ST - ST, 62.5/125	62.5	125	Orange	10m	**130-0226●**	21.41	16.06	12.85
SC - ST, 62.5/125	62.5	125	Orange	1m	**130-0227●**	10.51	7.89	6.30
SC - ST, 62.5/125	62.5	125	Orange	2m	**130-0228●**	11.74	8.81	7.05
SC - ST, 62.5/125	62.5	125	Orange	3m	**130-0229●**	12.99	9.74	7.78
SC - ST, 62.5/125	62.5	125	Orange	5m	**130-0230●**	15.46	11.60	9.27
SC - ST, 62.5/125	62.5	125	Orange	10m	**130-0231●**	21.66	16.25	13.00
SC - SC, 62.5/125	62.5	125	Orange	1m	**130-0232●**	10.87	8.16	6.53
SC - SC, 62.5/125	62.5	125	Orange	2m	**130-0233●**	12.12	9.09	7.27
SC - SC, 62.5/125	62.5	125	Orange	3m	**130-0235●**	13.35	10.02	8.02
SC - SC, 62.5/125	62.5	125	Orange	5m	**130-0236●**	15.83	11.87	9.51
SC - SC, 62.5/125	62.5	125	Orange	10m	**130-0237●**	22.03	16.52	13.22
LC - LC, 62.5/125	62.5	125	Orange	1m	**130-0238●**	18.77	14.08	11.26
LC - LC, 62.5/125	62.5	125	Orange	2m	**130-0240●**	20.00	15.00	12.01
LC - LC, 62.5/125	62.5	125	Orange	3m	**130-0241●**	21.25	15.93	12.74
LC - LC, 62.5/125	62.5	125	Orange	5m	**130-0242●**	22.48	16.86	13.48
LC - LC, 62.5/125	62.5	125	Orange	10m	**130-0243●**	28.68	21.51	17.21
LC - ST, 62.5/125	62.5	125	Orange	1m	**130-0244●**	14.18	10.64	8.51
LC - ST, 62.5/125	62.5	125	Orange	2m	**130-0245●**	15.42	11.57	9.25
LC - ST, 62.5/125	62.5	125	Orange	3m	**130-0247●**	16.66	12.50	10.00
Multimode								
LC - ST, 62.5/125	62.5	125	Orange	5m	**130-0248●**	19.14	14.35	11.49
LC - ST, 62.5/125	62.5	125	Orange	10m	**130-0249●**	25.34	19.00	15.20
LC - SC, 62.5/125	62.5	125	Orange	1m	**130-0250●**	14.49	10.87	8.70
LC - SC, 62.5/125	62.5	125	Orange	2m	**130-0251●**	15.73	11.80	9.44
LC - SC, 62.5/125	62.5	125	Orange	3m	**130-0252●**	16.97	12.73	10.18
LC - SC, 62.5/125	62.5	125	Orange	5m	**130-0253●**	15.26	11.45	9.15
LC - SC, 62.5/125	62.5	125	Orange	10m	**130-0254●**	25.64	19.24	15.39
ST - ST, 50/125	50	125	Orange	1m	**130-0255●**	10.25	7.69	6.16
ST - ST, 50/125	50	125	Orange	2m	**130-0256●**	11.50	8.62	6.90
ST - ST, 50/125	50	125	Orange	3m	**130-0257●**	12.73	9.56	7.64
ST - ST, 50/125	50	125	Orange	5m	**130-0259●**	15.21	11.41	9.13
ST - ST, 50/125	50	125	Orange	10m	**130-0261●**	21.41	16.06	12.85
SC - ST, 50/125	50	125	Orange	1m	**130-0262●**	10.51	7.89	6.30
SC - ST, 50/125	50	125	Orange	2m	**130-0263●**	11.74	8.81	7.05
SC - SC, 50/125	50	125	Orange	1m	**130-0267●**	10.87	8.16	6.53
SC - SC, 50/125	50	125	Orange	2m	**130-0268●**	12.12	9.09	7.27
SC - SC, 50/125	50	125	Orange	3m	**130-0269●**	13.35	10.02	8.02
SC - SC, 50/125	50	125	Orange	5m	**130-0270●**	15.83	11.87	9.51
SC - SC, 50/125	50	125	Orange	10m	**130-0272●**	22.03	16.52	13.22
LC - LC, 50/125	50	125	Orange	1m	**130-0273●**	18.77	14.08	11.26
LC - LC, 50/125	50	125	Orange	2m	**130-0274●**	20.00	15.00	12.01
LC - LC, 50/125	50	125	Orange	3m	**130-0275●**	21.25	15.93	12.74
LC - LC, 50/125	50	125	Orange	5m	**130-0276●**	22.48	16.86	13.48
LC - LC, 50/125	50	125	Orange	10m	**130-0277●**	28.68	21.51	17.21
LC - ST, 50/125	50	125	Orange	1m	**130-0278●**	14.18	10.64	8.51
LC - ST, 50/125	50	125	Orange	2m	**130-0279●**	15.42	11.57	9.25
LC - ST, 50/125	50	125	Orange	3m	**130-0280●**	16.66	12.50	10.00
LC - ST, 50/125	50	125	Orange	5m	**130-0281●**	19.14	14.35	11.49
LC - ST, 50/125	50	125	Orange	10m	**130-0282●**	25.34	19.00	15.20
LC - SC, 50/125	50	125	Orange	1m	**130-0284●**	14.49	10.87	8.70
LC - SC, 50/125	50	125	Orange	2m	**130-0285●**	15.73	11.80	9.44
LC - SC, 50/125	50	125	Orange	3m	**130-0286●**	16.97	12.73	10.18
LC - SC, 50/125	50	125	Orange	5m	**130-0287●**	19.45	14.60	11.67
LC - SC, 50/125	50	125	Orange	10m	**130-0288●**	25.64	19.24	15.39
Multimode 3 (OM3 Type)								
ST - ST, 50/125	50	125	Purple	1m	**130-0289●**	7.78	5.83	4.66
ST - ST, 50/125	50	125	Purple	2m	**130-0290●**	11.16	8.36	6.69
SC - SC, 50/125	50	125	Purple	10m	**130-0306●**	24.16	18.13	14.50
LC - LC, 50/125	50	125	Purple	1m	**130-0307●**	18.00	13.51	10.80
LC - LC, 50/125	50	125	Purple	2m	**130-0308●**	16.90	12.68	10.14
LC - LC, 50/125	50	125	Purple	3m	**130-0309●**	20.80	15.60	12.48
LC - LC, 50/125	50	125	Purple	5m	**130-0310●**	20.55	15.42	12.33
LC - LC, 50/125	50	125	Purple	10m	**130-0311●**	33.95	25.46	20.37
LC - ST, 50/125	50	125	Orange	2m	**130-0314●**	16.25	12.19	9.75
LC - SC, 50/125	50	125	Purple	2m	**130-0319●**	12.94	9.70	7.76
LC - SC, 50/125	50	125	Purple	3m	**130-0320●**	18.04	13.53	10.82
LC - SC, 50/125	50	125	Purple	5m	**130-0321●**	21.15	15.85	12.68
LC - SC, 50/125	50	125	Purple	10m	**130-0322●**	28.89	21.67	17.33
Singlemode								
ST - ST, 9/125	9	125	Yellow	1m	**130-0323●**	11.90	8.94	7.15
ST - ST, 9/125	9	125	Yellow	2m	**130-0324●**	10.26	7.70	6.16
ST - ST, 9/125	9	125	Yellow	5m	**130-0327●**	16.60	12.44	9.96
ST - ST, 9/125	9	125	Yellow	10m	**130-0328●**	22.44	16.83	13.46
SC - ST, 9/125	9	125	Yellow	1m	**130-0329●**	12.19	9.14	7.31
SC - ST, 9/125	9	125	Yellow	10m	**130-0334●**	11.70	8.78	7.03
SC - SC, 9/125	9	125	Yellow	1m	**130-0335●**	11.50	8.62	6.90
SC - SC, 9/125	9	125	Yellow	2m	**130-0336●**	12.67	9.51	7.60
SC - SC, 9/125	9	125	Yellow	3m	**130-0338●**	13.84	10.38	8.30
SC - SC, 9/125	9	125	Yellow	5m	**130-0339●**	16.19	12.14	9.71
SC - SC, 9/125	9	125	Yellow	10m	**130-0340●**	22.03	16.52	13.22
FC - FC, 9/125	9	125	Yellow	1m	**130-0341●**	15.83	11.87	9.51
FC - FC, 9/125	9	125	Yellow	2m	**130-0342●**	17.01	12.75	10.20
FC - FC, 9/125	9	125	Yellow	3m	**130-0343●**	18.18	13.64	10.90
FC - FC, 9/125	9	125	Yellow	5m	**130-0344●**	20.52	15.39	12.31
FC - FC, 9/125	9	125	Yellow	10m	**130-0345●**	26.37	19.78	15.82
FC - ST, 9/125	9	125	Yellow	1m	**130-0346●**	13.84	10.38	8.30
FC - ST, 9/125	9	125	Yellow	10m	**130-0352●**	24.38	18.28	14.63
FC - SC, 9/125	9	125	Yellow	1m	**130-0353●**	14.12	10.59	8.47
FC - SC, 9/125	9	125	Yellow	2m	**130-0354●**	15.29	11.47	9.17
FC - SC, 9/125	9	125	Yellow	3m	**130-0355●**	16.45	12.34	9.87
FC - SC, 9/125	9	125	Yellow	10m	**130-0357●**	24.65	18.48	14.79
LC - LC, 9/125	9	125	Yellow	1m	**130-0358●**	26.13	19.60	15.68
LC - LC, 9/125	9	125	Yellow	2m	**130-0359●**	27.30	20.48	16.38
LC - LC, 9/125	9	125	Yellow	3m	**130-0360●**	28.48	21.36	17.09
LC - LC, 9/125	9	125	Yellow	5m	**130-0361●**	30.80	23.11	18.48
LC - LC, 9/125	9	125	Yellow	10m	**130-0363●**	36.66	27.50	22.00
LC - ST, 9/125	9	125	Yellow	1m	**130-0364●**	21.07	15.80	12.64
LC - ST, 9/125	9	125	Yellow	10m	**130-0368●**	31.60	23.71	18.96
LC - SC, 9/125	9	125	Yellow	1m	**130-0369●**	21.25	15.93	12.74
LC - SC, 9/125	9	125	Yellow	2m	**130-0370●**	22.41	16.81	13.44
LC - SC, 9/125	9	125	Yellow	3m	**130-0371●**	23.58	17.69	14.15
LC - SC, 9/125	9	125	Yellow	10m	**130-0373●**	31.78	23.84	19.06
E2000 - SC, 9/125	9	125	Yellow	1m	**130-0375●**	33.31	25.32	21.82
E2000 - E2000, 9/125	9	125	Yellow	1m	**130-0385●**	54.45	41.39	35.68
SC/APC - SC/APC, 9/125	9	125	Yellow	2m	**130-0392●**	24.22	18.41	15.86
SC/APC - SC/APC, 9/125	9	125	Yellow	3m	**130-0393●**	24.93	18.95	16.33
SC/APC - SC/APC, 9/125	9	125	Yellow	5m	**130-0394●**	26.42	20.07	17.31
SC/APC - SC/APC, 9/125	9	125	Yellow	10m	**130-0395●**	34.25	26.03	22.43

£ € 40,000 PRICES REDUCED

RL Re-reeling available

Farnell

Optical Pigtails

OPTRONICS

900μm Tight Buffered Fibre Optic Cable



OM3 50/125 multimode allows for new VSEL based hardware and old legacy LED based hardware to co-exist without the need to implement a full-blown singlemode solution to utilise the new 10Gbs Ethernet protocols.

- ST, SC, LC, FC, MU and E2000 Connector types
- Full tracability & test certification supplied with each assembly
- OM3 enhanced 50/125 (10Gigabit) types available

451031

	Cable Colour	Length	Mftrs. List No.	Order Code	Price Each 1+	10+	25+	50+
Connector and Fibre Size								
ST, 62.5/125	White	1m	ST62B1	**130-0396●**	3.38	2.53	2.03	1.66
LC, 50/125	White	1.5m	LC50B1	**130-0401●**	5.51	4.13	3.31	2.72
ST, 9/125	White	1m	ST09B1	**130-0405●**	3.78	2.83	2.27	1.86
FC, 9/125	White	1m	FC09B1	**130-0409●**	6.12	4.60	3.68	3.03

Optical Attenuators - Singlemode

OPTRONICS

Plug-in Package



- Accurate attenuation
- Ultra low back reflection
- Broad wavelength band
- Flat response over all wavelengths
- Environmentally stable

These single mode attenuators are designed to be used in communication systems to reduce the optical power launched into the photo detector. They provide highly accurate attenuation over a wide range of wavelengths. The plug type configuration allows use directly onto the ends of fibre jumpers and to insert directly into the adapter.

451092

Connector Style	Attenuation	Mftrs. List No.	Order Code	Price Each 1+	5+	10+	25+
FC	5dB	FAFCS05K	**130-0411●**	27.18	20.66	17.81	16.45
FC	10dB	FAFCS10K	**130-0412●**	27.18	20.66	17.81	16.45
SC	5dB	FASCS05K	**130-0415●**	27.18	20.66	17.81	16.45
SC	10dB	FASCS10K	**130-0417●**	27.18	20.66	17.81	16.45
LC	5dB	FALCS05K	**130-0420●**	36.69	27.89	24.04	22.21
LC	10dB	FALCS10K	**130-0421●**	36.69	27.89	24.04	22.21

Optical Patch Panels

OPTRONICS

Sliding Tray



The sliding tray patch panel is supplied complete with the specified number of required adapters and a simple splice management kit.

S00 Type

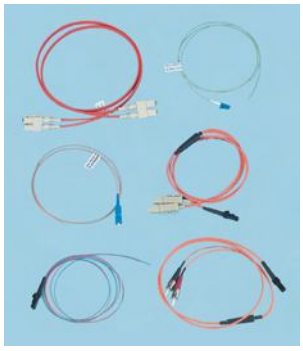
451093

Adapter Number / Style	Mode	No. of Ports	Directions	Mftrs. List No.	Order Code	Price Each 1+	5+	+
24 / Fibre Optic	Multimode	24	Simplex	S00STM24	**130-0433●**	56.80	47.33	– –

Fibre Optic Cable Assemblies

molex PREMISE NETWORKS

Multimode



- Factory tested and certified
- ST, SC, MTRJ & LC versions
- Insertion loss <0.35dB
- LSZH cable sheath as standard
- Individually packed

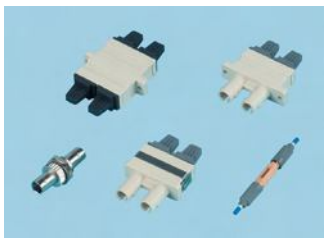
231787

Connector Combinations and Cable Length	Mftrs. List No.	Order Code	Price Each 1+	5+
ST - ST Duplex, Zipcord Cable				
ST - ST, 1M	FPC-22010-00	**121-9593●**	17.90	15.86
SC - SC Duplex, Zipcord Cable				
SC - SC, 1M	FPC-44010-00	**121-9597●**	27.73	24.58
SC - SC, 2M	FPC-44020-00	**121-9598●**	23.27	20.62
ST - MTRJ Duplex, Zipcord Cable				
ST - MTRJ Female, 2M	FPC-28020-00	**121-9602●**	27.90	– –

Connector Combinations and Cable Length	Mftrs. List No.	Order Code	Price Each 1+	5+
ST - ST Duplex, Zipcord Cable				
ST - ST, 2M	FPC-22020-10	**121-9604●**	15.62	13.84
ST - ST, 3M	FPC-22030-10	**121-9605●**	20.99	18.61
ST - ST, 5M	FPC-22050-10	**121-9606●**	19.06	16.89
SC - SC Duplex, Zipcord Cable				
SC - SC, 1m	FPC-44010-10	**121-9607●**	27.97	24.79
SC - SC, 3m	FPC-44030-10	**121-9609●**	30.99	27.47
SC - SC, 5m	FPC-44050-10	**121-9610●**	34.05	30.18
2 x ST - 2 x SC Duplex, Zipcord Cable				
2 x ST - 2 x SC, 2m	FPC-24020-10	**121-9611●**	22.65	20.07

Fibre Optic Adaptors - Multi Mode

molex PREMISE NETWORKS



- A range of adapters to suit SC, ST and FDDI connections
- Industry standard footprints, combinations include: ST/ST, SC/SC and SC/ST
- Industry standard mounting: flange or snap-in
- Rugged Polymer or Phosphor Bronze alignment sleeves
- Mechanical splice available

231802

Description	Mftrs. List No.	Order Code	Price Each 1+	5+	10+
ST/ST Metal Body	106113-1000	**121-9616●**	1.41	1.26	1.11
SC/SC Duplex, Flange Mount	106167-0010	**121-9617●**	4.41	3.90	3.47

Fibre Optic Management Panel

molex PREMISE NETWORKS

Premice Network - FMP 3 Series



- 19" Rack compatible
- 12 or 24 ports
- Various front plate standards available
- Fibre management system including strain relief for cables
- Seperate chassis and front plate
- 442 x 29 x 44mm in Graphite grey

The Body Kit (145-4671) contains the following parts:

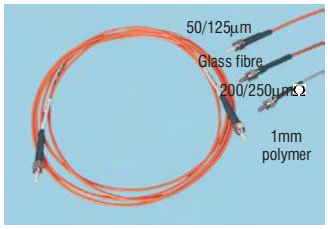
1 x Cable gland 4 - 8mm M20
4 x Blanking grommet 20mm
1 x Open grommet
2 x Fibre support base and clips
1 x Kevlar retention post
24 x Adapter mounting screws.

496668

Number of Ports	Description	Mftrs. List No.	Order Code	Price Each 1+	3+
Loaded Front Plates - ST					
12		RFR-00115	**145-4673**	43.79	40.14

50/125μm glass, 200/230μm glass, 1mm polymer

OMC Applying the technology of light



A range of fibre optical leads, terminated with 9mm FSMA connectors compatible with FSMA transmitters and receivers.

Type	Core Dia.	Cladding Dia.	Cladding Dia.
50/125μm glass	0.050	0.125	2.5
200/230μm glass	0.200	0.250	3.2
1mm polymer	1.0	—	2.2

206490

Length	Order Code	Price Each 1+	5+	10+	25+
50/125μm Glass Fibre					
2m	**120-8865●**	55.42	49.44	40.64	33.26
5m	**120-8866●**	58.62	46.83	38.98	35.20
10m	**120-8863●**	63.94	51.08	42.53	38.38
20m	**120-8864●**	77.29	61.74	51.41	46.40
200/230μm Glass Fibre					
2m	**120-8907●**	40.36	34.71	30.44	28.57
5m	**120-8908●**	46.88	40.38	35.48	33.33
10m	**120-8909●**	57.43	49.46	43.44	40.80
1mm Polymer					
1m	**120-8867●**	22.17	19.89	13.11	11.21
2m	**120-8868●**	24.36	21.89	20.02	15.15
5m	**120-8869●**	27.49	24.69	22.63	17.13

Fibre Optic Continuity Testers

ProsKit



1504088



1504086

- Low cost Fibre Optics tester
- Checks continunity of single(laser version) and multimode(bulb version) fibres
- Battery powered (Laser: 2x AAA, Bulb: 2 x AA)

RL Re-reeling available

Farnell

Fibre Optic Cable Assemblies and Accessories - continued

Fibre Optic Continuity Testers - continued

491098

Mftrs. List No.	Type	Order Code	Price Each 1+	10+	25+
MT-7050N	Bulb	**150-4088**	15.67	13.07	12.05

Fibre Optic Scribes and Polishers

ProsKit



Kit contains:
- Optics cleaning kit (10xSwabs, cloth and fluid)
- MicroScope(200x)
- Side Cutter
- Ceramic scissors
- Stripper
- Kevlar cutter
- Universal syringe
- SC and ST polishing disks
- Utility Storage Box
- Crimp tool (0.42", 0.68", 0.133", 0.162", 0.195")
- Carry zipper case.
- Side Cutter

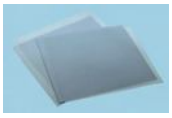
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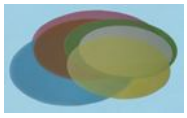
Mftrs. List No.	Order Code	Price Each 1+	10+	25+	50+
Fibre Optic Tool Kit					
1PK-940KN	**150-4093**	61.34	59.24	– –	– –
Fibre Continuity Tester					
MT-7050N	**150-4088**	15.67	13.07	12.05	12.05
Fibre Optic Stripper					
8PK-326	**150-4091**	9.79	8.16	7.53	7.53
Foam Swabs Cleaning Kit (10xSwabs, cleaning cloth + cleaning liquid)					
8PK-C002	**150-4092**	4.01	3.21	2.91	2.91
Polishing Disks					
1FB-ST	**150-4089**	9.70	8.08	7.46	7.46
1FB-SC	**150-4090**	9.70	8.08	7.46	7.46

Lapping Film

3M

New





- Fast polishing
- High yield
- Clean finish
- Improved throughput
- Good control of fibre height

3M lapping film contains precisely graded minerals which are coated on a high strength, 3mm polyester backing to provide a uniform, consistent finish. Available in aluminum oxide for leveling and polishing steps and in diamond for cutting and polishing hard ceramic ferrules and glass fibers at the same rate and to the same level. Used to radius ferrule connectors or to refine the finish in preparation for the final polish. Available in 0.5 - 9 micron grades.

Dimensions (in.)	Micron Size	Mineral	Mftrs. List No.
8.5 x 11	9	Aluminum Oxide	261X 9 MIC - 8 1/2"" X 11""
8.5 x 11	3	Aluminum Oxide	261X 3 MIC - 8 1/2"" X 11""
8.5 x 11	1	Aluminum Oxide	262X 1 MIC - 8 1/2"" X 11""
9 x 11	3	Diamond	661X 3 MIC - 9"" X 11""
9 x 11	1	Diamond	661X 1 MIC - 9"" X 11""
∅ 4.25	6	Diamond	662XW 6 MIC - 4 1/4"" DISC
∅ 4.25	3	Diamond	662XW 3 MIC - 4 1/4"" DISC
∅ 4.25	1	Diamond	662XW 1 MIC - 4 1/4"" DISC
∅ 4.25	0.5	Diamond	662XW 0.5 MIC - 4 1/4"" DISC
∅ 5	6	Diamond	662XW 6 MIC - 5"" DISC
∅ 5	3	Diamond	662XW 3 MIC - 5"" DISC
∅ 5	1	Diamond	662XW 1 MIC - 5"" DISC
∅ 5	0.5	Diamond	662XW 0.5 MIC - 5"" DISC

527994

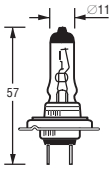
Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+
261X 9 MIC - 8 1/2"" X 11""	**168-3472**	1.86	1.63	1.45	1.30
261X 3 MIC - 8 1/2"" X 11""	**168-3473**	1.86	1.63	1.45	1.30
262X 1 MIC - 8 1/2"" X 11""	**168-3474**	1.76	1.54	1.37	1.23
661X 3 MIC - 9"" X 11""	**168-3475**	26.74	24.06	21.87	20.05
661X 1 MIC - 9"" X 11""	**168-3476**	26.74	24.06	21.87	20.05
662XW 6 MIC - 4 1/4"" DISC	**168-3477**	9.48	8.29	7.37	6.63
662XW 3 MIC - 4 1/4"" DISC	**168-3478**	9.48	8.29	7.37	6.63
662XW 1 MIC - 4 1/4"" DISC	**168-3479**	9.48	8.29	7.37	6.63
662XW 0.5 MIC - 4 1/4"" DISC	**168-3480**	9.48	8.29	7.37	6.63
662XW 6 MIC - 5"" DISC	**168-3481**	13.15	11.51	10.23	9.20
662XW 3 MIC - 5"" DISC	**168-3483**	13.15	11.51	10.23	9.20
662XW 1 MIC - 5"" DISC	**168-3484**	13.15	11.51	10.23	9.20
662XW 0.5 MIC - 5"" DISC	**168-3485**	13.15	11.51	10.23	9.20

Automotive Lamps & Lighting

Car and Motorcycle Headlamps

LUX





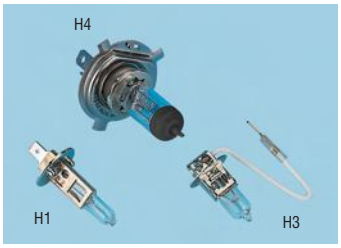
Voltage	Wattage	Description	BS Ref	Style	Order Code
12V	55W	H7 PX26d Tungsten/Halogen	499	H7	113-9219

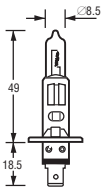
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Order Code	Price Each 1+	10+	25+	50+	100+
113-9219●	11.60	10.05	9.37	7.33	7.04

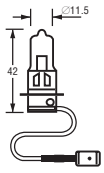
Stop/Fog and Headlight Lamps

LUX

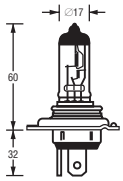




H1



H3



H4

Voltage	Wattage	Description	BS Ref	Style	Order Code
12V	55W	H1 Tungsten/Halogen	BS448	H1	113-9209
12V dc	55W	H1 Xenon	BS448X	H1	113-9212
24V	70W	H1 Tungsten/Halogen	BS466	H1	113-9211
12V	55W	H3 Tungsten/Halogen	BS453	H3	113-9213
24V	70W	H3 Tungsten/Halogen	BS460	H3	113-9214
12V	60W/55W	H4 Tungsten/Halogen	BS472	H4	113-9215
12V dc	60W/55W	H4 Xenon	BS472X	H4	113-9218
24V	75W/70W	H4 Tungsten/Halogen p43t	BS475	H4	113-9217

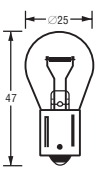
206546

Order Code	Price Each 1+	10+	25+	50+	100+
113-9209●	1.75	1.55	1.43	1.32	1.25
113-9212●	8.84	7.80	7.29	5.42	5.21
113-9211●	3.24	2.82	2.63	2.06	1.99
113-9213●	1.62	1.43	1.30	1.22	1.16
113-9214●	2.49	2.21	2.05	1.88	1.78
113-9215●	2.44	2.15	1.99	1.84	1.75
113-9218●	8.93	7.90	7.37	5.49	5.27
113-9217●	5.18	4.44	4.16	3.25	3.13

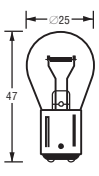
Stop/Tail Flashers

LUX





BA15s



BA15d

Voltage	Wattage	Description	Style	Order Code
12V	21W	SCC BA15s	BA15s	113-9269
12V	21W	SBC BA15d	BA15d	113-9263
24V	21W	SCC BA15s	BA15s	113-9271

206533

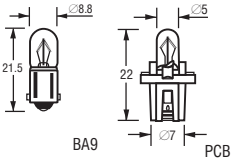
RL Re-reeling available

BS Ref.	Order Code	Price Each 1+	10+	25+	50+	100+
BS382	113-9269●	0.210	0.181	0.171	0.152	– –
BS241	113-9271●	0.350	0.300	0.260	0.230	0.200
BS335	113-9263●	0.350	0.310	0.300	0.230	0.210

Side and Indicators

LUX





Voltage	Wattage	Description	Style	Order Code
12V	4W	BA9s	BA9s	113-9183
24V	4W	BA9s	BA9s	113-9188
12V	1.2W	PCB (Black)	PCB	113-9260
24V	1.2W	PCB (Grey)	PCB	113-9261

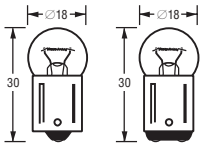
206534

BS Ref.	Order Code	Price Each 1+	10+	25+	50+	100+
BS233	113-9183●	0.183	0.180	0.171	0.152	0.138
BS249	113-9188●	0.240	0.220	0.210	0.185	0.174
BS286T	113-9260●	0.630	0.600	0.550	0.410	0.400
BS508T	113-9261●	0.820	0.790	0.740	0.540	0.520

Side, Tail Indicators

LUX





BA15s SCC BA15d SBC

Wattage	Voltage	Description	Style	Order Code
5W	12V	SCC BA15s	BA15s	113-9270
5W	12V	SBC BA15d	BA15d	113-9264
5W	24V	SCC BA15s	BA15s	113-9272
5W	24V	SCC BA15s (Heavy Duty)	BA15s	113-9273
5W	24V	SBC BA15d	BA15d	113-9266
5W	24V	SBC BA15d (Heavy Duty)	BA15d	113-9267
10W	12V	SCC BA15s	BA15s	113-9268

206535

BS Ref.	Order Code	Price Each 1+	10+	25+	50+	100+
BS207	113-9270●	0.240	0.230	0.200	0.152	0.138
BS245	113-9268●	0.240	0.220	0.210	0.185	0.174
BS149	113-9272●	0.280	0.250	0.210	0.164	0.152
BS248	113-9273●	0.570	0.560	0.520	0.380	0.370
BS209	113-9264●	0.280	0.250	0.230	0.164	0.160
BS150	113-9266●	0.240	0.220	0.210	0.185	0.174
247BS247	113-9267●	0.570	0.540	0.520	0.390	0.380

Festoon and Wedge Base Lamps for Side, Tail, Licence Plate and Interior Illumination

LUX





Voltage	Wattage	Description	Style	Order Code
12V	5W	11x38mm Festoon	Festoon	113-9192
12V	10W	11x38mm Festoon	Festoon	113-9191
24V	5W	11x38mm Festoon	Festoon	113-9193

206536

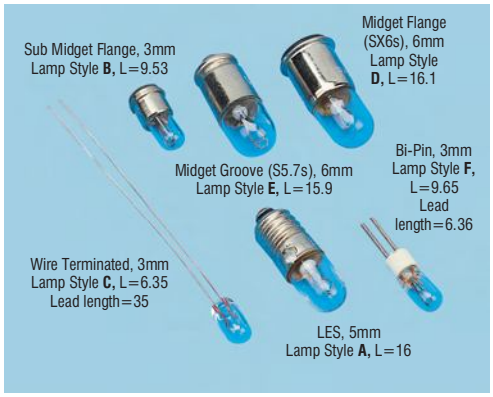
BS Ref.	Order Code	Price Each 1+	10+	25+	50+	100+
BS239	113-9192●	0.300	0.250	0.230	0.174	0.164
BS272	113-9191●	0.340	0.280	0.260	0.198	0.193
BS242	113-9193●	0.260	0.230	0.210	0.185	0.174

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NATO Numbered Filament Lamps

NATO Numbered Filament Lamps





MBC/MCC (BA9s), 10mm, Lamp Style G, L=28



MBC/MCC (BA9s), 11mm, Lamp Style H, L=24



MES (E10), 10mm, Lamp Style I, L=28



MES (E10), 11mm, Lamp Style J, L=28

Nato Number	Voltage (V)	Current (A)	Power Rating (W)	Nominal Lumens (lm)	Nominal Life (Hrs)	Lamp Style	Order Code
9951903	14	0.05	0.7	3	1000	A	113-9220
9951906	24	0.04	0.96	3	10000	A	113-9221
9959184	28	0.024	0.672	1.6	4000	B	113-9275
9954534	28	0.024	0.672	1.9	4000	C	113-9474
9951189	5	0.06	0.3	0.6	40000	C	113-9475
9952907	12	0.06	0.72	1.9	16000	C	113-9471
9959118	28	0.04	1.12	4.5	4000	D	113-9276
9959182	28	0.04	1.12	4	10000	D	113-9278
6590286	28	0.04	1.12	3.8	10000	E	113-9262
9952193	28	0.024	0.672	1.9	4000	F	113-9190
9951294	6.5	0.3	2	12	4000	G	113-9189
9954739	12	0.183	2.2	11	3000	G	113-9182
9951233	24	0.12	2.8	12	3000	G	113-9187
9951234	24	0.117	2.8	11	3000	H	113-9185
9951922	6.5	0.3	2	12	4000	I	113-9231
9959233	24	0.05	1.2	4	5000	I	113-9225
9951232	24	0.12	2.9	12	3000	I	113-9227
9951183	6.5	0.3	2	12	4000	J	113-9229
9953247	12	0.183	2.2	11	4000	J	113-9224
9951297	24	0.117	2.8	11	3000	J	113-9226

206581

Order Multiple=5

Voltage	Nominal Lumens	Order Code	Price Each 5+	50+	100+	250+	500+
14V dc	3lm	113-9220●	0.340	0.320	0.310	0.230	0.210
24V dc	3lm	113-9221●	0.340	0.320	0.310	0.230	0.210
28V dc	1.6lm	113-9275●	0.660	0.610	0.550	0.410	0.400
28V dc	1.9lm	113-9474●	0.580	0.570	0.520	0.380	0.370
5V dc	0.6lm	113-9475●	0.290	0.260	0.240	0.174	0.164
12V dc	1.9lm	113-9471●	0.290	0.260	0.240	0.174	0.164
28V dc	4.5lm	113-9276●	0.310	0.300	0.260	0.198	0.185
28V dc	4lm	113-9278●	0.310	0.300	0.260	0.198	0.185
28V dc	3.8lm	113-9262●	0.380	0.340	0.330	0.240	0.230
28V dc	1.9lm	113-9190●	0.900	0.880	0.790	0.560	0.550
6.5V dc	12lm	113-9189●	0.310	0.300	0.260	0.185	0.174
12V dc	11lm	113-9182●	0.310	0.300	0.260	0.185	0.174
24V dc	12lm	113-9187●	0.310	0.300	0.260	0.185	0.174
24V dc	11lm	113-9185●	0.310	0.300	0.260	0.185	0.174
6.5V dc	12lm	113-9231●	0.310	0.300	0.260	0.185	0.174
24V dc	4lm	113-9225●	0.310	0.300	0.260	0.185	0.174
24V dc	12lm	113-9227●	0.310	0.300	0.260	0.185	0.174
6.5V dc	12lm	113-9229●	0.310	0.300	0.260	0.185	0.182
12V dc	11lm	113-9224●	0.310	0.300	0.260	0.185	0.174
24V dc	11lm	113-9226●	0.310	0.300	0.260	0.185	0.174

RL Re-reeling available

Torch Bulbs

Xenon, Krypton, Halogen and Vacuum Versions



P13.5s, L=32 | BA9s, L=33 | E10, L=32, B L=24

Voltage (V)	Current (A)	Nominal Lumens	Nominal Life (Hrs)	Lamp Type	Lamp Style	Mftrs List No.	Order Code
2.5	0.83	23	25	Halogen	A	1340100H	110-5532
5.2	0.85	90	25	Halogen	A	1340300H	110-5533
2.4	0.3	6	4	Near/Far	B	13000100	110-5546
2.2	0.25	4	10	Test Bulb	B	13100503	110-5547
12	10 (Watt)	200	240	Halogen	C	4330000H	110-5534
12	20 (Watt)	200	240	Halogen	C	00000433	110-5535
2.4	0.85	12	10	Xenon	D	1321090X	110-5542
2.4	0.5	10	10	Xenon	D	1321080K	113-9259
3.6	0.3	10	30	Krypton	D	1321120K	110-5543
4.75	0.5	32	20	Krypton	D	1321155K	110-5544
5.4	0.54	38	15	Krypton	D	1321160K	110-5545
2.8	0.85	35	10	Halogen	D	1325100H	110-5536
5.2	0.85	85	25	Halogen	D	1325300H	110-5538
6	1	100	100	Halogen	D	1325600H	110-5539
6.5	0.7	90	20	Halogen	D	1325700H	110-5540
2.5	0.3	6	10	Vacuum	D	13211100	110-5548
3.6	0.5	17	30	Vacuum	D	13211303	110-5549
4.75	0.5	25	15	Vacuum	D	13211550	110-5551
5.85	0.5	39	15	Vacuum	D	13211700	110-5552

206609

Voltage	Nominal Lumens	Order Code	Price Each 1+	10+	25+	100+	250+
2.5	23	**110-5532●**	2.150	1.810	1.520	1.180	1.010
5.2	90	**110-5533●**	3.180	2.990	2.580	1.570	1.360
2.4	6	**110-5546●**	0.340	0.300	0.260	0.189	0.165
2.2	4	**110-5547●**	0.340	0.300	0.260	0.230	0.220
12	200	**110-5534●**	4.970	3.880	3.110	2.090	1.800
12	200	**110-5535●**	6.240	4.900	3.910	2.610	2.270
2.4	12	**110-5542●**	0.570	0.480	0.460	0.320	0.310
2.4	10	**113-9259●**	0.280	0.250	0.240	0.172	0.168
3.6	10	**110-5543●**	0.270	0.230	0.197	0.136	0.130
4.75	32	**110-5544●**	0.270	0.230	0.210	0.131	0.128
5.4	38	**110-5545●**	0.270	0.230	0.210	0.131	0.128
2.8	35	**110-5536●**	2.490	1.990	1.530	1.050	1.000
5.2	85	**110-5538●**	2.300	1.940	1.650	1.140	1.060
6	100	**110-5539●**	4.190	3.200	2.470	1.690	1.440
6.5	90	**110-5540●**	2.250	1.790	1.570	1.400	1.260
2.5	6	**110-5548●**	0.153	0.131	0.118	0.082	0.078
3.6	17	**110-5549●**	0.153	0.135	0.117	0.083	0.078
4.75	25	**110-5551●**	0.153	0.135	0.117	0.083	0.078
5.85	39	**110-5552●**	0.210	0.149	0.128	0.081	0.078

T3 1/4 & P13.5 MES (E10/13) Halogen

CML INNOVATIVE TECHNOLOGIES WHERE INNOVATION COMES TO LIGHT



L=30

Voltage Supply (Vdc)	Current Rating (mA)	List No.	Order Code	Voltage Supply (Vdc)	Current Rating (mA)	List No.	Order Code
2.3	0.85	13502303	136-8875				
				6	0.7	13502000	136-8873
4	0.85	13502703	136-8876	6	0.7	13503300	136-8879
5.2	0.5	13502903	136-8877	12	0.417	00H01205	136-9099
5.2	0.5	1325270H	136-9102	12	1.25	00H01215	136-9100
5.2	0.85	13503103	136-8878				

476865

Vdc	Power Rating (W)	Mftrs. List No.	Order Code	Price Each 1+	10+	50+
MES						
2.3	2.38	13502303	**136-8875●**	1.69	1.53	1.47
4	3.4	13502703	**136-8876●**	1.69	1.53	1.47
5.2	2.6	13502903	**136-8877●**	2.39	2.15	2.06
5.2	4.4	13503103	**136-8878●**	2.39	2.15	2.06
6	4.2	13503300	**136-8879●**	2.39	2.15	2.06
P13.5S						
5.2	2.6	1325270H	**136-9102●**	2.90	2.66	2.56
6	4.2	13502000	**136-8873●**	1.57	1.44	1.40
BA9s - T10						
12	5	00H01205	**136-9099●**	2.13	1.97	1.89
12	15	00H01215	**136-9100●**	2.13	1.97	1.89

Filament Lamps

LES (E5) 5mm, T1½

CML INNOVATIVE TECHNOLOGIES WHERE INNOVATION COMES TO LIGHT



L=16.0

Voltage (V)	Current (A)	Watts	Nominal Lumens	Nominal Life (Hrs)	Mftrs List No.	Order Code
6	0.06	0.36	1	10000	673	113-9306
12	0.08	0.96	2	10000	679	113-9299
12	0.12	1.44	5.5	5000	280	113-9300
14	0.04	0.56	2	5000	690	113-9301
14	0.05	0.7	3	1000	5682	113-9302
24	0.04	0.96	3	10000	687	113-9303
28	0.04	1.12	3.8	7000	CM399	113-9304
28	0.04	1.12	4.5	4000	688	113-9305

207634

Order Multiple=5 Voltage	Nominal Lumens	Order Code	Price Each 5+	100+	1K+
6	1	**113-9306●**	0.43	0.34	0.27
12	2	**113-9299●**	0.48	0.39	0.29
12	5.5	**113-9300●**	0.72	0.54	0.39
14	2	**113-9301●**	0.83	0.56	0.36
14	3	**113-9302●**	0.48	0.39	0.29
24	3	**113-9303●**	0.88	0.72	0.55
28	3.8	**113-9304●**	1.12	0.85	0.53
28	4.5	**113-9305●**	0.66	0.53	0.42

MES (E10) 10mm, T3¼

CML INNOVATIVE TECHNOLOGIES WHERE INNOVATION COMES TO LIGHT



L=28.0◆
L=30.0

Voltage (V)	Current (A)	Output (W)	Nominal Lumens	Nominal Life (Hrs)	Mftrs. List No.	Order Code
6.5	0.3	1.95	12	4000	W503-5	113-9437
12	0.183	2.2	11	3000	W1309-5	113-9428
12	0.25	3	12.5	4000	W577-5	113-9427
24	0.05	1.2	3.8	5000	W592-5	113-9431
24	0.12	2.8	10.7	3000	W599-5	113-9433
24	0.07	1.96	4.5	25000	W1122-5	113-9432
48	0.1	4.8	41.5	1000	CM1823-1	113-9436◆
130	0.02	2.6	3	3000	W1159-5	113-9430

207608

Order Multiple=5 Voltage	Nominal Lumens	Order Code	Price Each 5+	100+	500+
6.5	12	**113-9437●**	0.45	0.37	0.27
12	11	**113-9428●**	0.46	0.33	0.28
12	12.5	**113-9427●**	0.54	0.43	0.33
24	3.8	**113-9431●**	0.51	0.49	0.42
24	10.7	**113-9433●**	0.56	0.45	0.33
24	4.5	**113-9432●**	0.47	0.39	0.24
48	41.5	**113-9436●**	0.91	0.37	0.32
130	3	**113-9430●**	1.37	0.90	0.77

MES (E10) 11mm, G3½

CML INNOVATIVE TECHNOLOGIES WHERE INNOVATION COMES TO LIGHT



L=24.0

Voltage (V)	Current (A)	Watts	Nominal Lumens	Nominal Life (Hrs)	Order Code
2.5	0.2	0.5	3.8	10	113-9200
2.5	0.25	0.63	5.6	30	113-9201
3.5	0.3	1	6	1000	157-3893
6	0.06	0.36	1	10000	113-9208
6.5	0.15	0.975	6	3000	113-9206
6.5	0.3	1.95	12	4000	113-9207
12	0.1	1.2	5	5000	113-9197
12	0.18	2.2	9.4	3000	113-9199
24	0.05	1.2	3.8	3000	113-9202
24	0.12	2.8	10.7	3000	113-9203

207610

Order Multiple=5 Voltage	Nominal Lumens	Order Code	Price Each 5+	100+	1K+
2.5	3.8	**113-9200●**	0.41	0.32	0.26
2.5	5.6	**113-9201●**	0.31	0.26	0.24
3.5	6	**157-3893●**	0.39	0.31	0.29
6	1	**113-9208●**	0.41	0.32	0.26
6.5	6	**113-9206●**	0.41	0.32	0.26
6.5	12	**113-9207●**	0.41	0.32	0.29
12	5	**113-9197●**	0.44	0.37	0.29
12	9.4	**113-9199●**	0.44	0.37	0.28
24	3.8	**113-9202●**	0.88	0.62	0.39
24	10.7	**113-9203●**	0.49	0.39	0.38

MBC/MCC (BA9s) 10mm, T3¼

CML INNOVATIVE TECHNOLOGIES WHERE INNOVATION COMES TO LIGHT



L=28.0
◆L=30.0

Voltage (V)	Current (A)	Watts	Nominal Lumens	Nominal Life (Hrs)	Mftrs. List No.	Order Code
5	0.09	0.45	3.1	750	W440-1	113-9417
6	0.2	1.2	3.8	15000	W1212-5	113-9426
6.3	0.15	0.945	4.1	20000	CM755-5	113-9418◆
6.3	0.15	0.945	6.5	3000	CM47-5	113-9419◆
6.3	0.25	1.575	11.3	3000	CM44-5	113-9420◆
6.5	0.15	0.97	6	3000	W476-1	113-9422
6.5	0.3	1.95	12	4000	W504-1	113-9424
12	0.17	2	9.4	3000	W643-5	113-9397
24	0.05	1.2	3.8	5000	W568-5	113-9401
24	0.07	2	6.3	10000	W1152-1	113-9402

RL Re-reeling available

Voltage (V)	Current (A)	Watts	Nominal Lumens	Nominal Life (Hrs)	Mftrs. List No.	Order Code
24	0.083	2	6.3	10000	W1201-5	113-9404
24	0.12	2.88	12	3000	W600-5	113-9403
28	0.04	1.1	4.3	3000	CM1819-5	113-9405
28	0.07	1.96	12.6	1000	1829-5	113-9407◆
28	0.08	2.24	7.8	7500	CM757-5	113-9408◆
28	0.1	2.8	20	1000	CM1820-5	113-9409◆
28	0.17	4.76	38	1000	CM1864-5	113-9412
30	0.07	2	6.3	5000	W1204-5	113-9413
48	0.02	0.96	1.9	1000	W1166-5	113-9414
48	0.04	1.92	6.3	5000	W1206-5	113-9415
50	0.05	2.5	9	5000	W608-5	113-9416
60	0.033	2	5	3000	W1207-5	113-9425
130	0.02	3.2	4.5	3000	W1121T	113-9398

207609

Order Multiple=5				Price Each	
Voltage	Nominal Lumens	Order Code	5+	100+	500+
5	3.1	113-9417●	0.46	0.28	0.26
6	3.8	113-9426●	0.33	0.32	0.28
6.3	4.1	113-9418●	0.66	0.52	0.34
6.3	6.5	113-9419●	0.41	0.31	0.24
6.3	11.3	113-9420●	0.41	0.31	0.24
6.5	6	113-9422●	0.49	0.39	0.28
6.5	12	113-9424●	0.49	0.39	0.28
12	9.4	113-9397●	0.48	0.39	0.30
24	3.8	113-9401●	0.54	0.45	0.34
24	6.3	113-9402●	0.54	0.46	0.26
24	6.3	113-9404●	0.53	0.44	0.41
24	12	113-9403●	0.54	0.45	0.34
28	4.3	113-9405●	0.54	0.45	0.42
28	12.6	113-9407●	0.51	0.44	0.39
28	7.8	113-9408●	0.52	0.45	0.38
28	20	113-9409●	0.53	0.41	0.36
28	38	113-9412●	0.53	0.44	0.34
30	6.3	113-9413●	0.54	0.45	0.24
Order Multiple=1			**1+**	**100+**	**500+**
48	1.9	113-9414●	0.61	0.59	0.57
48	6.3	113-9415●	0.68	0.56	0.33
50	9	113-9416●	0.65	0.55	0.48
60	5	113-9425●	0.68	0.54	0.32
130	4.5	113-9398●	3.14	2.42	1.56

MBC/MCC (BA9s) 11mm, G3½



L=25

Voltage (V)	Current (A)	Watts	Nominal Lumens	Nominal Life (Hrs)	Mftrs. List No.	Order Code
6.5	0.3	1.95	12	4000	G502-5	113-9196
12	0.183	2.2	11	3000	G643-5	113-9194
24	0.116	2.8	11	3000	G651-5	113-9195

207611

Order Multiple=5				Price Each	
Voltage	Nominal Lumens	Order Code	5+	100+	500+
6.5	12	113-9196●	0.42	0.33	0.27
12	11	113-9194●	0.45	0.37	0.29
24	11	113-9195●	0.52	0.42	0.33

Bayonet (BA7s) 7mm, T2



L=20.7

Voltage (V)	Current (A)	Watts	Nominal Lumens	Nominal Life (Hrs)	Mftrs. List No.	Order Code
12	0.17	2	7.5*	1000*	281	113-9376
24	0.04	1	3*	7000*	285	113-9377
24	0.125	3	10*	3000*	283	113-9378

* min @ 13.5595421

206319

Order Multiple=5				Price Each	
Voltage	Nominal Lumens	Order Code	5+	100+	1K+
12	7.5	113-9376●	0.51	0.38	0.30
24	3*	113-9377●	0.64	0.31	0.30
24	10	113-9378●	0.39	0.37	0.35

230V Multilamps

MCC (BA9s) and MES (Ex10)



Multilamps are built from three small filament lamps assembled together in an MCC base. This design gives a long lifetime, good brightness and a high degree of safety. The design allows operation at 230V/240V with a high resistance to shock and vibration, and avoids excessive heat generation. The product is fully insulated in the base to prevent shorting, and the Ex10 caps prevent potential arcing between the two points of contact.

L=29.0

Style	Voltage (V)	Current (A)	Watts	Nominal Lumens	Nominal Life (Hrs)	Mftrs. List No.	Order Code
BA9s MCC	230	0.009	2	3	5000	14022050	113-9223

206266

Voltage	Nominal Lumens	Order Code	Price Each 1+	10+	100+
MCC (BA9s)					
230	3	113-9223●	8.12	7.55	4.91

Sub-Midget Flange (SX4s) 3mm, T1



L=9.5

Voltage (V)	Current (A)	Watts	Nominal Lumens	Nominal Life (Hrs)	Order Code
5	0.06	0.3	0.6	40000	113-9293
12	0.06	0.72	1.88	10000	113-9291
12	0.06	0.72	1.88	10000	113-9291

220833

Voltage	Nominal Lumens	Order Code	Price Each 1+	100+	500+
5	0.6	113-9293●	1.09	1.06	0.84
12	1.88	113-9291●	1.17	1.10	0.91

Midget Flange (SX6s, S6/8) 6mm T1¾

Low cost replacement filament lamps



L=16mm

Voltage (V)	Current (A)	Power Rating (W)	Nominal Lumens (lm)	Nominal Life (Hrs)	Order Code
6	0.2	1.2	7.9	1000	113-9357
12	0.09	1.12	4.4	5000	113-9340
14	0.08	14	3.77	15000	113-9342
28	0.04	28	3.8	10000	113-9348

206603

Voltage	Nominal Lumens	Order Code	Price Each 1+	100+	1K+	+
6V dc	7.9lm	113-9357●	1.05	0.82	0.66	– –
12V dc	4.4lm	113-9340●	0.82	0.68	0.48	– –
14V dc	3.77lm	113-9342●	0.61	0.46	0.34	– –
28V dc	3.8lm	113-9348●	0.59	0.41	0.28	– –

Midget Flange (SX6s, S6/8) 6mm, T1¾



L=16.1

Voltage (V)	Current (A)	Watts	Nominal Lumens	Nominal Life (Hrs)	Mftrs. List No.	Order Code
6	0.1	0.6	2.5	5000	723	113-9355
6	0.2	1.2	7.5	1000	328	113-9358
6	0.2	1.2	7.9	1000	724.	113-9357
12	0.04	0.48	1.5	10000	394	113-9339
12	0.09	1.12	4.4	5000	725	113-9340
14	0.04	0.6	2	5000	733	113-9341
14	0.08	1.12	3.77	15000	382	113-9342
14	0.08	1.12	6.28	1000	330	113-9343
28	0.024	0.672	1.7	4000	1116	113-9346
28	0.04	1.12	4.5	4000	727	113-9350
28	0.04	1.12	4.3	4000	327	113-9349
28	0.04	1.12	4.02	10000	736	113-9351
28	0.04	1.12	3.8	10000	387	113-9348
28	0.04	1.12	2.5	20000	385	113-9347
28	0.08	2.24	10.05	2000	729	113-9352
48	0.025	1.2	4	2500	730	113-9353
60	0.02	1.2	2.2	3000	777	113-9354

207653

Voltage	Nominal Lumens	Order Code	Price Each 1+	100+	1K+
6	2.5	113-9355●	0.73	0.54	0.39
6	7.5	113-9358●	0.62	0.43	0.30
6	7.9	113-9357●	1.05	0.82	0.66
12	1.5	113-9339●	1.10	0.84	0.52
12	4.4	113-9340●	0.82	0.68	0.48
14	2	113-9341●	0.67	0.52	0.30
14	3.77	113-9342●	0.61	0.46	0.34
14	6.28	113-9343●	0.68	0.46	0.32
28	1.7	113-9346●	0.77	0.59	0.42
28	4.5	113-9350●	0.64	0.49	0.31
28	4.3	113-9349●	0.68	0.46	0.31
28	4.02	113-9351●	0.49	0.38	0.33
28	3.8	113-9348●	0.59	0.41	0.28
28	2.5	113-9347●	1.01	0.70	0.48
28	10.05	113-9352●	1.06	0.83	0.52
48	4	113-9353●	1.31	1.00	0.70
60	2.2	113-9354●	1.31	1.00	0.70

£ € 40,000 PRICES REDUCED

RL Re-reeling available

Midget Groove (S5.7s) 6mm T1 ¾



L=15.9

- Low cost replacement filament lamps

Voltage (V)	Current (A)	Watts	Nominal Lumens	Nominal Life (Hrs)	Order Code
28	0.04	1.12	3.8	10000	113-9363
48	0.025	1.2	4.3	5000	113-9365
60	0.02	1.2	2.1	3000	113-9367

206602

Voltage	Nominal Lumens	Order Code	Price Each 1+	100+	1K+	+
28	3.8	113-9363●	0.69	0.48	0.33	– –
48	4.3	113-9365●	1.26	0.94	0.58	– –
60	2.1	113-9367●	1.28	1.16	0.83	– –

Midget Groove (S5.7s) 6mm T1¾



Lens End L=16.5



Standard L=15.9

Voltage (V)	Current (A)	Watts	Nominal Lumens	Nominal Life (Hrs)	Mftrs. List No.	Order Code
Lens End						
2.5	0.35	0.88	3.10	10000	253	113-9361
Standard						
6.3	0.2	1.26	5	20000	379	113-9366
14	0.08	1.12	6.3	750	336	113-9359
28	0.04	1.12	4.3	4000	334	113-9362
28	0.04	1.12	3.8	10000	388	113-9363
36	0.03	1.08	3.52	5000	788	113-9364
48	0.025	1.2	4.3	5000	790	113-9365
60	0.02	1.2	2.1	3000	799	113-9367

227414

Voltage	Nominal Lumens	Order Code	Price Each 1+	100+	1K+
Lens End					
2.5	3.10	113-9361●	4.44	3.31	1.97
Standard					
6.3	5	113-9366●	0.68	0.36	0.33
14	6.3	113-9359●	1.00	0.85	0.59
14	3.8	113-9360●	1.13	0.79	0.54
28	4.3	113-9362●	1.11	0.80	0.55
28	3.8	113-9363●	0.69	0.48	0.33
36	3.52	113-9364●	1.01	0.76	0.47
48	4.3	113-9365●	1.26	0.94	0.58
60	2.1	113-9367●	1.28	1.16	0.83

Axial Wire Ended, T3.8 and T6.2



T3.8
L=20.00
Lead length=15.0 (min)

T6.2
L=28.0
Lead length=15.0 (min)

Voltage (V)	Current (A)	Watts	Nominal Lumens	Nominal Life (Hrs)	Mftrs. List No.	Order Code
T3.8						
5 - 8	0.1	0.6	1.9	5000	3820AL	113-9454
10 - 15	0.055	0.6	2.3	5000	3890AL	113-9453
T6.2						
10 - 15	0.11	1.3	7	5000	6275AL	113-9465

206365

Order Multiple=5 Voltage	Order Code	Price Each 5+	25+	100+	500+
T3.8					
5-8	113-9454●	0.75	0.46	0.34	0.28
2.8-9 SMD	113-5453●	4.81	3.28	2.30	2.26
T6.2					
10-15	113-9465●	0.83	0.47	0.34	0.28

Wire ended T1, T1½

3mm T1, 5mm T1½



- Low cost replacement filament lamps

T1 L=6.35, T1½ L=13.2
Lead Length=25.0 min.

Voltage (V)	Current (A)	Watts	Nominal Lumens	Nominal Life (Hrs)	Mftrs. List No.	Order Code
3mm T1						
28	0.03	0.67	1.9	1000	6838-004	113-9295
5mm T1½						

206595

Voltage	Lumens	Order Code	Price Each 5+	100+	1K+	+
3mm T1						
5	0.4	113-9296●	0.28	0.22	0.21	– –
5	1.5	113-9298●	0.46	0.38	0.34	– –
28	1.9	113-9295●	1.05	0.84	0.57	– –
5mm T1½						
24	2.8	113-9310●	0.83	0.58	0.36	– –

Wire Ended T1, T1½ and T1¾



3mm, T1
L=6.35
Lead length=35.0 nom

5mm, T1½
L=13.5
Lead length=19.0 nom

6mm, T1¾
L=13.5
Lead length=19.0 nom

Voltage (V)	Current (A)	Watts	Nominal Lumens	Nominal Life (Hrs)	Mftrs. List No.	Order Code
3mm, T1						
5	0.06	0.3	0.4	25000	680	113-9296
5	0.06	0.3	0.6	20000	683-004	113-9297
5	0.115	0.56	1.5	20000	715-004	113-9298
12	0.06	0.72	1.9	5000	7219-004	113-9294
28	0.024	0.67	1.9	1000	6838-004	113-9295
5mm, T1½						
6	0.06	0.36	1	10000	673BS	113-9312
14	0.04	0.56	2	5000	690BS	113-9308
14	0.05	0.7	3	1000	682BS	113-9309
24	0.05	0.96	2.8	10000	687BS	113-9310
28	0.04	1.12	4.5	4000	688BS	113-9311
6mm, T1¾						
14	0.08	1.12	3.8	15000	2182	113-9369
28	0.04	1.12	3.8	10000	2187	113-9371

207616

Order Multiple=5 Voltage	Nominal Lumens	Order Code	Price Each 5+	100+	1K+
3mm, T1					
5	0.4	113-9296●	0.28	0.22	0.21
5	0.6	113-9297●	0.53	0.42	0.29
5	1.5	113-9298●	0.46	0.38	0.34
12	1.9	113-9294●	0.61	0.49	0.45
28	1.9	113-9295●	1.05	0.84	0.57
5mm, T1½					
6	1	113-9312●	0.41	0.32	0.22
14	2	113-9308●	0.62	0.47	0.30
14	3	113-9309●	0.44	0.34	0.32
24	2.8	113-9310●	0.83	0.58	0.36
28	4.5	113-9311●	0.53	0.42	0.29
6mm, T1¾					
14	3.8	113-9369●	0.49	0.48	0.36
28	3.8	113-9371●	0.49	0.48	0.36

Wedge Base 5mm, T1½



L=18.0

Voltage (V)	Current (A)	Watts	Nominal Lumens	Nominal Life (Hrs)	Mftrs. List No.	Order Code
6	0.17	1	3.8	5000	1105LF	113-9327
12	0.166	2	7.5	1000	924-002LF	113-9322
12	0.1	1.2	7.2	1000	286-20L-LF	113-9315
12	0.03	0.36	0.7	3000	1107-002-LF	113-9314
12	0.08	1	3	5000	1108LF	113-9321
24	0.03	0.72	1.25	5000	1110LF	113-9323
24	0.04	0.96	3	10000	1111LF	113-9324
24	0.05	1.2*	6.3*	1000	508LF	113-9325
28	0.04	1.12	3.8	10000	1199LF	113-9326

* @ 28V

207647

Order Multiple=10 Voltage	Nominal Lumens	Order Code	Price Each 10+	100+	500+
6	3.8	113-9327●	0.380	0.280	0.183
12	7.5	113-9322●	0.320	0.250	0.184
12	7.2	113-9315●	0.380	0.290	0.177
12	0.7	113-9314●	0.320	0.260	0.240
12	3	113-9321●	0.340	0.290	0.270
24	1.25	113-9323●	0.550	0.390	0.370
24	3	113-9324●	0.420	0.330	0.320
24	6.3	113-9325●	0.520	0.410	0.330
28	3.8	113-9326●	0.520	0.410	0.380

RL Re-reeling available

Wedge Base 6mm, T1¾



L=20.3

Voltage (V)	Current (A)	Watts	Nominal Lumens	Nominal Life (Hrs)	Mftrs. List No.	Order Code
14	0.08	1.12	3.8	15000	CM73LF	113-9372
14	0.09	1.26	6.3	1500	CM37LF	113-9373
28	0.04	1.12	3.8	10000	CM85LF	113-9374

207605

Order Multiple=10

Voltage	Nominal Lumens	Order Code	Price Each 10+	100+	500+
14	3.8	**113-9372●**	0.44	0.37	0.28
14	6.3	**113-9373●**	0.48	0.26	0.25
28	3.8	**113-9374●**	0.53	0.43	0.33

Wedge Base 10mm, T3¼



L=26.8 Nom. (L=20.7 for 526-976 and 526-988)

Voltage (V)	Current (A)	Watts	Nominal Lumens	Nominal Life (Hrs)	Mftrs. List No.	Order Code
6.3	0.15	0.95	4.3	7500	159LF	113-9450
6.3	0.25	1.575	8.2	10000	259LF	113-9452
12	0.166	2	13*	1000*	509LF	113-9442
12	0.1	1.2	5	5000	1112LF	113-9439
12	0.18	2.16	12.6	3000	510LF	113-9440
12	0.22	2.64	22.6	1000	512LF	113-9441
12	0.22*	3*	22*	1000*	504LF	113-9443
12	0.37*	5*	50*	1000*	501	110-5555
14	0.19	2.66	12.5	4000	550207LF	113-9444
24	0.08	1.92	8	5000	513LF	113-9445
24	0.13	3	22**	1000**	505LF	113-9446
24	0.21	5	50**	1000**	507LF	113-9448
28	0.06	1.68	7.8	5000	656-002LF	113-9449

* @ 13.5V ** @28V

207607

Order Multiple=5

Voltage	Nominal Lumens	Order Code	Price Each 5+	100+	500+	1K+	5K+
6.3	4.3	**113-9450●**	0.390	0.210	0.142	0.112	0.099
6.3	8.2	**113-9452●**	0.210	0.177	0.162	0.112	0.099
12	13*	**113-9442●**	0.340	0.250	0.192	– –	– –
12	5	**113-9439●**	0.420	0.360	0.300	0.125	0.098
12	12.6	**113-9440●**	0.420	0.380	0.194	0.111	0.098
12	22.6	**113-9441●**	0.420	0.410	0.300	– –	– –
12	22	**113-9443●**	0.420	0.290	0.280	– –	– –
12	50*	**110-5555●**	0.420	0.410	0.390	– –	– –
14	12.5*	**113-9444●**	0.660	0.500	0.350	0.310	0.163
24	8	**113-9445●**	0.510	0.390	0.340	0.174	0.099
24	22	**113-9446●**	0.470	0.460	0.330	– –	– –
24	50	**113-9448●**	0.470	0.460	0.330	– –	– –
28	7.8	**113-9449●**	0.410	0.340	0.300	0.174	0.099

Wedge Base 16mm, T5



L=37.9

Voltage (V)	Current (A)	Watts	Nominal Lumens	Nominal Life (Hrs)	Mftrs. List No.	Order Code
12.8	1	12.8	150	1000	912	1139456

206322

Order Multiple=5

Voltage	Nominal Lumens	Order Code	Price Each 5+	100+	1K+
12.8	150	**113-9456●**	0.64	0.62	0.61

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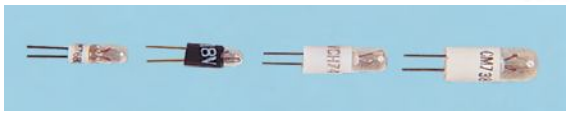
L=46.5

Voltage (V)	Current (A)	Watts	Nominal Lumens	Nominal Life (Hrs)	Mftrs. List No.	Order Code
24	0.05	1.2	3.5	5000	03632500	113-9466
28	0.04	1.12	4.5	5000	03633200	113-9467
30	0.04	1.2	3.8	5000	03633700	113-9469
60	0.02	1.2	2.2	5000	03636000	113-9470

207645

Voltage	Nominal Lumens	Order Code	Price Each 1+	100+	1K+
24	3.5	**113-9466●**	0.87	0.83	0.54
28	4.5	**113-9467●**	0.97	0.86	0.55
30	3.8	**113-9469●**	0.97	0.86	0.55
60	2.2	**113-9470●**	1.01	0.90	0.62

Bi-Pin T1, T1¼ and T1¾



3mm, T1	3mm, T1	4mm, T1¼	6mm, T1¾
L=9.65	L=9.65	L=14.0	L=15.8
Lead length=6.85	Lead length=6.4	Lead length=6.85	Lead length=6.85
Lead spacing=1.27	Lead spacing=2.54	Lead spacing=2.54	Lead spacing=3.17

Voltage (V)	Current (A)	Watts	Nominal Lumens	Nominal Life (Hrs)	Order Code
3mm, T1 (1.27 lead spacing)					
5	0.06	0.3	0.38	40000	113-9286
28	0.024	0.672	1.9	40000	113-9283
3mm, T1 (2.54 lead spacing)					
6	0.115	0.69	1.9	25000	113-9288
12	0.06	0.72	1.9	10000	113-9279
18	0.026	0.47	1.9	5000	113-9281
24	0.024	0.58	1.9	5000	113-9282
4mm, T1¼					
6	0.06	0.36	1.6	3000	113-9331
12	0.03	0.36	0.7	3000	113-9328
24	0.035	0.84	1.9	7500	113-9329
6mm, T1¾					
6.3	0.2	1.26	5	20000	113-9338
14	0.08	1.12	3.8	15000	113-9333
28	0.04	1.12	2.5	20000	113-9335

Mftr. VCH except 3mm, T1 (2.54 lead spacing) types EBT.

207620

Voltage	Nominal Lumens	Order Code	Price Each 1+	100+	500+
3mm, T1 (1.27 lead spacing)					
5	0.38	**113-9286●**	0.85	0.84	0.83
28	1.9	**113-9283●**	1.09	1.05	1.00
3mm, T1 (2.54 lead spacing)					
5	1.9	**113-9287●**	0.72	0.62	0.54
6	1.9	**113-9288●**	1.12	0.86	0.57
12	1.9	**113-9279●**	1.30	1.08	0.81
12	1.9	**113-9280●**	1.06	0.87	0.47
18	1.9	**113-9281●**	1.54	1.40	0.80
24	1.9	**113-9282●**	1.61	1.47	1.05
28	1.9	**113-9285●**	1.00	0.89	0.51
4mm, T1¼					
6	1.6	**113-9331●**	0.83	0.60	0.56
12	0.7	**113-9328●**	0.97	0.76	0.51
24	1.9	**113-9329●**	0.91	0.73	0.55
28	4	**113-9330●**	0.91	0.73	0.66
6mm, T1¾					
6.3	5	**113-9338●**	0.64	0.63	0.40
14	3.8	**113-9333●**	1.11	0.79	0.54
28	3.8	**113-9336●**	0.99	0.68	0.47
28	2.5	**113-9335●**	1.09	0.83	0.57
28	4.3	**113-9337●**	0.40	0.39	0.38

Neon Lamps

MES (E10) T3¼



10mm/T3¼ L=30

With Series Resistor

Colour	Voltage	Mftrs.List No.	Order Code
Amber - Red	250-250V	8UHR220	113-9238
Green(fluorescent)	250-250V	8GR220	113-9239

207618

Order Multiple=1 With Series Resistor		Order Code	Price Each 1+	100+	1K+
Amber - Red	250V	**113-9238●**	0.83	0.66	0.54
Green	250V	**113-9239●**	1.05	0.87	0.64

RL Re-reeling available

Neon Lamps - continued

MBC/MCC (BA9s) 10mm, T3¼



L=28.0

Neon lamps with integral resistor. These capped neons have a white body with a clear lens.

Colour	Voltage	Mftrs.List No.	Order Code
Amber - Red	100-120V	MC09321150	113-9235
Amber - Red	220-250V	MC09322250	113-9236
Green	220-250V	MC09322750	113-9237

206453

Order Multiple=5			Price Each		
Order Code	5+	100+	500+	1K+	5K+
113-9235●	0.62	0.47	0.43	0.35	0.33
113-9236●	0.62	0.47	0.43	0.35	0.33
113-9237●	0.94	0.70	0.64	0.50	0.48

Wire Ended T1¼ and T2



4mm/T1¼ 6mm/T2

Amber-Red wire-ended neon lamps without series resistor.

Brightness	Body Length	Lead Length	Current Range mA	Maximum Strike Voltage ac	dc	Recommended Series Resistor 110V ac	240V ac	Mftrs. List No.
4mm, T1 ¼								
Standard	10	25	0.22 - 0.27	65	90	220K 1/4W	750K 1/4W	2ML
High	10	25	0.5 - 0.7	95	135	Not Suitable	220K 1/4W	1MH
6mm, T2								
Standard	16	30	0.35 - 0.55	65	90	100K 1/4W	330K 1/4W	16/30SB
Standard	16	50	0.35 - 0.55	65	90	100K 1/4W	330K 1/4W	16/50SB
High	12.5	25	0.85 - 1.2	95	135	56K 1/4W	180K 1/4W	12.5/25HB
High	16	30	1.8 - 2.5	95	35	33K 1/4W	100K 1/4W	16/30HB
High	16	50	1.8 - 2.5	95	135	33K 1/4W	100K 1/4W	16/50HB

207617

Order Multiple=5				Price Each	
Brightness	Mftrs. List No.	Order Code	5+	100+	1K+
4mm, T1 ¼					
Standard	2ML	113-9240●	0.200	0.167	0.141
High	1MH	113-9243●	0.200	0.167	0.141
6mm, T2					
Standard	16/30SB	113-9247●	0.157	0.154	0.141
Standard	16/50SB	113-9248●	0.270	0.200	0.166
High	12.5/25HB	113-9249●	0.240	0.187	0.166
High	16/30HB	113-9250●	0.270	0.220	0.135
High	16/50HB	113-9251●	0.270	0.200	0.182

Wire Ended T1¼ and T2



4mm/T1¼ 6mm/T2

Neon lamp without series resistor.

Brightness	Body Length	Lead Length	Current mA	Maximum Strike Voltage ac	dc	Recommended Series Resistor 110V ac	240V ac	Mftrs. List No.
4mm T1 ¼								
Standard	10.5	23	0.55	65	90	100K 1/4W	330K 1/4W	MC08010000
High	10.5	23	1.8	95	135	33K 1/4W	100K 1/4W	MC08020000
Green	10.5	23	0.55	65	90	100K 1/4W	330K 1/4W	MC08030000
6mm T2								
Green	12.5	30	0.8	65	90	68K 1/4W	220K 1/4W	MC08130000
Standard	16	30	0.55	65	90	100K 1/4W	330K 1/4W	MC08320000
High	16	30	4.5	95	135	12K 1/4W	39K 1/4W	MC08310015
Green	16	30	1.2	65	90	56K 1/4W	180K 1/4W	MC08330000

206455

Order Multiple=10			Price Each				
Brightness	Mftrs. List No.	Order Code	10+	100+	500+	1K+	5K+
4mm, T1 ¼							
Standard	MC08010000	113-9244●	0.114	0.096	0.094	0.092	0.081
High	MC08020000	113-9245●	0.114	0.096	0.094	0.092	0.081
Green	MC08030000	113-9246●	0.360	0.340	0.330	0.260	0.220
6mm, T2							
Standard	MC08320000	113-9255●	0.090	0.086	0.082	0.081	0.069
High	MC08310015	113-9256●	0.085	0.081	0.070	0.069	0.054
Green	MC08130000	113-9254●	0.330	0.290	0.280	0.220	0.198
Green	MC08330000	113-9257●	0.370	0.340	0.330	0.260	0.250

Bi-Pin T1¼



L=14.0, Lead length=6.85, Lead spacing=2.54

Brightness	Design Current (mA)	Max. Strike Voltage ac	dc	Recommended Resistor Series 110V ac	240V ac	Mftrs. List No.
Standard	0.25	65	90	220K 1/10W	560K 1/10W	2MLBP
High	0.6	95	135	82K 1/10W	270K 1/10W	1MHBP

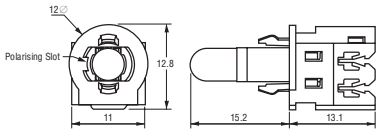
206323

Order Multiple=5	Mftrs.		Price Each		
Brightness	List No.	Order Code	5+	100+	1K+
Standard	1MHBP	113-9234●	0.51	0.42	0.39
Standard	2MLBP	113-9232●	0.51	0.42	0.39

IDC Lampholders

5mm, With Diode Protection





- Designed to hold a 5mm Wedge Base lamp
- PA66 plastic housing with two pairs of brass IDC slots
- IDC slots accept 7 x 0.2mm diameter conductors or equivalent
- With lamp rated @ 12V, 1.2 Watts, 5.0 Lumen
- Insertion/extraction tool available for lamp replacement

206510

Bulbholder Type	Mftrs. List No.	Order Code	Price Each 1+	50+	100+	500+	1K+
With Diode and Bulb	349494-1	139-580●	0.68	0.44	0.41	0.37	0.36
			1+	5+			
Insertion / Extraction Tool	1-525421-3	139-622	15.34	7.73			

Panel Lampholders

LES (E5/8)

Domed Lens, Snap-in Fixing



Mftrs. List No. T006100/colour.

The lens body is snap-fit in the panel. Vibration resistant holder with heat proof transparent polycarbonate lens. Designed for use with LES E5/8 bulbs.

Note: Not suitable for use above 50V.

L=35.0 (overall), Lens=5 x 9 dia
Panel cut-out=9.5 dia., Panel thickness=0.9 – 1.14

207628

Lens Colour	Order Code	Price Each 1+	100+	250+	500+	1K+
Red	140-150●	1.97	1.06	0.73	0.55	0.50
Green	140-151●	2.12	1.14	0.79	0.59	0.54

LES (E5/8) or Midget Flange (SX6s, S6/8)

Flat Lens



Threaded nylon body for screwed nut fixing. Polycarbonate transparent lens with removable chrome finish bezel. Supplied with special adaptor which allows for the fitting of either 6mm/T1¾" S6/8 caps midget flange or LES E5/8 bulbs.

L=30.5 (overall), Lens=9.5x14 dia
Panel cut-out=12.7 dia , Panel thickness=9.6 max

Note: The lens bezel is electrically connected to the case of the lamp. Not suitable for use above 50V.

Mftrs. List No. T0063A0/colour.

207623

Lens Colour	Order Code	Price Each 1+	50+	100+	250+	500+
Red	140-291●	1.52	1.42	1.36	1.23	1.18
Green	140-290●	1.52	1.42	1.36	1.29	1.15
Amber	140-287●	1.52	1.42	1.36	1.23	1.18
Blue	140-288●	1.52	1.42	1.36	1.23	1.18
Clear	140-289●	1.52	1.42	1.36	1.23	1.18

£ € 40,000 PRICES REDUCED

LES (E5/8) or Midget Flange (SX6s, S6/8)

Flat Lens



A miniature panel mounting lamp holder designed for LES bulbs. Bulb withdraws from front of panel by simply unscrewing lens. S6/8 midget flange bulbs can also be used if the small eyelet is omitted.

Note: Not suitable for use above 50V.

L=39.2 (overall), Lens=9.0 x 11 dia, Panel cut-out=12.9 dia

Mftrs. List No. L1896A/colour

207624

Lens Colour	Order Code	Price Each 1+	50+	250+
Green	329-344●	4.40	3.07	2.57
Amber	329-356●	4.40	3.07	2.57
Clear	329-368●	3.35	2.34	1.96

MES (E10)

Flat Lens



A lamp holder with plastic body and polished chrome bezel.

Termination 6.35 tabs.

Note: Not suitable for use above 50V.

Mftrs. List No. C1090FE/colour.

L=51.0 (overall), Lens=12 x 17 dia
Panel cut-out=19.0 dia, Panel thickness=6.3 max

207625

Lens Colour	Order Code	Price Each 1+	50+	100+	250+	500+
Red	140-259●	4.73	4.22	4.05	1.18	1.15
Green	140-258●	4.73	4.22	3.50	1.18	1.15
Amber	140-255●	4.73	4.22	1.48	1.18	1.15

MES (E10)

Domed Lens



A lampholder with plastic body and polished chrome bezel

Termination 6.35 tabs.

Note: Not suitable for use above 50V.

Mftrs. List No. C1090VE/colour.

L=54.8 (overall), Lens=16 x 17 dia
Panel cut-out=19.0 dia, Panel thickness=6.3 max

207626

Lens Colour	Order Code	Price Each 1+	50+	100+	250+	500+
Red	140-254●	4.22	3.83	3.32	1.18	1.15
Green	140-253●	4.22	3.83	3.32	1.18	1.15
Amber	140-250●	4.22	3.83	1.48	1.18	1.15

Wedge Base T1½ or T1¾

High Impact - IP67/9



L=42.5 (overall),
Lens/Bezel=9.5 x 29 dia.
Panel cut-out=22.5 dia.
Panel thickness=6 max

Robust panel lampholders offering sealing to IP67 and with the highest impact rating of 9. The body is manufactured from a non-sparking zinc alloy, and the lens is polycarbonate. Vandal resistant and suitable for potentially explosive environments, conforming to NCB481/1965. The lampholders are designed to accept either a T1½ or T1¾ wedge base lamp, and are supplied with locking nut and washer.

220837

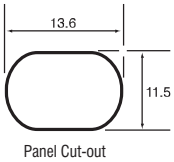
Lens Colour	Order Code	Price Each 1+	10+	25+	50+
Red	121-5705●	6.38	6.00	5.75	5.51

PCB Lampholders

Wedge Base 10mm, T3¼



L=19.6 overall
Dia=15.1 overall



Panel Cut-out

- Polycarbonate moulding with Tin-plated spring bronze contacts.
- PCB or panel mounting.

221679

Order Multiple=5		Price Each		
Mftrs. List No.	Order Code	5+	100+	500+
LH10	110-5556●	0.52	0.44	0.33

Wedge Base T1½ and T3¼



T1½: H=7.4, W=7.4
L=17.2 overall.

T3¼: H=12, W=12,
L=17.9 overall.

Tin plated spring bronze contacts directly soldered onto PCB. T1½ and T3¼ also suitable for panel and lug mounting respectively.

	Material	Mftrs. List No.	Order Code
T1½, 5mm	Polycarbonate	LH3	110-5558
T3¼, 10mm	Malcrolon	LH12	110-5557

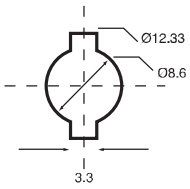
221680

Order Multiple=5		Price Each		
	Order Code	5+	100+	500+
T1½	110-5557●	0.70	0.32	0.26
T3¼	110-5558●	0.52	0.44	0.27

Wedge Base Twistlock 5mm, T1½



L=14.0 overall
Dia.=12.5 overall



Panel Cut-out

Thermoplastic moulding with 20% glass fibre. Tin-plated spring steel contacts connected to PCB by double contact made from either side. PCB thickness 1.5mm.

Mftrs. List No. TR4000

221682

Order Code	Price Each 1+	50+	100+
110-5560●	0.62	0.59	0.33

MES and BA9 Lamp Holders



Solder Tag Version



Wired Version

Holders for MES type bulbs available for either cross-head screw or solder tag connection. The screw connection version has a white base with two mounting holes (fixing centre 22mm).

206347

Type	Order Code	Price Each 1+	50+	100+
MES				
Solder Tag	136-9385●	0.58	0.54	0.52
E12 - Wired	136-9101●	4.61	4.27	3.85
BA9 - MBC				
Solder Tag	136-9387●	2.25	2.03	1.97

Xenon Indicators

Cable Assemblies for Tab Terminals



- Suitable for all voltage ranges
- Flying lead length is 300mm in red and black
- Cable assemblies suitable for all indicators with 2.0 x 0.55mm and 2.8 x 0.8mm tab terminations
- These assemblies fit all of the EBT ranges of LED Indicators and Xenon Flash Indicators. The 2.0 x 0.55mm fit the 3 & 5mm ranges and the 2.8 x 0.8mm fit the 10 & 16mm ranges and the Xenon Indicators

RL Re-reeling available

Xenon Indicators - continued

Cable Assemblies for Tab Terminals - continued

206585

Order Multiple=5				Price Each		
2.0 x 0.5mm	**Order Code**	5+	25+	50+	100+	250+
Red, 300mm	**110-5189●**	0.44	0.38	0.36	0.28	0.27
Black, 300mm	**110-5191●**	0.44	0.38	0.36	0.28	0.27
2.8 x 0.8mm						
Red, 300mm	**110-5192●**	0.34	0.29	0.27	0.21	0.20
Black, 300mm	**110-5193●**	0.34	0.29	0.27	0.21	0.20

Filament Indicators

Miniature, Nut Fixing — BOSS INDUSTRIAL MOULDINGS



Polycarbonate lens and body incorporating a nickle plated brass bezel. ¼ UNF threaded body with nut and washer supplied.

L=30.0 (overall),
Lens=5.0 x 6.7 dia,
Panel cut-out=6.4 dia,
Panel thickness=0.5=3.5

Termination 135mm flexible leads,
Voltage identified by lead colour:

Maximum working temperature 70°C
White=6V, Yellow=14V, Green=28V

APPROVED TO **BS EN60-335-1, BS EN60-065, BS EN61010-1** and **BS EN60950**

221706

Colour				Price Each		
6V	**Order Code**	1+	50+	100+	250+	500+
Red	**745-327●**	1.20	1.04	0.95	0.87	0.82
Green	**745-339●**	1.20	1.04	0.95	0.87	0.82
14V						
Red	**881-510●**	1.31	1.11	0.96	0.88	0.83
Green	**881-521●**	1.31	1.11	0.96	0.88	0.83
Amber	**881-533●**	1.31	1.11	0.97	0.88	0.83
Opal	**365-4795●**	1.57	1.21	1.04	0.84	0.79
28V						
Red	**881-545●**	1.41	1.26	1.14	0.95	0.90
Green	**881-557●**	1.41	1.26	1.08	0.95	0.90
Amber	**881-569●**	1.41	1.25	1.08	0.95	0.90
Opal	**365-4801●**	1.19	1.04	0.98	0.84	0.76

Turn to page 866 for
LED Indicators



Miniature, Nut Fixing — Arcolectric



A low voltage filament lamp with 200mm PVC leads and a chrome finished brass body.
L=14.5 (body=lens)
Lens=4 x 7 dia.
Panel cut-out=6.3 dia.
Panel thickness=6.3 max.

Mftrs List No. L104100FAA/colour/voltage

220834

Lens Colour	Order Code	1+	100+	Price Each 250+	500+	1K+
6 Volts						
Red	**147-401●**	4.40	1.70	1.63	1.26	1.24
12-14 Volts						
Red	**147-401●**	4.40	1.70	1.63	1.26	1.24
Green	**147-404●**	4.40	1.70	1.63	1.26	1.24
24-28 Volts						
Red	**149-878●**	4.54	1.70	1.63	1.26	1.24
Green	**149-879●**	4.81	1.70	1.63	1.26	1.24
Amber	**149-880●**	4.81	1.70	1.63	1.26	1.24

Neon Indicators

Rear Panel Mounting — BOSS INDUSTRIAL MOULDINGS

High Temperature



L=31.0 (excl. leads), Depth behind panel=9.0, Lens=2.0 x 12 dia.,
Panel cut-out=10.0, Panel thickness=2.0 max

Low profile rear mounting neon which snap-fits into a clip-on lens. The neon/resistor housing is polysulphone and the wire leads are silicone insulated enabling the assembly to be mounted in high temperature areas, up to 180°C. The assembly requires only 9mm clearance at the rear of the panel so it is particularly suited to areas where space is at a premium. Integral resistor for direct 200-250V ac operation.

Termination 185mm flexible leads.

Approved to **BS EN60-335-1, BS EN60-065, BS EN61010-1** and **BS EN60950**

206456

Colour				Price Each		
200-250V ac	**Order Code**	1+	50+	100+	250+	500+
Red	**881-600●**	1.05	0.81	0.80	0.69	0.68
Green	**881-612●**	1.36	1.30	1.12	0.88	0.86
Amber	**881-624●**	0.94	0.72	0.71	0.62	0.61

Push-fit — CML INNOVATIVE TECHNOLOGIES



Large high brightness, push-fit panel mounting neon indicators in bright chrome nylon housing with an attractive chrome bezel and coloured lens. Built in reflector giving a wide viewing angle. Direct operation from 230V ac mains voltage supplies.

Body Length=31.5, Bezel dia.=15.7
Mounting hole dia.=12.7
Termination=100mm PVC flexible leads.

Mftrs. List No. NU230R1 110-5561, NU230G1 110-5562, NU230A1 113-9615

221701

Colour	Order Code	1+	50+	Price Each 100+	250+	500+
Red	**110-5561●**	2.580	2.080	1.720	1.560	1.460
Green	**110-5562●**	2.760	2.230	1.870	1.660	1.550
Amber	**113-9615●**	2.580	2.080	1.720	1.560	1.460
		5+	**50+**	**100+**		
Mounting Clip	**110-5438●**	0.210	0.153	0.134		

Miniature, Nut Fixing — BOSS INDUSTRIAL MOULDINGS



Polycarbonate lens and body incorporating a nickel plated brass bezel. UNF threaded body with out and washer supplied. Integral resistor for direct 110-125 V ac or 200-250V ac operation.

Approved to **BS EN60-335-1, BS EN60-065, BS EN61010-1** and **BS EN60950.**

L=30.0 (overall), Lens=5.0 x 6.7 dia.
Panel cut-out=6.4 dia, Panel thickness=0.5=3.5.

Termination 135mm flexible leads. Maximum working temperature: 70°C
Voltage identified by lead colour: Blue=125V, Red=240V

221705

				Price Each		
100-125V ac	**Order Code**	1+	50+	100+	250+	500+
Red	**745-145●**	1.28	1.25	1.22	0.63	0.58
Green	**745-157●**	2.02	1.16	1.03	0.80	0.78
Amber	**745-169●**	1.82	0.94	0.83	0.65	0.62
200-250V ac						
Red	**745-170●**	1.28	1.25	1.22	1.16	1.01
Green	**745-182●**	1.81	1.56	1.47	1.05	0.70
Amber	**745-194●**	1.36	1.30	1.24	1.06	0.59

Miniature, Snap-In Fixing — Arcolectric



Miniature snap-in neon indicator with suitable resistor built into one lead. Approved to **CSA, OVE, DEMKO** specifications and **UL** Recognised.

Termination 200mm 16/0.2 flexible leads.

L=41 (excl. flexible leads), Lens=4.8 x 7.5 dia
Bezel dia=9.8, Panel cut-out=8.0 dia
Panel thickness=0.8-1.6

Mftrs. List No. L295100N/colour/voltage

220836

Colour			Price Each		
200-250V ac	**Order Code**	1+	100+	250+	500+
Green	**151-765●**	3.31	2.12	1.43	0.98
Amber	**151-766●**	2.98	2.04	1.40	0.88
100-130V ac					
Green	**657-426●**	1.53	1.37	1.21	1.12
Amber	**657-438●**	1.37	1.23	1.06	0.99

RL Re-reeling available

Miniature, Nut Fixing

Arcolectric



Miniature panel mounting neon indicator with suitable resistor built into one lead.

Termination 200mm PVC flexible leads.

L=14.5 (body+lens), Lens=4 x 8 dia
Panel cut-out=6.35 dia., Panel thickness=6.35 max

Mftrs. List No. L104100N / colour / voltage

220835

Colour		Price Each				
200-250V ac	**Order Code**	1+	100+	250+	500+	1K+
Red	**140-000●**	4.16	3.63	2.85	1.64	1.41
Green	**147-422●**	4.16	3.63	2.79	1.38	1.21
Amber	**140-001●**	4.16	3.63	2.46	1.40	1.13
Clear	**140-002●**	4.16	3.12	2.46	1.40	1.13
100-130V ac						
Red	**140-003●**	4.16	3.63	2.85	1.64	1.41
Green	**147-423●**	4.16	3.63	2.40	1.38	1.21
Amber	**140-004●**	4.16	3.12	2.46	1.40	1.13
Clear	**140-005●**	4.16	3.12	2.46	1.40	1.13

Snap-In Fixing

BOSS INDUSTRIAL MOULDINGS



Polycarbonate moulded body incorporating side spring lugs for push-in fitting. Supplied with nickel plated brass bezel for optional use. Integral resistor for direct 200-250V ac operation.

Connection is by 250 (¼") push on connectors.

L=28.5 (overall), Lens=5.5x11.5 dia,
Max. panel thickness with bezel 1.5mm,
without bezel 4.0mm, Panel cut-out 13.0

Approved to **BS EN60-335-1, BS EN60-065, BS EN61010-1** and **BS EN60950**

206446

Colour		Price Each				
200-250V ac	**Order Code**	1+	50+	100+	250+	500+
Red	**745-200●**	1.13	1.09	1.04	0.97	0.87
Green	**745-212●**	1.60	1.54	0.79	0.63	0.56
Amber	**745-224●**	1.15	1.12	1.03	0.56	0.51

Snap-In Fixing

BOSS INDUSTRIAL MOULDINGS



Polycarbonate body. Integral resistor for direct 100-125V ac or 200/250V ac operation. The indicator may be mounted by a special moulded ring. When fitted from the front of the panel it gives a white bezel appearance, or a chrome bezel may be used by fitting the white ring from the rear.

Connection is by faston/solder tab terminals.

L=37.9 (overall) Lens=6.5 x 10.0,
Panel cut-out=8.0 dia,
Tab connections 2.8 x 0.8

Approved to **BS EN60-335-1, BS EN60-065, BS EN61010-1** and **BS EN60950**

206448

		Price Each				
100-125V ac	**Order Code**	1+	50+	100+	250+	500+
Red	**745-080●**	1.02	0.81	0.67	0.57	0.53
Green	**745-091●**	2.31	0.87	0.82	0.62	0.61
Amber	**745-108●**	1.02	0.81	0.67	0.57	0.53
200-250V ac						
Red	**745-110●**	1.02	0.81	0.66	0.57	0.53
Green	**745-121●**	1.51	1.03	0.77	0.62	0.56
Amber	**745-133●**	1.02	0.81	0.67	0.57	0.53

Rear Panel Mounting

multicomp



A neon indicator requiring only 9mm clearance behind the panel. The neon is rear panel mounting and snaps into the lens making a simple and secure mounting. An appropriate resistor is incorporated in the body moulding.

Termination 200mm PVC flexible leads.

L=31 (excl. leads), Depth behind panel=9
Lens=2.5 x 12.0 dia., Panel cut-out=9.5 dia.
Panel thickness=2.0 max.

207646

Colour		Price Each		
220 – 250V ac	**Order Code**	1+	50+	100+
Red	**113-5534●**	0.93	0.81	0.62
Green	**113-5535●**	1.24	1.12	0.96
Amber	**113-5536●**	1.09	0.93	0.75

Snap-In Fixing

Arcolectric



Snap-in neon indicator with integral resistor for direct 220/240V ac operation. Approved to **CSA, SEMKO, DEMKO, VDE, OVE, KEMA** specifications, **UL** Recognised.

Termination 6.3mm tabs.

L=59.2 (overall) Panel thickness=2.8 max.
Lens=4 x 12 dia., Panel cut-out=9.5 dia.

Mftrs. List No.: C0276AA/colour/250V ac

206290

Colour		Price Each			
220 – 250V ac	**Order Code**	1+	100+	250+	500+
Red	**491-720●**	1.15	1.13	1.10	0.90
Green	**491-731●**	1.58	1.53	1.30	1.07
Amber	**491-743●**	0.70	0.68	0.66	0.53

Spring Nut Fixing

Arcolectric



Spring fixing nut supplied. Appropriate resistor incorporated in the body moulding.

Termination 6.3mm tabs.

Mftrs. List No. C0180AA/colour/voltage.

L=37.5 (overall), Lens=5 x 12 dia
Panel cut-out=12.7 dia . Panel thickness=19 max

207629

Colour		Price Each				
200 – 250V ac	**Order Code**	1+	100+	250+	500+	1K+
Red	**140-006●**	2.06	1.82	1.41	0.53	0.52
Green	**140-009●**	2.40	2.13	1.69	0.68	0.66
Amber	**140-007●**	2.06	1.82	1.41	0.53	0.52
Clear	**140-008●**	2.06	1.82	1.41	0.53	0.52
100 – 130V ac						
Red	**140-010●**	2.06	1.82	1.41	0.53	0.52
Green	**151-755●**	2.38	1.50	0.91	0.66	0.63
Amber	**140-011●**	2.06	1.82	1.41	0.53	0.52
Clear	**140-012●**	2.06	1.82	1.41	0.53	0.52

Snap-In Fixing

Arcolectric



Snap in fixing type with chrome bezel. Appropriate resistor incorporated in the body moulding.
Termination 6.3mm tabs.

Mftrs. List No. C0180BB/colour/voltage.

L=37.5 (overall), Lens=5.5 x 12 dia
Panel cut-out=13.5 dia, Panel thickness=2 max

207630

Colour		Price Each				
200 – 250V ac	**Order Code**	1+	100+	250+	500+	1K+
Red	**140-013●**	2.78	2.48	1.95	1.13	0.81
Green	**140-016●**	3.16	2.13	1.41	0.91	0.88
Amber	**140-014●**	2.76	1.68	1.07	0.81	0.80
Clear	**140-015●**	2.62	1.60	1.01	0.77	0.76
100 – 130V ac						
Red	**140-017●**	2.76	1.68	1.07	0.81	0.80

Snap-In Fixing

8.0mm Dia. panel cutout

Arcolectric



- Snap-in neon indicator for panels 0.8 to 3.5mm thick
- Integral resistor for direct 220/240V ac operation
- Approved to **CSA** and **VDE**, **UL** Recognised.
- Connection via 4.8 x 0.8mm fast-on terminals

L=39mm (overall), D=9.5mm (lens)

Mftrs. List No:	Order Code:
H0568BYNAA	826-4767
H0568BYNAB	826-4775
H0568BYNAC	826-4783

377465/405987

Colour		Price Each				
200 – 250V ac	**Order Code**	1+	50+	100+	250+	500+
Red	**826-4767●**	0.75	0.56	0.45	0.39	0.33
Amber	**826-4775●**	0.56	0.41	0.32	0.28	0.27
Green	**826-4783●**	0.88	0.70	0.52	0.45	0.39

£ € 40,000 PRICES REDUCED

RL Re-reeling available

Farnell

Snap-In Fixing

9.0mm Dia. panel cutout



- Snap-in neon indicator for panels 0.8 to 3.5mm thick
- Integral resistor for direct 220/240V ac operation
- **VDE** and **CSA** Approved, **UL** Recognised.
- Connection via 200mm heat resistant PVC leads

L = 34mm (overall), D = 10mm (lens)

Mftrs. List Nos:	Order Codes:
L0569AWNAE	826-4791
L0569AWNAF	826-4805
L0569AWNAG	826-4813

377467/405989

Colour	Order Code	Price Each 1+	50+	100+	250+	500+
200 – 250V ac						
Red	**826-4791●**	0.84	0.65	0.50	0.43	0.37
Amber	**826-4805●**	0.84	0.65	0.50	0.43	0.37
Green	**826-4813●**	0.96	0.76	0.59	0.49	0.43

Snap-In Fixing



Snap-in neon indicator with appropriate resistor incorporated in the body moulding. Approved to **CSA, VDE, OVE, KEMA, SEMKO, DEMKO, NEMKO, SEV** specifications, **UL** Recognised.

Termination 200mm PVC flexible leads.

Mftrs. List No. L058900/colour/Voltage

L=35, Lens=3.2 x 15.9 dia
Pane cut-out=12.7 dia, Panel thickness=0.8-1.5

207644

Colour	Order Code	Price Each 1+	100+	250+	500+
200 - 250V ac					
Red	**151-773●**	2.14	1.84	1.17	0.68
Green	**151-774●**	2.49	1.43	1.25	0.78
Amber	**151-775●**	2.14	1.29	1.17	0.68

Snap-In Fixing



Tab type L=38.2 (overall),
Flex. lead type L=40.0 (excl. leads), Lens=5 x 13.6 dia
Panel cut-out=12.0 dia, Panel thickness=2.0 max

Snap-in neon indicator with a modern style polycarbonate coloured lens. An appropriate resistor is incorporated in the body moulding. Approved **to CSA, VDE, OVE, KEMA, DEMKO, NEMKO, SEV** specifications, **UL** Recognised.

Termination 6.3mm tabs.

Mftrs. List No. C282000/colour/250Vac = 147-409/410/411,
C282000/colour/130Vac = 657-475/487/499,
L282000/colour/250Vac = 147-412/413/414,

207631

Colour	Order Code	Price Each 1+	100+	250+	500+	1K+
Tab Terminations, 200 – 250V ac						
Red	**147-409●**	1.64	1.58	0.91	0.52	0.51
Green	**147-411●**	2.23	1.92	1.02	0.67	0.62
Amber	**147-410●**	1.90	1.67	1.32	0.52	0.51
Flexible Lead Terminations, 200 – 250V ac						
Red	**147-412●**	2.16	1.86	1.02	0.67	0.61
Green	**147-414●**	2.46	2.15	1.09	0.73	0.71
Amber	**147-413●**	1.08	0.93	0.75	0.53	0.50
Tab Terminations, 100 – 130V ac						
Red	**657-475●**	0.94	0.75	0.71	0.52	0.51
Green	**657-487●**	1.12	0.87	0.81	0.65	0.62
Amber	**657-499●**	0.70	0.62	0.55	0.46	0.39
Flexible Lead Terminations, 100 – 130V ac						
Green	**657-517●**	1.23	0.94	0.90	0.73	0.71

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Nut Fixing



L=57.8 (overall), Lens=3.0 x 13.2 dia.
Panel cut-out=10.0 dia
Panel thickness=12 max

Low profile neon indicators with nylon body and polycarbonate lens with chrome bezel and fixing nut. An appropriate resistor is incorporated in the body moulding. Approved to **CSA, VDE, OVE, KEMA, SEMKO, DEMKO, NEMKO** and **SEV** specifications, **UL** Recognised.

Termination 6.3mm tabs.

Mftrs. List No. C027500 / colour / voltage + Bezel

207651

Colour	Order Code	Price Each 1+	50+	100+	250+	500+
200 – 250V ac						
Red	**254-915●**	2.23	2.03	1.87	1.68	1.56
Green	**254-927●**	2.42	2.23	2.05	1.85	1.71
Amber	**254-939●**	2.23	2.03	1.87	1.68	1.56
110 – 130V ac						
Red	**254-940●**	2.23	2.03	1.87	1.68	1.56
Green	**254-952●**	2.27	2.12	2.03	1.72	1.59
Amber	**254-964●**	2.07	1.93	1.85	1.56	1.45

Neon Indicators

14mm Bezel, with Isolating Spacer



Colour	Voltage Rating (VAC)	Luminous Intensity (mcd)	Current Rating (mA)		Mftrs. List No.	Order Code
Satin chrome bezel						
Red	230	33	2.3		19310230	136-9016
Green	230	26	1.5		19310231	136-9017
Amber	230	61	2.2		19310234	136-9018
Black chrome bezel						
Red	240	33	2.2		19311230	136-9021
Green	240	26	1.5		19311231	136-9022
Amber	240	61	2.2		19311234	136-9023
AC/DC - Satin chrome bezel			**AC**	**DC**		
Red	12	60	9	17	190B0250	136-9203
Green	12	40	9	17	190B0251	136-9204
Red	24	60	9	17	190B0350	136-9206
Green	24	40	9	17	190B0351	136-9207
Yellow	24	40	9	17	190B0352	136-9208

475918

Colour	Mftrs. List No.	Order Code	Price Each 1+	10+	25+
Satin chrome bezel					
Red	19310230	**136-9016●**	5.19	4.84	4.62
Green	19310231	**136-9017●**	5.64	5.25	5.01
Amber	19310234	**136-9018●**	5.19	4.84	4.62
Black chrome bezel					
Red	19311230	**136-9021●**	5.31	4.95	4.73
Green	19311231	**136-9022●**	5.75	5.38	5.12
Amber	19311234	**136-9023●**	3.79	3.53	3.38
AC/DC - Satin chrome bezel					
Red	190B0250	**136-9203●**	1.90	1.79	1.71
Green	190B0251	**136-9204●**	2.66	2.51	2.41
Red	190B0350	**136-9206●**	2.66	2.51	2.41
Green	190B0351	**136-9207●**	2.66	2.51	2.41
	190B0352	**136-9208●**	2.66	2.51	2.41

Nut Fixing



Moulded nylon body. Polycarbonate lens with chrome bezel. An appropriate resistor is incorporated in the body moulding. Approved to **CSA, VDE, OVE, KEMA, SEMKO, DEMKO, NEMKO, SEV** specifications, **UL** Recognised.

L=40.0 (body+lens), Lens=8 x 14 dia
Panel cut-out=12.7 dia , Panel thickness=12 max

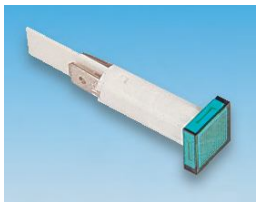
Mftrs. List No. L017700/colour/voltage

207635

Colour **200 – 250V ac**	Order Code	Price Each 1+	100+	250+	500+	1K+
Red	**140-277●**	6.11	4.42	3.21	1.65	1.40
Green	**140-276●**	5.81	4.17	2.96	1.60	1.49
Amber	**140-275●**	6.11	4.42	3.21	1.65	1.40
110 – 130V ac						
Red	**151-751●**	6.11	5.12	3.78	2.08	1.82
Green	**151-752●**	5.81	4.17	2.96	1.60	1.49
Amber	**151-753●**	6.11	4.42	3.21	1.65	1.40

Square, Snap-In Fixing

Arcolectric



A neon indicator with square shaped lens. Appropriate resistor incorporated in the body moulding. Approved to **CSA, KEMA, DEMKO, OVE, SEV** specifications, **UL** Recognised.

Termination 6.3mm tabs.

L=50.0 (overall), Lens=3.5 x 12sq.
Panel cut-out=9 dia, Panel thickness=2 max.

207636

Colour	Order Code	Price Each 1+	100+	250+	500+	1K+
200-250V ac						
Red	**140-274●**	2.06	1.44	1.05	0.70	0.56
Green	**140-273●**	1.82	1.42	1.05	0.58	0.53

Miniature, Snap-In Fixing

Arcolectric



A single pole size snap-in panel fixing neon indicator designed to match H8400VB, H8410VB and H8550VB rocker switches - see **Section 34.** The body is matt black. Approved to **VDE, CSA, SEV, KEMA, SEMKO, DEMKO, NEMKO, FI** specifications, **UL** Recognised.

Termination 4.8 x 0.8 tabs.

Mftrs. List No. H8630FB/colour/250V ac

Depth behind panel=18.2
Panel cut-out=19.3 x 13
Panel thickness=0.75-3.0

207641

Colour	Order Code	Price Each 1+	100+	250+	500+
200–250V ac					
Red	**149-882●**	1.30	1.22	1.17	1.12
Green	**149-883●**	1.50	1.41	1.35	1.29
Amber	**149-884●**	1.30	1.22	1.17	1.12

Snap-In Fixing

Arcolectric



Depth behind panel=25.3
Panel cut-out
Single pole size=28.2 x 11.5 Double pole size=28.2 x 22.3 Panel thickness=0.75 - 2.5

Snap-in panel fixing neon indicators designed to match corresponding Arcolectric rocker switches detailed in **Switch section of the Catalogue.** Standard indicators match C1500 switches, 'Softline' indicators match 'Softline' switches. **UL** Recognised, approved to **CSA, OVE, KEMA, SEV, SEMKO, DEMKO, NEMKO** specifications.

Termination 6.3mm tabs.

Mftrs. List No. Single Pole = C0430FQ/colours/250Vac. Double Pole = C0480FQ/colours/250V ac.
Single Pole 'Softline' = C0430AT/colours/250V ac

207637

Colour	Order Code	Price Each 1+	100+	250+	500+
Single Pole Size, 200V-250V ac					
Red / White Body	**140-199●**	1.28	1.21	1.13	0.83
Red / Black Body	**140-295●**	1.45	1.28	0.71	0.55
Double Pole Size, 200-250V ac					
Red / Black Body	**140-293●**	2.26	1.98	1.59	0.60
Single Pole Size 'Softline', 200-250V ac					
Red / Black Body	**150-914●**	1.57	1.48	1.31	1.01
Green / Black Body	**150-916●**	1.81	1.70	1.63	1.47
Amber / Black Body	**150-918●**	1.57	1.48	1.25	1.01

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Neon Smart Indicators

LED Maintenance Timers

Arcolectric



New

The LED Maintenance Timer monitors equipment usage, and operates as a preventative maintenance or inspection reminder. The unit counts only the time that power is applied, and remembers the accumulated time even if power is switched off. The 'reset' terminal clears the timer to zero, and timing starts again. Applications: component end of life indication; de-scale/decalcification interval; filter cleaning/replacement interval; machinery - lubrication, belt change; petrol/diesel engines - oil change, servicing; equipment calibration interval reminder; visual inspection and cleaning reminder; UV (ultraviolet) lamp replacement reminder before end of working life.

- Colour, illumination: Green LED normal condition
- Colour, illumination: Flashing Red LED when time limit exceeded
- Terminal type: 6.3mm x 0.8mm fast-on tab terminals
- Convenient snap-in design
- Approval Bodies: CE, FCC, UL

Bezel Size 32mm x 14mm Operating Temperature -20°C to +70°C
Panel Cut-Out Size 30mm x 11mm

528899

Time	Mftrs. List No.	Order Code	Price Each 1+	25+	100+
12 Volts DC					
1 Week	C1432ALMAM	**145-4819●**	7.85	6.98	6.73
1 Month	C1432ALMAN	**145-4820●**	7.85	6.98	6.73
3 Months	C1432ALMAO	**145-4822●**	7.85	6.98	6.73
6 Months	C1432ALMAP	**145-4823●**	7.85	6.98	6.73
24 Volts DC					
1 Week	C1432ALMAH	**145-4814●**	7.85	6.98	6.73
1 Month	C1432ALMAI	**145-4815●**	7.85	6.98	6.73
3 Months	C1432ALMAJ	**145-4816●**	7.85	6.98	6.73
6 Months	C1432ALMAK	**145-4817●**	7.85	6.98	6.73
1 Year	C1432ALMAL	**145-4818●**	7.85	6.98	6.73
230 Volts AC					
1 Week	C1432ALMAB	**145-4806●**	7.85	6.98	6.73
1 Month	C1432ALMAC	**145-4807●**	7.85	6.98	6.73
3 Months	C1432ALMAD	**145-4809●**	7.85	6.98	6.73
6 Months	C1432ALMAE	**145-4811●**	7.85	6.98	6.73
1 Year	C1432ALMAF	**145-4812●**	7.85	6.98	6.73
3 Years	C1432ALMAG	**145-4813●**	7.85	6.98	6.73

LED Temperature Monitors

Arcolectric



New

The LED Temperature Monitor measures the temperature on the supplied thermistor sensor, and continuously compares this value against pre-programmed upper and lower limits. When an out-of limits temperature is detected the problem can be identified by the LED colour / flashing status.

For refrigeration (+2°C to +8°C) and freezer (-14°C to -22°C) applications, the LED illumination indicates when too cold (Flashing Blue) warning that energy is being wasted, ideal temperature range (Steady Blue) or too warm (Flashing Red).

Ice warning models normally indicate Steady Green when temperature is Over +2°C, but Flashing Red when there is risk of ice.

Factory act model indicates Steady Green between +16°C and +24°C, otherwise Flashing Red is seen.

Anti-scald (over +49°C) and overheat (over +70°C) models indicate Steady Green LED for normal or safe temperature, while Flashing Red indicates high temperature.

- Temperature monitor indicator
- Monitors and displays operating temperature
- Indicates too cold / normal / too hot
- Thermistor temperature sensor supplied, 1m cable
- Terminal type: 6.3mm x 0.8mm fast-on tab terminals
- Convenient snap-in design
- Approval Bodies: CE, FCC, UL

Bezel Size 32mm x 14mm Operating Temperature -20°C to +70°C
Panel Cut-Out Size 30mm x 11mm

528903

Time	Mftrs. List No.	Order Code	Price Each 1+	25+	100+
12 Volts DC					
-14°C / -22°C	C1433ALMAJ	**145-4834●**	8.77	7.80	7.52
OVER +2°C	C1433ALMAK	**145-4835●**	8.77	7.80	7.52
+2°C / +8°C	C1433ALMAL	**145-4836●**	8.77	7.80	7.52
24 Volts DC					
-14°C / -22°C	C1433ALMAG	**145-4830●**	8.77	7.80	7.52
OVER +2°C	C1433ALMAH	**145-4831●**	8.77	7.80	7.52
+2°C / +8°C	C1433ALMAI	**145-4832●**	8.77	7.80	7.52
230 Volts AC					
-14°C / -22°C	C1433ALMAA	**145-4824●**	8.77	7.80	7.52
OVER +2°C	C1433ALMAB	**145-4825●**	8.77	7.80	7.52
+2°C / +8°C	C1433ALMAC	**145-4826●**	8.77	7.80	7.52
+16°C / -24°C	C1433ALMAD	**145-4827●**	8.77	7.80	7.52
OVER 49°C	C1433ALMAE	**145-4828●**	8.77	7.80	7.52
OVER 70°C	C1433ALMAF	**145-4829●**	8.77	7.80	7.52

RL Re-reeling available

Farnell

Neon Smart Indicators - continued

LED Mains Checkers

Arcolectric



New

The LED Mains Checker connects to Live, Neutral and Earth, and monitors the supply for swapped or missing connections, giving a simple status indication of wiring problems. Designed for permanent connection, the checker detects and indicates up to seven different wiring conditions.
Applications: monitors cables vulnerable to damage; monitors wear and tear through continued use; power tools and site equipment; garden equipment; consumer units; extension cables and cable reels.

- Colour, illumination: Green LED normal connection
- Colour, illumination: Red LED connection fault
- Terminal type: 6.3mm x 0.8mm fast-on tab terminals
- Convenient snap-in design
- Approval Bodies: CE, FCC, UL

Bezel Size	32mm x 14mm	Operating Temperature	-20°C to +70°C
Panel Cut-Out Size	30mm x 11mm		

528904

	Mftrs. List No.	Order Code	Price Each 1+	25+	100+
115V ac	C1431ALMAB	145-4838●	8.16	7.26	6.99
230V ac	C1431ALMAA	145-4837●	8.16	7.26	6.99

LED Temperature Logger

Arcolectric



New

The LED Temperature Micro Logger is an intelligent panel mounted device that monitors and stores temperature readings for downloading over a wireless IR data link.
The product can directly replace the mains neon indicator usually found on equipment, providing a fast, cost-effective upgrade of un-monitored equipment, simplifying reporting and providing documented evidence of historical storage temperatures.
Applications: food safety compliance monitoring; freezer and refrigeration monitoring; chiller, cold storage and process monitoring.

- Temperature logger and indicator
- Wireless data communication
- 14,000 reading non-volatile memory
- Configurable log interval
- Software available for PC and PDA
- Operating Voltage: 100 to 230V ac
- Measurement range -30°C to +80°C
- Measurement resolution ±0.5°C
- Colour, illumination: Blue LED normal temperature
- Colour, illumination: Red LED temperature alarm
- Thermistor temperature sensor supplied, 1m cable
- Terminal type: 6.3mm x 0.8mm fast-on tab terminals
- Convenient snap-in design
- Approval Bodies: CE, FCC, UL

Bezel Size	32mm x 14mm	Operating Temperature	-20°C to +70°C
Panel Cut-Out Size	30mm x 11mm		

528906

Mftrs. List No.	Order Code	Price Each 1+	25+	100+
C1435ALMAA	145-4839●	27.70	24.65	23.73

Laser Diodes

Laser Diodes, Lenses and Laser Driver ICs

LASER COMPONENTS



A range of laser diodes in the visible and NIR ranges, ideal for building laser pointers, laser scanners and sensors. These semiconductor lasers are packaged in industry-standard compact 5.6mm cans and feature low drive current and extremely long lifetimes. A selection of aspherical plastic lenses for straightforward collimation of the laser beam and ready-to-use driver boards with built-in automatic power control function make these products ideal for anyone developing a new laser diode-based product or experimenting with laser diodes. The APC laser diode ADL-65075TA2 is unique in including the laser diode and drive electronics within the same 5.6mm package.

- ADL-78901TL and ADL-80Y01TL need more current than the ICs can deliver - this can easily be solved via an external circuit

452080

Mftrs. List No.	Wavelength	Order Code	Price Each 1+	10+
ADL-63054TL	635 nm	127-2657●	9.50	9.14
ADL-65055TL	655 nm	127-2658●	3.55	3.22
ADL-65074TR	655 nm	127-2659●	7.59	6.90
ADL-65075TA2	655 nm	127-2660●	7.35	6.68
ADL-65075TL	655 nm	127-2661●	3.79	3.45
ADL-66502TL	660 nm	127-2662●	46.33	41.06
ADL-78901TL	785 nm	127-2663●	10.92	10.50
ADL-80Y01TL	808 nm	127-2665●	14.10	13.55
Fitting lenses				
CAX100	-	127-2666●	5.33	4.84
CAY033	-	127-2667●	4.12	3.78
CAY046	-	127-2668●	3.66	3.54

Mftrs. List No.	Wavelength	Order Code	Price Each 1+	10+
Development Kits				
IC-SY WK1D	-	127-2669●	8.45	7.67
IC-SY WK2D	-	127-2670●	6.12	5.55
Laser Diode Driver ICs				
IC-WKL SO8	-	SMD 127-2671●	3.58	3.25
IC-WKM SO8-TP	-	SMD 127-2672●	5.62	5.09
IC-WKN SO8-TP	-	SMD 127-2673●	5.62	5.09

Acculase

Modular mountable lasers

Global Laser



L=47.5, D=15

- Linear and PWM control(TTL switching) options
- Stable power output
- Wide operating temperature
- Inverted polarity protection
- User adjustable focus
- Rise and fall times: 0.5µs

Supply Voltage (V) ±5%	Temp. Range
5	-10 to 50°C

The Acculase is precision set during manufacture that ensures that the output beam is accurately aligned to the outer sleeve. This allows fast and simple installation, as well as immediate and consistent alignment, even in the field.
The secret of their superiority is a control circuit design that not only gives you excellent output power stability over time and temperature, but also offers fast, closed-loop modulation with an extinction ratio as high as 10,000:1.
The LC version allows full control of the output intensity linearly by applying an input control voltage of between 0 to 1 volts.The output intensity will faithfully replicate any arbitrary signal applied within the limits of the laser module's maximum rise and fall time. The control input is clamped at 1V to prevent damage to the laser.
The PWM version allows full pulse width modulation of the output intensity from a TTL level input signal, within the laser modules maximum rise and fall times. Therefore mean light intensity can be carefully controlled by chaning the mark to space ratio.

Wavelength	Output Power	Mftrs. List No.	Order Code
Linear Control			
635nm	5mW	ACCULASE-LC-635-5-S	133-8721
650nm	5mW	ACCULASE-LC-650-5-S	133-8722
PWM Control			
635nm	5mW	ACCULASE-PWM-635-5-S	133-8724

461187

Mftrs. List No.	Order Code	Price Each 1+	3+	5+	+
ACCULASE-LC-635-5-S	133-8721●	156.00	148.20	140.79	– –
ACCULASE-LC-650-5-S	133-8722●	181.13	172.07	163.47	– –
ACCULASE-PWM-635-5-S	133-8724●	201.83	191.73	182.15	– –

Lyte-MV-Excel Machine Vision Laser

Modular Mountable Laser

Global Laser



Supply Voltage (V) range	4.5V to 5.5V
Operating Temperature	-10 to 50°C

- Unique user adjustable focus without removing line optics
- Uniform non-gaussian line with various fan angle options
- Laser classification maintained during focus adjustment
- CW, Linear modulation or TTL control
- Excellent focus and line quality
- Rugged design
- Case electrically isolated
- Accurately aligned

Applications include:
- Automotive
- Ceramics
- Timber & packaging
- Aerospace
- Triangulation
- Tomography

The Lyte-MV-Excel laser module provides a reliable high power, industrial laser light source with well-defined line illuminations. Used primarily with industrial cameras, it is suitable for a wide range of inspection, measurement and control systems. Incorporating a integrated focusing system, which can be controlled by simply rotating the rear end of the laser. This novel design improves line quality whilst maintaining accurate alignment. The analogue laser is designed to offer accurate linearity between input signal and laser output.

Fan Angle	Peak Wavelength	Output Power	Mftrs. List No.	Order Code
30°	650nm	5mW	LYTE-MV-EXCEL-650-5-30-A	133-8712

462383

Order Code	Price Each 1+	3+	5+	+	+
Analog - High Linearity Laser					
133-8712●	274.28	260.56	247.53	– –	– –

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RL Re-reeling available

DragonFly Green Laser

Diode Pumped Solid State Laser (DPSS)



L=94, Dia=17

- Stable power without thermoelectric (TE) cooling
- Power stability better than 5% at constant temperature
- Low operating current
- Low beam divergence
- Compact size

Applications include:
- Medical alignment
- Apparel alignment
- Cutting & drill positioning

The low cost DragonFly DPSS Green laser diode module produces a circular beam with low beam divergence, a wavelength of 532nm and output power options of 1 mW and 5mW. The laser is complete with in-built driver electronics that provide CW operation with automatic power control (APC). The laser operates from a low voltage input 5 Vdc and a low operating current of 350mA(max.).
The DragonFly laser consists of anodised aluminium housing, driver circuit, user-adjustable focusing lens. Electrical connections are via flying leads.

Output Power, (mW)	Wavelength nm	Mftrs. List No.	Order Code	Supply Voltage (V) range 5V	Temp. Range 10 to 35°C
Linear Control					
0.9	532	DRAGONFLY-1-D	133-8709		
5	532	DRAGONFLY-5-D	133-8710		

462391

	Price Each				
Order Code	1+	3+	5+	+	+
133-8709●	309.47	293.99	279.30	– –	– –
133-8710●	315.78	300.00	285.00	– –	– –

Vertical Cavity Surface Emitting Laser



OPV310



OPV314

- High performance 850nm Vertical Cavity Surface Emitting Laser (VCSEL)
- OPV310 is designed to be utilized for sensing applications and air transmission of data
- OPV314 is designed for high speed communication links and combines all the performance advantages of a VCSEL with the addition of a power monitor diode for precise control of optical power
- OPV310 and OPV314 have a back monitor photodiode used for optical power management or optical reception for data communication applications
- OPV310 has a flat lens while the OPV314 has a microbead lens

Laser Class	Output Power	Peak Wavelength	Operating Temperature	Mftrs. List No.	Order Code
Class 1M	1.5mW	850nm	0°C to +70°C	OPV310	167-8684
Class 1M	1.5mW	850nm	0°C to +70°C	OPV310Y	167-8685
Class 1M	1.4mW	850nm	0°C to +70°C	OPV314	167-8686
Class 1M	600µW	850nm	-40°C to +85°C	OPV314AT	167-8687
Class 1M	1.4mW	850nm	0°C to +70°C	OPV314Y	167-8688
Class 1M	600µW	850nm	-40°C to +85°C	OPV314YAT	167-8689

528433

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
OPV310	**167-8684●**	10.69	9.50	6.11	5.78	5.55
OPV310Y	**167-8685●**	11.04	9.80	6.31	5.96	5.73
OPV314	**167-8686●**	13.30	11.82	7.60	7.19	6.91
OPV314AT	**167-8687●**	20.37	18.11	11.64	11.01	10.58
OPV314Y	**167-8688●**	13.64	12.12	7.79	7.37	7.08
OPV314YAT	**167-8689●**	20.69	18.39	11.82	11.18	10.75

Pulsed Laser Diodes



H=12.2, W=5, D=2.3
1226445, 1242053



H=5, D=5.9
1226446, 1226448

- Low cost, compact size
- Integrated FET and capacitors for pulse control
- Strained InAlGaAs/GaAs QW- structures
- Laser aperture 200 µm x 2µm
- High speed operation (<30ns pulse width)

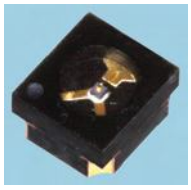
Output Power, Pk.(W)	λ_{Peak} (nm)	Supply max, (V or A)	Features	No. Pins	Mftrs List No.	Order Code
10	850	12A	—	2	SPLPL85	122-6446
14	850	9V	FET Control	3	SPLLL85-Z	122-6445
25	905	20V	FET Control	3	SPLLL90	124-2053
25	905	40A	—	2	SPLPL90	122-6448

Depending on the mode of operation, these devices emit highly concentrated non-visible infrared light, which can be hazardous to the human eye.
Note:Products which incorporate these devices have to follow the safety precautions given in IEC 60825-2 -Safety of laser products

459148

Mftrs. List No.	Order Code	Price Each 1+	5+	10+	25+
SPLPL85	**122-6446●**	22.34	20.33	18.48	17.06
SPLLL85-Z	**122-6445●**	33.17	30.16	27.43	25.31
SPLPL90	**122-6448●**	22.95	18.58	16.40	14.21
SPLLL90	**124-2053●**	28.32	25.74	23.43	21.62

Infrared Light Emitting Diode



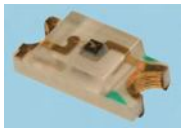
The OPR2800T is a GaAlAs infrared LED mounted in a surface mount chip carrier (SMCC) package with a flat lens window that allows a wide beam angle. The SMCC format has a lower height profile than the PLCC-2 package and mounts in the same footprint. The device is suitable for use in single device or array applications.

Viewing Angle	100°	Wavelength (typ)	890nm
Power Dissipation	130mW	Operating Temperature	-40°C to +100°C
Forward Current (typ)	20mA		

528761

Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
OPR2800T	**167-8680●**	1.68	1.50	0.96	0.90	0.87

Surface Mount - 1206 IR



OP250



OP251



OP280

Each OP250 and OP251 device is a GaAlAs infrared LED, mounted in a miniature SMT 1206 size chip carrier that is compatible with most automated mounting equipment. The OP250 has a flat molded lens that enables a wide beam angle and provides an even emission pattern. The OP251 has an internal molded lens that enables a tight beam angle and provides an even emission pattern. The OP280 is a PLCC-2 packaging suitable for single device or array applications.

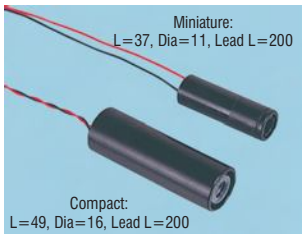
Applications:
- Non-contact position sensing
- Datum detection
- Machine automation
- Optical encoding

Forward Current	20mA	Wavelength (typ)	890nm
Power Dissipation	130mW	Operating temperature	-25°C to +85°C
Forward Voltage (max)	1.5V		

527907

Case Style	Viewing Angle	Mftrs. List No.	Order Code	Price Each 1+	25+	100+	250+	500+
1206	160°	OP250	**167-8542●**	0.290	0.240	0.183	0.160	0.137
1206	90°	OP251	**167-8543●**	0.330	0.270	0.220	0.183	0.160
PLCC-2	100°	OP280	**167-8556●**	0.350	0.290	0.230	0.194	0.171

LDM115 & LDM145 CW operation Laser Diode Modules



Industry standard CW laser diode modules, self-contained and available in various visible powers. In addition, having the option of elliptical spot (G) or circular spot (P). They are designed for industrial applications and offer superior ruggedness within a range of industry standard package sizes (11mm or 16mm). Available in wavelengths and powers of 633nm, 670nm and 1mW, 3mW. An inbuilt driver circuit provides stable, reliable performance whilst insuring protection against reverse polarity and voltage spikes.

- High quality elliptical spot at short distances. (G) version
- Good quality circular collimated beams over larger distances. (P) version
- Ideal integration module for OEM applications
- Choice of Industry standard housings (11mm diameter- miniature, 16mm diameter - compact)
- External Line Generator Optics available see part numbers 623258 + 623260
- User Adjustable Focusing Lens
- Rugged Construction
- Low Voltage DC Operation
- Reverse Polarity Protection
- Electrically isolated housing

Applications include:
Alignment, Positioning, Dimensional Scanning, Robot Control, Target Designation, Edge Detection, Analysis, Entertainment (Laser Gaming)

RL Re-reeling available

Farnell

Laser Diodes - continued

LDM115 & LDM145 CW operation Laser Diode Modules - continued

468925

Module Type	Mftrs. List No.	Order Code	Price Each 1+	Price Each 3+
Miniature, 0.9mW, 670nm	LDM115/670/1	**121-6290●**	122.00	109.79
Miniature,0.9mW, 633nm	LDM115/633/1	**121-6294●**	142.76	112.03
Miniature,3mW, 670nm	LDM115/670/3	**121-6291●**	91.46	83.94
Miniature,5mW, 633nm	LDM115/633/5	**121-6313●**	237.71	215.07
Compact,0.9W, 670nm	LDM145/670/1	**121-6292●**	142.28	128.05
Compact,0.9mW, 633nm	LDM145/633/1	**121-6295●**	187.44	166.97
Compact,0.9mW, 650nm	LDM115P/650/1	**121-6307●**	94.96	80.02
Compact,0.9mW, 635nm	LDM115P/635/1	**121-6308●**	114.28	96.03

Laser Diode Modules



The Laser Diode Modules emit a high visible red beam at 635nm, 650nm or 532nm. The circular beam makes this laser a perfect tool for precise alignment applications. The laser beam is focusable from 15cm to infinity. The beam only increases 0,2mm per meter distance. For operation only connect the laser to a power supply or batteries.

- Laser Class 2 (eye safe)
- Focusable
- Isolated housing
- Very low divergence (0,2mrad)
- Reverse voltage protection
- 1AA modulation by control wire

Technical data:

Output power:	> 1 mW
Operating current:	50mA
Operating voltage:	4.5 - 6 VDC
Length:	ca. 57 mm
Diameter:	11.5 mm
Operating temperature:	0 - 40°C

Laser Radiation ! Do not stare into the beam !Laser class 2 according to DIN EN 60825-11:2001-11

336032

Typ	Wavelength	Order Code	Price Each 1+	Price Each 5+
FP-64/1AF-AV-SD5	635 nm	**122-9875●**	109.60	101.58
FP-65/1AF-AV-SD5	650 nm	**122-9877●**	112.68	106.97
FP-65/1AA-AV-SD5	650 nm	**122-9884●**	105.59	96.22
FP-53/1AF-AV-SD	532 nm	**126-9865●**	221.42	207.50
With fibre adapter				
FP-65/1FA-SMA	650 nm	**126-9869●**	274.57	256.85

LDM150 CW operation Laser Diode Module



The LDM150 laser is a self-contained OEM laser diode module. The ultra compact design has an inbuilt driver circuit that provides stable, reliable performance whilst insuring protection against reverse polarity and voltage spikes. It is available in wavelengths of 635nm (3mW power) and 650nm (1mW power).

- Ultra compact 7mm diameter
- Ideal integration module for OEM applications
- Small output beam diameter
- User Adjustable Focusing Lens
- Low Voltage DC Operation
- Reverse Polarity Protection
- Electrically isolated housing

Applications:
Alignment, Positioning, Dimensional Scanning, Metrology, Event Detection, Robot Control, Target Designation, Edge Detection, Analysis, Security, Entertainment (Laser gaming)

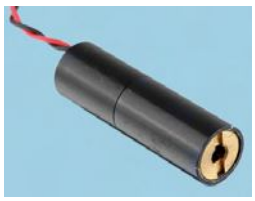
Specifications	**121-6298**	**121-6299**
Optical		
Output Power (±10 %)	5mW	0.9mW
Wavelength	635nm	650nm
Focus Range	500 to mm	500 to mm
Beam Size (at aperture)	3 x 1 mm	3 x 1 mm
Beam Size (at nearest focus)	<50µm	<50µm
Electrical/Mechanical		
Supply Voltage	3.5 to 5V	3.5 to 5V
Operating Current	65mA	45mA
Length	30mm	30mm
Diameter	7mm	7mm
Supply Lead Length	200mm	200mm
Environmental		
Operating Temperature	-10 to 50°C	-10 to 50°C
Storage Temperature	-40 to 85°C	-40 to 85°C
MTTF at 25°C	>30,000Hrs.	>60,000Hrs.

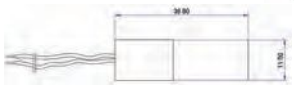
338555

Wavelength	Output Power	Mftrs. List No.	Order Code	Price Each 1+	Price Each 3+
635nm	5mW	1450-06	**121-6298●**	94.96	80.02
650nm	0.9mW	1450-07	**121-6299●**	73.63	62.25

£ € 40,000 PRICES REDUCED

LLM115 and LCG115 11mm Line and Cross Generators





Self-contained OEM laser diode modules emitting either a line or crossed line pattern. It is of high visibility and can be seen in most lighting conditions. It is generally used where alignment by eye is required but is also suitable for use with camera systems. The 90° cross can be achieved at any mounted position. The laser is available in a highly visible 635nm wavelength with a power of 3mW. An inbuilt driver circuit provides stable, reliable performance whilst insuring protection against reverse polarity and voltage spikes.

- Self-contained, OEM compact alignment laser diode module (11mm diameter)
- Ideal integration module for OEM applications
- Rugged Construction
- User Adjustable Focusing Lens
- Low Voltage DC Operation
- Reverse Polarity Protection
- Electrically isolated housing

Applications:
Object Positioning, alignment, Metrology, Quality Control, Robot Control, Edge Detection, Analysis

Specifications	**121-6309**		
Output Power (±10 %)	3mW	Supply Voltage:	5.5 to 3.5V
Laser Classification	Class 3r	Operating Current	65mA
Wavelength	635nm	Length	37mm
Focus Range	50mm to ∞	Diameter	11mm
Beam Size (at aperture)	4 x 2mm	Supply Lead Length	200mm
Line Width (at nearest focus)	<100µm	Operating Temperature	-10 to 40°C
Electrical/Mechanical		Storage Temperature	-40 to 80°C
		MTTF at 25°C	>30,000Hrs.

338590

Description	Mftrs List No.	Order Code	Price Each 1+	Price Each 3+	Price Each 5+
Laser Line	LLM115G/635/3	**121-6309●**	223.00	186.72	164.85

Line Laser Diode Modules



A wide range of industrial and medical applications includes the positioning of tools and work pieces, alignment of instruments and machines. The line laser emits a high visible red line. The line length is equal to the distance between the laser and the surface. All line lasers are laser class 2M.

- perfect tool for alignment
- housing made of anodized aluminium
- reverse voltage protection

Technical data:

Output power:	> 3 mW
Operating current max:	50mA
Operating Voltage:	4.5 - 6 VDC
Length:	57mm
Diameter:	11.5mm
Fan angle:	50°
Operating temperature:	0 - 40°C

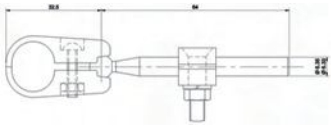
Laser Radiation ! Do not stare into the beam !Laser class 2M according to DIN EN 60825-11:2001-11

336043

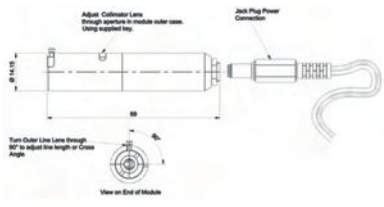
Typ	Wavelength	Order Code	Price Each 1+	Price Each 5+
FP-64/3LF-50	635 nm	**122-9890●**	131.20	118.99
FP-65/3LF-50	650 nm	**122-9891●**	127.75	115.89
FP-53/3LF-Ö50	532 nm	**126-9866●**	277.07	259.71

LaserLyte Laser Alignment System (Cross / Dot / Line)





Mounting Kit



Variable Line Module

The LaserLyte alignment system is a unique, user adjustable, plug and play laser system suitable for a wide range of applications including alignment and positioning of materials including garments, cloth, paper, wood and metal. The complete system consists of a laser, mounting kit, 1.5m cable, a focus key, a universal transformer (110-240 Vac) and additional mounting brackets. The projections include a 90° cross at any mounted position, variable length line and a variable intensity dot.

- Complete, ready to use Plug and play system
- 90° cross at any mounted position, 635nm, 5mW (V3RXL)
- Variable length line, 650nm, 5mW (V5VLL)
- Variable intensity dot, 650nm, 1mW (V5Dvi)
- Simple User adjustable focus control
- Wide range of mounting options and accessories
- No technical laser experience required
- Ideal for end user applications

Applications include:
Garment manufacturing, Screen printing , Sewing, embroidery, Tyre manufacturing, Saw alignment, Fabric cutting, Patient positioning, Rotary press alignment, Glass cutting, drill positioning, Graphics alignment .

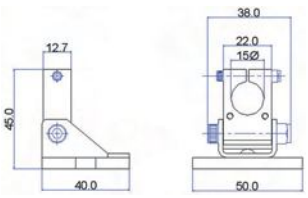
Optical		
Output Power (±20 %)	5mW	1 to 5mW
Wavelength	635nm	650nm
Electrical/Mechanical		
Connector Cable Length	1.5m	1.5m
Length	67mm	67mm
Diameter	14mm	14mm

338587

Wavelength	Mftrs. List No.	Order Code	Price Each 1+	3+	5+
635nm	V3RXL	**121-6304●**	288.08	240.06	211.95
650nm	V5VLL	**121-6305●**	213.40	177.83	157.00

Mounting Bracket





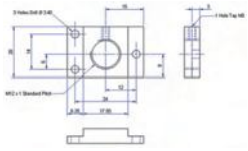
The swivel clamp allows the Premier & Acculase to be mounted securely. It offers the user up and down movement as well as + 45° swivel. The base plate has a series of holes which allows the clamp to be fixed directly onto a machine or workbench. It has been designed for use with the Acculase range of lasers.

339893

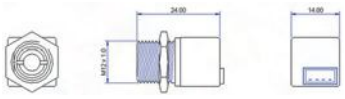
Mftrs List No.	Order Code	Price Each 1+	3+	5+
1200-01	**121-6310●**	41.61	35.58	31.42

Gated Cameo Thread mounted laser diode module





Alignment Mounting Kit



Cameo Laser Generator

The Gated Cameo is a unique, versatile, high quality industrial laser module widely used in alignment applications. It provides a switchable control input to turn the laser beam ON/OFF at high speed. A lower speed enable input is also provided. Many applications require a chopped light source or need digital information to be encoded on the beam. Using an appropriate detector, the laser light can be distinguished from other light sources, which might affect the alignment system. The gated beam can also be detected at very low levels, making long range operation possible. The isolated threaded mount houses an industrial grade laser diode, adjustable collimating lens and protected connectorised drive electronics.

- Simple thread mounted industrial laser module
- CW or modulated operation
- Third wire input facilities rapid switching/gating
- Switching speeds up to 100kHz
- Operates directly from binary logic signals
- Effective in wide variety of light conditions
- Controlled chopping minimizes power consumption and extended life
- Low speed enable input
- Isolated metal case
- Compact length for restricted areas
- User focusable
- Designed for continuous cool running
- Wide range of focus distances

Applications include:
Graphics Displays, Vision Systems, Telemetry, Dynamic Lighting, Sensors, Laboratory Testing, Smoke & Fog Detectors, Safety & Security , Alignment Systems, Beam Break.

Specifications	**121-6300**	**121-6301**
Optical		
Output Power (±20 %)	0.9mW	3mW
Laser Classification	Class 2	Class 3r
Wavelength	650nm	635nm
Focus Range	30mm to ∞	30mm to ∞
Beam Size (at aperture)	2mm	3 by 1 mm
Beam Size (at nearest focus)	50µm	20 by 60µm
Electrical/Mechanical		
+ve Supply, Pin 1 - red lead	3 to 6V	
-ve Supply, Pin 2 - black lead	0	
Supply Voltage (black lead)	OFF < 50mV, ON > 2.0V	
Control, Pin 3 - yellow lead	OFF < 0.4V, ON > 2.0V	
Operating Current	45mA	65mA
Length	24mm	24mm
Diameter	14mm	14mm
Supply Lead Length	300mm	300mm
Environmental		
Operating Temperature	-10 to 40°C	-10 to 40°C
Storage Temperature	-25 to 85°C	-25 to 85°C
Operating Humidity	90%rh non-condensing	
MTTF at 25°C	25,000Hrs.	40,000Hrs.

338580

Wavelength	Mftrs. List No.	Order Code	Price Each 1+	3+	5+
650nm	1260-07	**121-6300●**	84.50	76.38	69.68
635nm	1260-08	**121-6301●**	158.98	133.37	117.75

Laser Line Generating Optics



	Miniature	Compact
Length	24	26
Diameter	17.5	22
Length with LDM	51	60
Diameter with LDM	17.5	22

The series of line generator (LGO) have been designed specifically for use with the corresponding ranges of laser diode modules (LDM115 & LDM145). They are simple to mount and adjust on a pre-focused LDM, these units emit a highly defined thin line of laser light that can be used for a wide range of the applications.

- Produces a 40° Laser line for a wide range of applications
- Easy to mount no technical knowledge needed.
- Fits the LDM115 and LDM145 laser diode modules

Applications include: Object Positioning, alignment, Metrology, Quality Control, Robot Control, Edge Detection, Analysis.

206387

Description	Mftrs List No.	Order Code	Price Each 1+	3+	5+
Miniature LGO	LGO115/40	**121-6311●**	65.80	59.28	54.73
	LGO145/40	**121-6312●**	64.31	58.60	54.41

OEM Laser Diode Modules







Connections
Red=Supply +ve,
Black=Supply -ve
Pink=TTL modulation input



- Low Cost
- Miniature Design
- Automatic Power Control
- 3.0Vdc Operating
- Adjustable or Fixed Focus Options (650nm)
- Red or High visibility Green Options

A range of laser diode modules designed for OEM applications with the lowest cost, miniature size and beam focussing requirements.
These modules are ideal for a wide range of low power laser applications, such as general sighting, levelling and positioning.
The red laser modules are available with either a fixed or adjustable focus, the wavelength being in the red region at 650nm.
The green 532nm diode pumped solid state modules use a laser diode pumped Nd:YVO_4 crystal coupled with KTP as a frequency doubler to generate green light. These modules produce a high visibility beam which appears up to ten times brighter than a red laser for the same 1mW power output. Additional heat sinking may be required for continuous operation. A pulsed green laser module is available with modulation up to 1 kHz and a power output from 1.5 to 2.99mW.

Colour	Module size (mm) Dia.	Length	Focus	Supply volts (min)	(max)	Wave-length (nm)	Beam Dia. (mm)	Supply current (mA)	Output power max (mW)	Max Modulation	Mftrs. List No.
Red	10.5	17	Fixed	2.7	6	650	5.8	45	1	—	PLP6501FR
Red	10.5	17	Adj.	2.7	6	650	5.8	45	1	—	PLP6501AR

RL Re-reeling available

Farnell

Laser Diodes - continued

OEM Laser Diode Modules - continued

WARNING: These devices are laser diode modules and conform to BS (EN) 60825 emission criteria. Do not look directly into the laser beam. Eye protection should be worn as blink response is not sufficient to protect the human eye.
<1mW visible - class II, 3mW & 5mW visible - class IIIa.

241021

Description	Mftrs List No.	Order Code	Price Each 1+	3+	5+
1mW Laser, 650nm Fixed focus	PLP6501FR	**120-9950**	19.15	17.89	17.20
1mW Laser, 650nm Adj. focus	PLP6501AR	**120-9951**	19.15	17.89	17.20

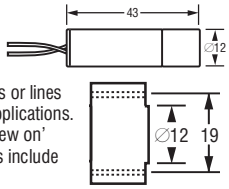
Self-Contained

MELLES GRIOT









This range of high quality, user focusable diode lasers with integral drive electronics offers reliability at an affordable price. The 635nm modules emit very bright spots or lines and are particularly suited to high ambient light level applications. Options include an easy to install flanged housing, and 'screw on' line generating optics for use with any module. Applications include alignment, positioning, security and machine vision.

Wavelengths	635nm, 670nm, 780nm
Output owers	<1mW, (Class2), 3mW, 5mW (Class 3a) with exception of 780nm and 635nm
12mW modules (class 3b)	
Housings:	12mm cylindrical or flanged x 43mm
Beam size (Nom.)	2mm x 4mm
Beam Divergence	<0.5 mrad
Pointing Stability	<0.5 mrad/deg C
Supply Voltage	3 to 6V dc
Current Drain (typ.)	<70mA
Output Power Stabilisation	<5%
	Reverse Polarity protected
Operating Temperature	-10°C to +40°C (except 670nm 3mW -10°C to +60°C)

WARNING: These devices are laser diode modules and conform to BS (EN) 60825 emission criteria. Do not look directly into the laser beam. Eye protection should be worn as blink response is not sufficient to protect the human eye.
<1mW visible - class II, 3mW & 5mW visible - class IIIa, 12mW - class 111b.

206539

Module Type	Housing	Order Code	Price Each 1+	5+	10+
635nm, 1mW	Cylindrical	**121-8965●**	117.50	93.52	78.86
635nm, 1mW	Flanged	**121-8966●**	113.85	106.57	90.46
635nm, 3mW	Cylindrical	**121-8968●**	119.76	111.77	94.69
670nm, 3mW	Cylindrical	**121-8969●**	87.04	69.55	58.82
780nm, 3mW	Cylindrical	**121-8970●**	91.39	77.00	65.60

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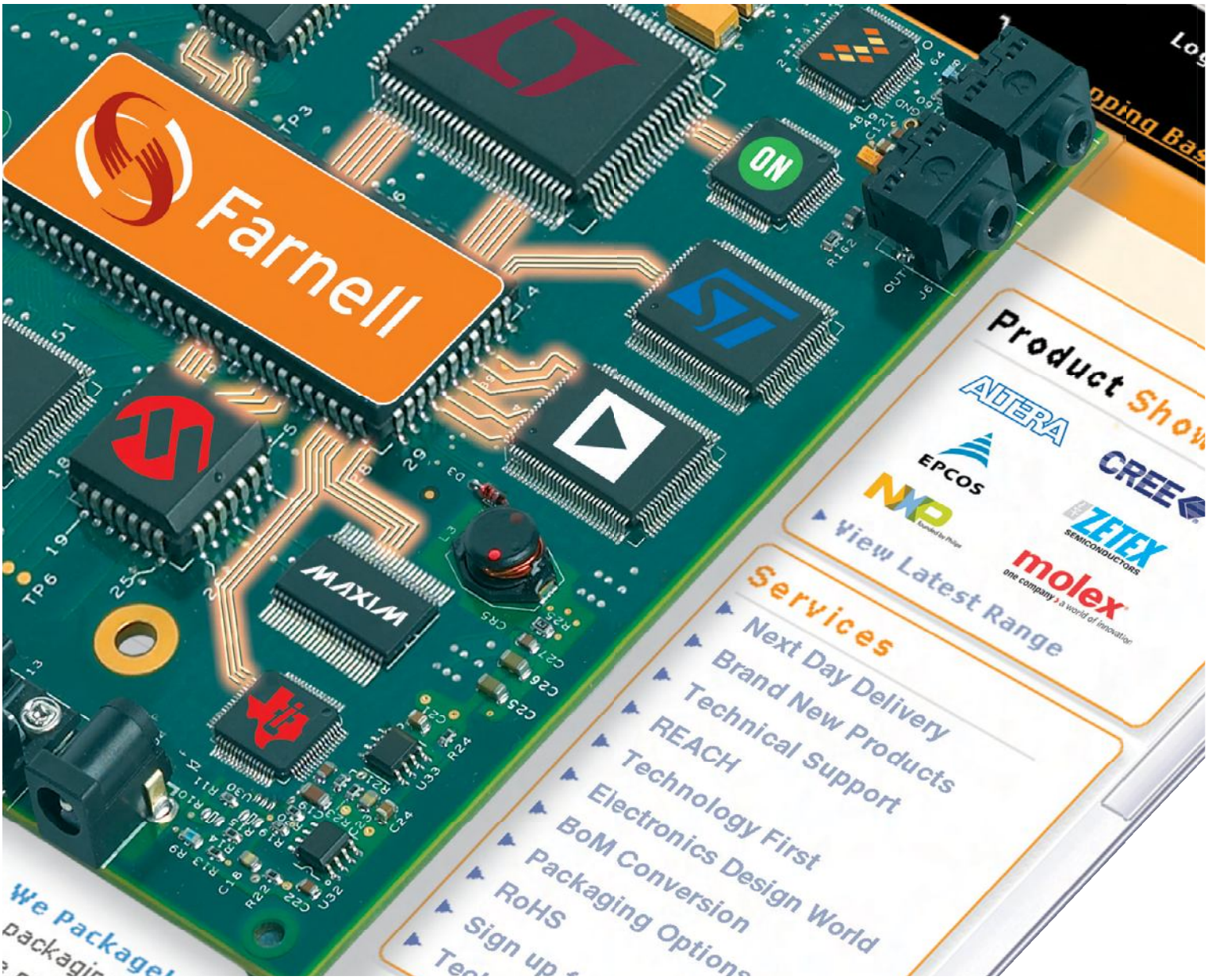
MANUFACTURERS

PRODUCT CATEGORY		AVAGO TECHNOLOGIES	ARCOELECTRIC	BATRON	DIALIGHT	BOSS	BP SOLAR	BULGIN	CENTRONIC	CML INNOVATIVE TECHNOLOGIES	CREE	DENSITRON	DIALIGHT	ENFIS	EPIGAP	EVERBOUQUET	FAIRCHILD	GLOBAL LASER	HITACHI	HAMAMATSU	HONEYWELL	IMATRONIC	JEN COLOUR	KINGBRIGHT	KODENSHI	KYOCERA	LAMINA	LASER COMPONENTS	LUMIDRIVES	LUMILEDS	MARL	MELLES GRIOT	MENTOR	MOLEX PREMISE NETWORK	NORITAKE-ITRON	OLMEC - SURELIGHT	OMC	OMRON	OPTEK	OPTRONICS	OSRAM	POWERTIP	ROHM	RALOSS	RIT DISPLAY	SEOUL SEMICONDUCTOR	SHARP	SILONEX	SPC MULTICOMP	TAOS	TOSHIBA	TOYODA GOSEI	VARITRONIX	VISHAY
OPTOELECTRONICS	Backlighting	Backlight LED																																																		
		Electro-Luminescent																																																		
	Displays	LCD			●								●				●			●							●																											
		LED	●																						●																												
		OLED											●																																								
		VFD																																																			
	Fibre Optic	Cables	●																																																
		Emitters	●																		●																															
		Receivers	●																		●																															
		Transceivers	●																		●																															
	Lamps & Indicators	LED Panel Indicators		●		●	●		●		●			●																		●		●																		
		LED PCB Indicators	●											●																		●		●																		
		Incandescent Panel Indicators		●			●				●																																									
		Incandescent lamps									●																																									
		LED Replacement Lamps			●						●																					●																				
	Visible	Laser Diodes																										●																							
		Laser Modules																●				●						●				●																				
		Standard	●		●						●	●													●						●		●																		
		Power LEDs	●								●	●													●					●																				
		Power LED Modules/Arrays	●								●			●													●		●	●																				
		Light Engines												●													●																							
	Non-visible	Infrared Emitters	●								●				●		●			●	●				●							●																		
		Light Detectors & Sensors	●																	●	●																●	●													
		Opto Switches															●				●				●												●	●													
		Opto Transceivers	●																																		●														
	Other	Light Dependant Resistors																																																
		Optocouplers	●														●																																		
		Photodiodes	●						●											●		●	●																											
		Solar Cells					●																																												

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