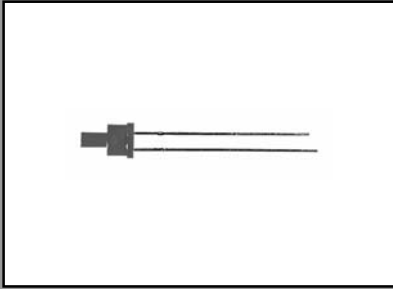
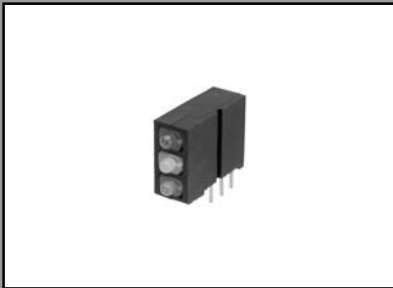


LIGHTHOUSE LEDS



STATUS INDICATORS



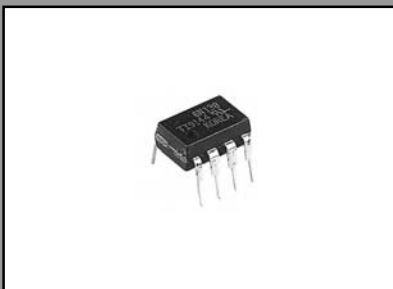
LED CLUSTERS



LED PANEL CLIPS



OPTOISOLATORS



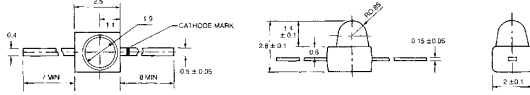
1.8mm LEDS	2176
2mm LEDS	2176
2.4mm LEDS	2176
3mm LEDS	2176 - 2178
8mm LEDS	2181
10mm LEDS	2181
20mm LEDS	2181
5V LEDS	2178/2180
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CON Z T E N S

SQUIRES MODEL & CRAFT TOOLS

1.8mm AXIAL LEDs

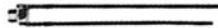
SUB-MINIATURE 1.8mm AXIAL LED. A range of miniature axial LEDs in a water clear package suitable for high density PCB applications. Cathode is identified by a stripe on one lead. Sold individually or in packs of 100.



	If	V _F	V _F	V _R	Int.at If	View	Wave
	max.	typ.	max.	max.	mcd.	angle	length
Clear Red	30mA	2.5V	2.5V	5V	100 @ 20mA	30°	625
Clear Green	25mA	2.5V	2.5V	5V	150 @ 20mA	30°	565
Clear Yellow	30mA	2.5V	2.5V	5V	70 @ 20mA	30°	590

CODE	TYPE	PRICE
LED011	Sub-Mini Axial 1.8mm LED Red.....	£0.25
LED021	Sub-Mini Axial 1.8mm LED Green.....	£0.25
LED031	Sub-Mini Axial 1.8mm LED Yellow.....	£0.25
LED012	Sub-Mini Axial 1.8mm LED Red 100pk.....	£20.00
LED022	Sub-Mini Axial 1.8mm LED Green 100pk.....	£20.00
LED032	Sub-Mini Axial 1.8mm LED Yellow 100pk.....	£20.00

MINIATURE 1.8mm LED. A range of miniature LEDs in a diffused package of 1.8mm dia, suited to through panel applications. The cathode is identified by the shorter lead.



	If	V _F	V _F	V _R	Int.at If	View	Wave
	max.	typ.	max.	max.	mcd.	angle	length
Red	20mA	2V	2.5V	5V	2.0 @ 10mA	30°	660
Green	30mA	2.2V	2.5V	5V	5.0 @ 10mA	30°	565
Yellow	30mA	2.1V	2.5V	5V	5.0 @ 10mA	30°	590

CODE	TYPE	PRICE
LED040	Mini 1.8mm LED Red.....	£0.25
LED050	Mini 1.8mm LED Green.....	£0.25
LED055	Mini 1.8mm LED Amber.....	£0.25
LED060	Mini 1.8mm LED Yellow.....	£0.25
620-850	Mini 1.8mm LED White.....	£0.75
LED041	Mini 1.8mm LED Red 100pk.....	£20.00
LED051	Mini 1.8mm LED Green 100pk.....	£20.00
LED056	Mini 1.8mm LED Amber 100pk.....	£20.00
LED061	Mini 1.8mm LED Yellow 100pk.....	£20.00

2mm LIGHTHOUSE LEDS

LIGHTHOUSE 2mm LED. A range of lighthouse style 2mm flat top LEDs housed in a diffused coloured package. Ideally suited to through panel applications where a wide viewing angle is required. Sold individually or in packs of 100.



	If	V _F	V _F	V _R	Int.at If	View	Wave
	max.	typ.	max.	max.	mcd.	angle	length
Red	20mA	2V	2.5V	5V	1.25 @ 10mA	70°	660
Green	30mA	2.2V	2.5V	5V	8.0 @ 10mA	70°	565
Yellow	30mA	2.1V	2.5V	5V	8.0 @ 10mA	70°	590

CODE	TYPE	PRICE
LED062	Lighthouse LED 2mm Red.....	£0.20
LED063	Lighthouse LED 2mm Green.....	£0.20
LED064	Lighthouse LED 2mm Yellow.....	£0.20
620-270	Lighthouse LED 2mm Red 100pk.....	£16.00
620-280	Lighthouse LED 2mm Green 100pk.....	£16.00
620-290	Lighthouse LED 2mm Yellow 100pk.....	£16.00

2.4mm LIGHTHOUSE LEDS

LIGHTHOUSE 2.4mm LED. A range of lighthouse style 2.4mm flat top LEDs housed in a diffused coloured package. Ideally suited to through panel applications where a wide viewing angle is required. Sold in singles and packs of 100.

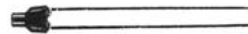


	If	V _F	V _F	V _R	Int.at If	View	Wave
	max.	typ.	max.	max.	mcd.	angle	length
Red	20mA	1.7V	2.1V	5V	3.2 @ 10mA	120°	660
Green	30mA	2.2V	2.5V	5V	2.5 @ 10mA	120°	565
Yellow	30mA	2.1V	2.5V	5V	3.0 @ 10mA	120°	590

CODE	TYPE	PRICE
620-250	Lighthouse LED 2.4mm Red.....	£0.20
620-255	Lighthouse LED 2.4mm Green.....	£0.20
620-260	Lighthouse LED 2.4mm Yellow.....	£0.20
620-251	Lighthouse LED 2.4mm Red 100pk.....	£16.00
620-256	Lighthouse LED 2.4mm Green 100pk.....	£16.00
620-261	Lighthouse LED 2.4mm Yellow 100pk.....	£16.00

2mm FLAT TOP LEDS

FLAT TOP 2mm LED. A compact design 2mm flat top LED in diffused coloured packages. Ideally suited to through panel applications. Cathode is identified by shorter lead. Sold individually or in packs of 100.



	If	V _F	V _F	V _R	Int.at If	View	Wave
	Max.	Max.	Max.	Max.	mcd.	angle	length
Red	25mA	2.5V	5V	2.0 @ 10mA	70°	700	
Green	25mA	2.5V	5V	8.0 @ 10mA	70°	565	
Yellow	30mA	2.5V	5V	8.0 @ 10mA	70°	590	

CODE	TYPE	PRICE
LED065	Flat Top LED 2mm Red.....	£0.20
LED066	Flat Top LED 2mm Green.....	£0.20
LED067	Flat Top LED 2mm Yellow.....	£0.20
620-300	Flat Top LED 2mm Red 100pk.....	£16.00
620-305	Flat Top LED 2mm Green 100pk.....	£16.00
620-310	Flat Top LED 2mm Yellow 100pk.....	£16.00

3mm LEDS

MINIATURE 3mm LED. A range of miniature 3mm round LEDs housed in a diffused coloured package. The cathode is identified by a flat on the body. Sold individually or in packs of 100.



	If	V _F	V _F	V _R	Int.at If	View	Wave
	max.	typ.	max.	max.	mcd.	angle	length
Red	20mA	2V	2.5V	5V	3.2 @ 10mA	120°	660
Green	30mA	2.2V	2.5V	5V	20 @ 10mA	120°	565
Yellow	30mA	2.1V	2.5V	5V	20 @ 10mA	120°	590

CODE	TYPE	PRICE
LED070	Mini 3mm LED Red.....	£0.20
LED080	Mini 3mm LED Green.....	£0.20
LED090	Mini 3mm LED Yellow.....	£0.20
LED092	Mini 3mm LED Amber.....	£0.20
LED093	Mini 3mm LED Orange.....	£0.20
LED100	ANY MIX OF 6 OF THE ABOVE 3mm LEDs.....	£1.00
LED071	Mini 3mm LED Red 100pk.....	£16.00
LED081	Mini 3mm LED Green 100pk.....	£16.00
LED091	Mini 3mm LED Yellow 100pk.....	£16.00
LED094	Mini 3mm LED Amber 100pk.....	£16.00
LED095	Mini 3mm LED Orange 100pk.....	£16.00

SQUIRES MODEL & CRAFT TOOLS

LOW CURRENT 3mm LED. A range of high efficiency low current LEDs housed in a diffused coloured package. Luminous intensity remains constant down to 2mA. Ideally suited to portable equipment. Sold Individually or in packs of 100.



	IF	V _F	V _F	V _R	Int.at IF	View	Wave
	max.	typ.	max.	max.	mcd.	angle	length
Red	20mA	2V	2.5V	5V	5 @ 2mA	120°	625
Green	20mA	2.2V	2.5V	5V	3.2 @ 2mA	120°	565
Yellow	20mA	2.1V	2.5V	5V	3.2 @ 2mA	120°	590

CODE	TYPE	PRICE
LED110	Low Current LED 3mm Red.....	£0.20
LED120	Low Current LED 3mm Green.....	£0.20
LED130	Low Current LED 3mm Yellow.....	£0.20
LED112	Low Current LED 3mm Red 100pk.....	£16.00
620-315	Low Current LED 3mm Green 100pk.....	£16.00
620-320	Low Current LED 3mm Yellow 100pk.....	£16.00

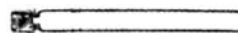
CLEAR 3mm LED a range of high efficiency 3mm LEDs housed in a water clear package. The devices are intensity and colour matched. Cathode identified by shorter lead. Sold individually or in packs of 100.



	IF	V _F	V _F	V _R	Int.at IF	View	Wave
	max.	typ.	max.	max.	mcd.	angle	length
Red	20mA	2V	2.5V	5V	125 @ 10mA	60°	625
Green	20mA	2.2V	2.5V	5V	80 @ 10mA	60°	565
Yellow	20mA	2.1V	2.5V	5V	80 @ 10mA	60°	590

CODE	TYPE	PRICE
LED111	3mm LED Clear Red.....	£0.20
LED121	3mm LED Clear Green.....	£0.20
LED131	3mm LED Clear Yellow.....	£0.20
LED141	3mm LED Clear Orange.....	£0.20
LED142	3mm LED Clear Blue.....	£0.45
LED113	3mm LED Clear Red 100pk.....	£16.00
LED122	3mm LED Clear Green 100pk.....	£16.00
LED132	3mm LED Clear Yellow 100pk.....	£16.00
LED143	3mm LED Clear Orange 100pk.....	£16.00
LED144	3mm LED Clear Blue 100pk.....	£36.00

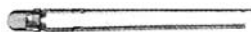
CYLINDRICAL 3mm BACKLIGHTING LED with concave lenses for applications requiring a uniform light over a large area. Ideal for backlighting, on front panel assemblies and may be used in place of incandescent bulbs in many applications. Cathode identified by the short lead. Sold individually or in packs of 100.



	IF	V _F	V _F	V _R	Int.at IF	View	Wave
	max.	typ.	max.	max.	mcd.	angle	length
Red	25mA	2V	2.5V	5V	7.0 @ 10mA	130°	625
Green	25mA	2.2V	2.5V	5V	5.5 @ 10mA	130°	565
Yellow	30mA	2.1V	2.5V	5V	3.5 @ 10mA	130°	590

CODE	TYPE	PRICE
LED133	Backlighting LED 3mm Red.....	£0.29
LED135	Backlighting LED 3mm Green.....	£0.29
LED137	Backlighting LED 3mm Yellow.....	£0.29
LED134	Backlighting LED 3mm Red 100pk.....	£23.00
LED136	Backlighting LED 3mm Green 100pk.....	£23.00
LED138	Backlighting LED 3mm Yellow 100pk.....	£23.00

3mm BLUE LED. A high intensity blue LED with a 430nm peak wavelength with intensity of 40mcd in a standard 3mm diffused blue package.



	IF	V _F	V _F	V _R	Int.at IF	View
	max.	typ.	max.	max.	mcd.	angle
Diffused Blue	30mA	4.5V	5.5V	5V	40 @ 20mA	60°

CODE	TYPE	PRICE
LED1460	High Intensity 3mm Diffused Blue LED.....	£1.49

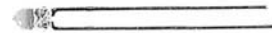
3MM WHITE LEDs 3mm white LEDs housed in a water clear package.



	Chromaticity	V _F	V _R	Int.at 20mA	View
		max.	max.	mcd.	angle
Kingbright White	X=0.30,Y=0.30	4.3V	5.0V	600	35°C
Nichia White	X=0.31,Y=0.32	4.0V	5.0V	900	60°C

CODE	TYPE	PRICE
622-122	3mm LED White Kingbright.....	£1.50
622-120	3mm LED White Nichia.....	£3.50

3.65mm BI-COLOUR WHITE/RED LED a bi-colour LED in a water clear 3.65mm, leaded package containing a white LED and a super bright red LED connected in inverse parallel. The viewing angle is 120°, applications include industrial, automotive, model railways and toys.



Technical Specification

Colour	Wavelength (nm)	Lum. int.(lm) @ IF (20mA)	IF max.(mA)	V _F typ.(V)	V _F max.(V)
Red	640	320	30	1.85	2.5
White	0.31/0.31 *	150	30	3.2	4

*Chromaticity coordinates

CODE	TYPE	PRICE
17-0182	3.65mm Bi-colour Red/White LED.....	£1.50

3mm PCB STATUS LEDs

SUBMINIATURE PCB STATUS INDICATOR a range of subminiature side stackable status indicators. Measuring just 6.5mm high by 2.5mm wide it is ideally suited to edge of board status indication where space is at a premium. Anode is front leg.



Technical Specification

Colour	Lens	V _F typ.	Wavelength	Lum. int. @ 20mA	View angle
Red	Diffused red	2	625	30mcd	40°
Green	Diffused green	2.2	568	10mcd	40°
Yellow	Diffused yellow	1.8	588	10mcd	40°

CODE	TYPE	PRICE
622-822	Subminiature PCB Status Indicator Red.....	£0.40
622-824	Subminiature PCB Status Indicator Green.....	£0.40
622-826	Subminiature PCB Status Indicator Yellow.....	£0.40

SUBMINIATURE TRI-LEVEL STATUS INDICATOR a Tri-level status indicator containing three 1.8mm LEDs housed in a black type 66 nylon housing. It has high reliability and a life measured in years. The leads are pre-trimmed for PCB mounting and the black case enhances contrast ratio. 70° viewing angle and case to UL94V-0.



Technical Specification

Colour	Wavelength	V _F typ.	IF max.	Lum. int @ 20mA
Red	625	2	30	15
Yellow	588	2.1	30	5
Green	568	2.2	25	10

CODE	TYPE	PRICE
17-2328	Subminiature Tri-level Status Indicator R/Y/G.....	£1.29
17-2326	Subminiature Tri-level Status Indicator Y/Y/G.....	£1.29

SQUIRES MODEL & CRAFT TOOLS

PCB MOUNTING 3mm LEDs. A range of 3mm diffused package LED's mounted in a black ABS moulding, meeting UL94V-0 flammability rating, which are end stackable to give a flush right angle mounting on PCB's. Sold individually.



	IF max.	V _F typ.	V _F max.	V _R max.	Int.at IF mcd.	View angle	Wave length
HE Red	30mA	2.0V	2.5V	5V	50 @ 20mA	60°	625
Green	25mA	2.2V	2.5V	5V	32 @ 20mA	60°	565
Yellow	30mA	2.1V	2.5V	5V	32 @ 20mA	60°	590

CODE	TYPE	PRICE
620-500	HE LED 3mm PCB Red.....	£0.30
620-505	HE LED 3mm PCB Green.....	£0.30
620-510	HE LED 3mm PCB Yellow.....	£0.30

TRI-LEVEL PCB MOUNTING 3MM LED a range of 3mm diffused package LEDs housed in a black ABS moulding for edge of board indication. The housing is supplied fitted with a spacer ensuring pin pitch is maintained at 2.54mm.



	IF max.	V _F typ.	V _F max.	V _R max.	Int.at IF mcd.	View angle	Wave length
HE Red	30mA	2.0V	2.5V	5V	50 @ 10mA	60°	625
Green	25mA	2.2V	2.5V	5V	32 @ 10mA	60°	565
Yellow	30mA	2.1V	2.5V	5V	32 @ 10mA	60°	590

CODE	TYPE	PRICE
622-125	3mm Tri-Level PCB Mounting LED Red.....	£0.99
622-130	3mm Tri-Level PCB Mounting LED Green.....	£0.99
622-135	3mm Tri-Level PCB Mounting LED Yellow.....	£0.99

5 and 12V 3mm LED. A range of 3mm LEDs incorporating an inbuilt series resistor enabling the LED to be directly connected to 5 or 12V supply lines. All devices are intensity and colour matched. Cathode identified by shorter lead. Sold individually or in packs of 100.



	IF max.	V _F typ.	V _R max.	P _{tot} mW(max.)	Int at IF mcd.	View angle	Wave length
5V HE Red	150mA	8V	5V	310	80 @ 10mA	60°	625
5V Green	150mA	8V	5V	310	32 @ 10mA	60°	565
5V Yellow	150mA	8V	5V	310	32 @ 10mA	60°	590
12V HE Red	150mA	15V	5V	310	80 @ 10mA	60°	625
12V Green	150mA	15V	5V	310	32 @ 10mA	60°	565
12V Yellow	150mA	15V	5V	310	32 @ 10mA	60°	590

	IF max.	V _F typ.	V _R max.	P _{tot} mW(max.)	Int at IF mcd.	View angle	Chromaticity coordinates x = 0.33 y = 0.34
12V White	10	14V	5V	120	1600	34°	

CODE	TYPE	PRICE
LED150	3mm 5V LED HE Red.....	£0.35
LED160	3mm 5V LED Green.....	£0.35
LED170	3mm 5V LED Yellow.....	£0.35
LED180	3mm 12V LED HE Red.....	£0.35
LED190	3mm 12V LED Green.....	£0.35
LED200	3mm 12V LED Yellow.....	£0.35
17-1909	3mm 12V LED White.....	£1.75
LED151	3mm 5V LED HE Red 100pk.....	£28.00
LED161	3mm 5V LED Green 100pk.....	£28.00
LED171	3mm 5V LED Yellow 100pk.....	£28.00
LED181	3mm 12V LED HE Red 100pk.....	£28.00
LED191	3mm 12V LED Green 100pk.....	£28.00
LED201	3mm 12V LED Yellow 100pk.....	£28.00

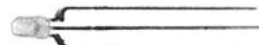
3mm BI-COLOUR LED. A range of miniature bi-colour LEDs offering several colour options housed in a milky white diffused package.



	IF max.	V _F typ.	V _F max.	V _R max.	Int.at IF mcd.	View angle	Wave length
Red	30mA	2V	2.5V	5V	40 @ 20mA	60°	625
Green	30mA	2.2V	2.5V	5V	40 @ 20mA	60°	565
Yellow	30mA	2.1V	2.5V	5V	40 @ 20mA	60°	590

CODE	TYPE	PRICE
LED240	3mm Bi-colour LED Red/Green.....	£0.50
LED250	3mm Bi-colour LED Red/Yellow.....	£0.50

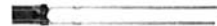
3mm TRI-COLOUR LED a miniature tri-colour LED offering several colour options housed in a milky white package. Uses a common cathode configuration and will display red, green or yellow when both diodes are connected together.



	IF max.	V _F typ.	V _F max.	V _R max.	Int.at IF mcd.	View angle	Wave length
Red	25mA	2V	2.5V	5V	50 @ 20mA	60°	625
Green	25mA	2.2V	2.5V	5V	50 @ 20mA	60°	565

CODE	TYPE	PRICE
LED265	3mm Tri-colour LED Red/Green.....	£0.50

CYLINDRICAL 3mm LED. A range of cylindrical profile 3mm LEDs in diffused coloured package. Cathode is identified by the shorter lead. Sold individually or in packs of 100.



	IF max.	V _F typ.	V _F max.	V _R max.	Int.at IF mcd.	View angle	Wave length
Red	20mA	2V	2.5V	5V	3.2 @ 10mA	100°	660
Green	30mA	2.2V	2.5V	5V	8.0 @ 10mA	100°	565
Yellow	30mA	2.1V	2.5V	5V	8.0 @ 10mA	100°	590

CODE	TYPE	PRICE
LED266	3mm Cylindrical LED Red.....	£0.25
LED267	3mm Cylindrical LED Green.....	£0.25
LED268	3mm Cylindrical LED Yellow.....	£0.25
LED269	3mm Cylindrical LED Amber.....	£0.25
620-325	3mm Cylindrical LED Red 100pk.....	£20.00
620-330	3mm Cylindrical LED Green 100pk.....	£20.00
620-335A	3mm Cylindrical LED Yellow 100pk.....	£20.00
620-340	3mm Cylindrical LED Amber 100pk.....	£20.00

5mm LEDs

STANDARD 5mm LED. A range of small LEDs suitable for PCB and panel mounting applications. 5mm diameter. Cathode identified by a flat on the body. Sold individually or in packs of 100.



	IF max.	V _F typ.	V _F max.	V _R max.	Int.at IF mcd.	View angle	Wave length
Red	20mA	1.7V	2V	5V	3.2 @ 10mA	60°	625
Green	25mA	2.2V	2.5V	5V	32 @ 10mA	60°	565
Yellow	30mA	2.1V	2.5V	5V	32 @ 10mA	60°	590

CODE	TYPE	PRICE
LED270	Standard 5mm LED Red.....	£0.20
LED280	Standard 5mm LED Green.....	£0.20
LED290	Standard 5mm LED Yellow.....	£0.20
LED295	Standard 5mm LED Amber.....	£0.20
LED296	Standard 5mm LED Orange.....	£0.20
LED300	ANY MIX OF 6 OF THE ABOVE 5mm LEDs.....	£1.00
LED271	Standard 5mm LED Red 100pk.....	£16.00
LED281	Standard 5mm LED Green 100pk.....	£16.00
LED291	Standard 5mm LED Yellow 100pk.....	£16.00
LED297	Standard 5mm LED Amber 100pk.....	£16.00
LED298	Standard 5mm LED Orange 100pk.....	£16.00

SQUIRES MODEL & CRAFT TOOLS

PINK 5mm LED An LED in an industry standard 5mm package in a unique pink colour. High brightness, suitable for PCB and panel mounting applications. Water clear lens, viewing angle 15°. typical chromaticity coordinates, x = 0.35 to 0.45, y = 0.15 to 0.25 (based on CIE1931 chart).



IF	V _F	V _R	Int.at IF	View	Wave
max.	max.	max.	mcd.	angle	length
30mA	3.4V	4V	5000 @20mA	15°	

CODE	TYPE	PRICE
17-0008	Pink 5mm LED.....	£1.99

LOW PROFILE 5mm LED low profile 5mm round LEDs in a diffused coloured package. Cathode is identified by flat on the body. Sold individually or in packs of 100.



IF	V _F	V _R	Int.at IF	View	Wave
max.	max.	max.	mcd.	angle	length
Red 30mA	2.5V	5V	50 @ 10mA	60°	625
Green 25mA	2.5V	5V	20 @ 10mA	60°	565
Yellow 30mA	2.5V	5V	20 @ 10mA	60°	590

CODE	TYPE	PRICE
LED301	Low Profile 5mm LED Red.....	£0.25
LED302	Low Profile 5mm LED Green.....	£0.25
LED303	Low Profile 5mm LED Yellow.....	£0.25
320-340	Low Profile 5mm LED Red 100pk.....	£20.00
320-345	Low Profile 5mm LED Green 100pk.....	£20.00
320-350	Low Profile 5mm LED Yellow 100pk.....	£20.00

LOW CURRENT 5mm LED. A range of high efficiency, low current LEDs housed in a diffused coloured package. Luminous intensity remains constant down to 2mA. These LEDs are ideally suited to portable equipment. Sold individually or in packs of 100.



IF	V _F	V _F	V _R	Int.at IF	View	Wave
max.	typ.	max.	max.	mcd.	angle	length
Red 20mA	2V	2.5V	5V	5 @ 2mA	120°	660
Green 20mA	2.2V	2.5V	5V	3.2 @ 2mA	120°	565
Yellow 20mA	2.1V	2.5V	5V	3.2 @ 2mA	120°	590

CODE	TYPE	PRICE
LED310	Low Current LED 5mm Red.....	£0.25
LED320	Low Current LED 5mm Green.....	£0.25
LED330	Low Current LED 5mm Yellow.....	£0.25
LED311	Low Current LED 5mm Red 100pk.....	£20.00
LED321	Low Current LED 5mm Green 100pk.....	£20.00
LED331	Low Current LED 5mm Yellow 100pk.....	£20.00

CLEAR 5mm LED. A range of high efficiency 5mm LED's housed in a water clear package. All devices are intensity and colour matched. Cathode identified by flat on body. Sold individually or in packs of 100.



IF	V _F	V _F	V _R	Int.at IF	View	Wave
max.	typ.	max.	max.	mcd.	angle	length
Red 30mA	2.0V	2.5V	5V	200@ 10mA	30°	625
Green 30mA	2.2V	2.5V	5V	80 @ 10mA	30°	565
Yellow 30mA	2.1V	2.5V	5V	80 @ 10mA	30°	590

CODE	TYPE	PRICE
620-700	Clear LED 5mm Red.....	£0.20
620-705	Clear LED 5mm Green.....	£0.20
620-710	Clear LED 5mm Yellow.....	£0.20
620-701	Clear LED 5mm Red 100pk.....	£16.00
620-706	Clear LED 5mm Green 100pk.....	£16.00
620-711	Clear LED 5mm Yellow 100pk.....	£16.00

SUPERBRIGHT 5mm LED'S. A range of superbright 5mm LED's offering a luminous intensity in excess of 2000mcd housed in a water clear package employing a GaAlAs dice. A range offering outstanding performance at extremely competitive prices. Sold individually.



IF	V _F	V _F	V _R	Int.at IF	View	Wave
max.	typ.	max.	max.	mcd.	angle	length
620-750 30mA	1.85V	2.5V	5V	1000@ 20mA	30°	660
620-755 30mA	1.85V	2.5V	5V	1600@ 20mA	30°	660
620-760 30mA	1.85V	2.5V	5V	2000@ 20mA	30°	660
620-765 30mA	1.85V	2.5V	5V	300 @ 20mA	30°	565
620-770 30mA	1.85V	2.5V	5V	400 @ 20mA	30°	590

CODE	TYPE	PRICE
620-750	Superbright LED 5mm Red 1000mcd.....	£0.25
620-755	Superbright LED 5mm Red 1600mcd.....	£0.30
620-760	Superbright LED 5mm Red 2000mcd.....	£0.35
620-765	Superbright LED 5mm Green 300mcd.....	£0.25
620-770	Superbright LED 5mm Yellow 400mcd.....	£0.35

SUPERBRIGHT 5mm LED'S. A range of superbright 5mm LED's offering a luminous intensity in excess of 300mcd housed in diffused coloured packages employing GaAlAs dice. Sold individually.



IF	V _F	V _F	V _R	Int.at IF	View	Wave
max.	typ.	max.	max.	mcd.	angle	length
620-725 30mA	1.85V	2.5V	5V	200@ 20mA	120°	660
620-730 30mA	1.85V	2.5V	5V	300@ 20mA	120°	660

CODE	TYPE	PRICE
620-725	Superbright LED 5mm Red 200mcd.....	£0.25
620-730	Superbright LED 5mm Red 300mcd.....	£0.25

5mm BLUE LED a high intensity blue LED with a 430nm peak wavelength and intensity of 50mcd. The device is in a standard 5mm package.



	IF	V _F	V _F	V _R	Int.at IF	View
	max.	typ.	max.	max.	mcd.	angle
Diffused Blue	30mA	4.5V	5.5V	5V	50@20 mA	50°
Water Clear	25mA		4.2V	5V	1200@20 mA	15°

CODE	TYPE	PRICE
LED1480	High Intensity 5mm Diffused Blue LED.....	£0.95
622-862	High Intensity 5mm Water Clear Blue LED.....	£0.95

5MM WHITE LED A range of 5mm high intensity white LED's from Nichia, Kingbright and TruOpto . Housed in water clear packages the devices are suited to a wide range of applications and can be used as direct replacements for filament lamps.



	V _F	V _R	Chromaticity	Int.@20mA	View
	max.	max.		mcd.	angle
KB 300mcd	4.0V	5.0V	X=0.31,Y=0.32	300	16°
Nic 1100mcd	4.0V	5.0V	X=0.31,Y=0.32	1100	50°
KB 3200mcd	4.0V	5.0V	X=0.34,Y=0.35	3200	20°
TO 3000mcd	4.2V	5.0V	X=0.31,Y=0.32	3000	15°
TO12000mcd	4.0V	5V	X=0.29,Y=0.28	8400 to 12000	15°

CODE	TYPE	PRICE
622-140	Nichia 5mm White LED 1100mcd.....	£1.75
622-145	Kingbright 5mm White LED 300mcd.....	£1.25
622-147	Kingbright 5mm White LED 3200mcd.....	£1.75
622-860	TruOpto 5mm White LED 3000mcd.....	£0.90
17-0004	TruOpto 5mm White LED 12000mcd.....	£1.25

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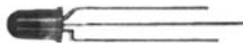
5mm BI-COLOUR LED. A range of 5mm LEDs offering several different colour options. Comprises of two LEDs connected in inverse parallel, housed in a milky white package. Applications include polarity indication etc.



	I _F max.	V _F typ.	V _F max.	V _R max.	Int.at I _F mcd.	View angle	Wave length
Red	30mA	2V	2.5V	5V	40 @ 20mA	60°	625
Green	30mA	2.2V	2.5V	5V	40 @ 20mA	60°	565
Yellow	30mA	2.1V	2.5V	5V	40 @ 20mA	60°	590

CODE	TYPE	PRICE
LED440	5mm Bi-colour LED Red/Green.....	£0.50
LED450	5mm Bi-colour LED Red/Yellow.....	£0.50
LED460	5mm Bi-colour LED Green/Yellow.....	£0.50

5mm TRI-COLOUR LED. A range of 5mm tri-colour LEDs offering several colour options, housed in a milky white package. Both diodes are connected in a common cathode configuration and by connecting both together a third colour is obtained.



	I _F max.	V _F typ.	V _F max.	V _R max.	Int.at I _F mcd.	View angle	Wave length
Red	30mA	2V	2.5V	5V	90 @ 20mA	60°	625
Green	30mA	2.2V	2.5V	5V	70 @ 20mA	60°	565
Yellow	30mA	2.1V	2.5V	5V	60 @ 20mA	60°	590

CODE	TYPE	PRICE
LED470	5mm Tri-colour LED Red/Green.....	£0.50
LED480	5mm Tri-colour LED Red/Yellow.....	£0.50
LED490	5mm Tri-colour LED Green/Yellow.....	£0.50

FULL COLOUR 5MM LED 60° VIEWING ANGLE A 5mm LED offering a wide combination of colours housed in an industry standard 5mm package with a white diffused lens. The LED contains red, green and two blue LED chips with all LEDs terminated to connections enabling the user to achieve a wide range of colour permutations.



Technical specification

Colour	I _F max	V _F typ	V _F max	V _R max	lum.int.(mcd) @I _F (20mA)	View angle	Wave length (nm)
Red	30mA	2	2.5	5	30	60°	625
Green	25mA	2.2	2.5	5	25	60°	565
Blue	30mA	4	4.5	5	20	60°	430

CODE	TYPE	PRICE
622-864	Multicolour 5mm LED.....	£1.99

CYLINDRICAL 5mm LED. A range of cylindrical profile 5mm diameter LEDs housed in diffused coloured packages. Cathode is the shorter lead. Sold individually or in packs of 100..



	I _F max.	V _F typ.	V _F max.	V _R max.	Int.at I _F mcd.	View angle	Wave length
Red	20mA	2V	2.5V	5V	3.2 @ 10mA	100°	660
Green	30mA	2.2V	2.5V	5V	8.0 @ 10mA	100°	565
Yellow	30mA	2.1V	2.5V	5V	8.0 @ 10mA	100°	590

CODE	TYPE	PRICE
LED491	5mm Cylindrical LED Red.....	£0.25
LED492	5mm Cylindrical LED Green.....	£0.25
LED493	5mm Cylindrical LED Yellow.....	£0.25
LED494	5mm Cylindrical LED Amber.....	£0.25
620-335B	5mm Cylindrical LED Red 100pk.....	£20.00
620-336	5mm Cylindrical LED Green 100pk.....	£20.00
620-337	5mm Cylindrical LED Yellow 100pk.....	£20.00
LED495	5mm Cylindrical LED Amber 100pk.....	£20.00

5V and 12V LEDs. A range of 5mm LEDs incorporating an inbuilt series resistor enabling the LED to be directly connected to 5 or 12V supply lines. All devices are intensity and colour matched, housed in a coloured diffused package. Sold individually or in packs of 100.



	I _F max.	V _F typ.	V _F max.	Ptot mW max	Int at I _F mcd.	View angle	Wave length
5V HE Red	150mA	8V	5V	310	80 @ 10mA	120°	630
5V Green	150mA	8V	5V	310	32 @ 10mA	120°	565
5V Yellow	150mA	8V	5V	310	32 @ 10mA	120°	590
12V HE Red	150mA	15V	5V	310	80 @ 10mA	120°	630
12V Green	150mA	15V	5V	310	32 @ 10mA	120°	565
12V Yellow	150mA	15V	5V	310	32 @ 10mA	120°	590

CODE	TYPE	PRICE
LED350	5mm 5V LED HE Red.....	£0.35
LED360	5mm 5V LED Green.....	£0.35
LED370	5mm 5V LED Yellow.....	£0.35
LED380	5mm 12V LED HE Red.....	£0.35
LED390	5mm 12V LED Green.....	£0.35
LED400	5mm 12V LED Yellow.....	£0.35
LED351	5mm 5V LED HE Red 100pk.....	£28.00
LED361	5mm 5V LED Green 100pk.....	£28.00
LED371	5mm 5V LED Yellow 100pk.....	£28.00
LED381	5mm 12V LED HE Red 100pk.....	£28.00
LED391	5mm 12V LED Green 100pk.....	£28.00
LED401	5mm 12V LED Yellow 100pk.....	£28.00

5MM BI-POLAR LED A range of miniature 5mm round LED's housed in a diffused coloured package comprising two LED's of the same colour connected in inverse parallel. All devices are intensity and colour matched.



	I _F max.	V _F typ.	V _F max.	V _R max.	Int.at I _F mcd.	View angle	Wave length
HE Red	30mA	2.0V	2.5V	5V	40 @ 20mA	60°	625
Green	25mA	2.2V	2.5V	5V	20 @ 20mA	60°	565
Yellow	30mA	2.1V	2.5V	5V	20 @ 20mA	60°	590

CODE	TYPE	PRICE
622-150	5mm Bi-Polar LED Red.....	£0.30
622-155	5mm Bi-Polar LED Green.....	£0.30
622-160	5mm Bi-Polar LED Yellow.....	£0.30

4.8mm PCB STATUS LEDs

PCB MOUNTING 4.8MM LED A range of 4.8mm diffused package LEDs mounted in a black ABS moulding meeting UL94V-0 flammability rating which is end stackable to give a flush right angle mounting on printed circuit boards. Available in single or bi-level options these LEDs are ideally suited to edge of board logic status indicators etc.



	I _F max.	V _F typ.	V _F max.	V _R max.	Int.at I _F mcd.	View angle	Wave length
HE Red	30mA	2.0V	2.5V	5V	32 @ 20mA	60°	625
Green	25mA	2.2V	2.5V	5V	32 @ 20mA	60°	565
Yellow	30mA	2.1V	2.5V	5V	32 @ 20mA	60°	590

CODE	TYPE	PRICE
622-157	Single Level 4.8mm HE Red.....	£0.30
622-158	Single Level 4.8mm Green.....	£0.30
622-159	Single Level 4.8mm Yellow.....	£0.30
622-161	Bi-Level 4.8mm HE Red.....	£0.60
622-162	Bi-Level 4.8mm Green.....	£0.60

SQUIRES MODEL & CRAFT TOOLS

8mm LEDs

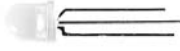
HIGH INTENSITY 8mm LED. A range of high intensity 8mm LEDs housed in a diffused coloured package. Particularly suited to warning devices, alarms etc.



	I _F max.	V _F typ.	V _F max.	V _R max.	Int.at I _F mcd.	View angle	Wave length
Red	30mA	2V	2.8V	5V	100 @ 20mA	140°	625
Green	30mA	2.2V	2.8V	5V	70 @ 20mA	140°	565
Yellow	30mA	2.1V	2.8V	5V	70 @ 20mA	140°	590

CODE	TYPE	PRICE
LED530	8mm LED Red.....	£0.30
LED540	8mm LED Green.....	£0.30
LED550	8mm LED Yellow.....	£0.30

TRI-COLOUR 8mm LEDs. A range of 8mm tri-colour LEDs housed in a white diffused package. Two diodes are connected in a common cathode configuration and when both are connected together a third colour is obtained.



	I _F max.	V _F typ.	V _F max.	V _R max.	Int.at I _F mcd.	View angle	Wave length
Red	30mA	2.0V	2.5V	5V	90 @ 20mA	50°	625
Green	25mA	2.2V	2.5V	5V	60 @ 20mA	50°	565

CODE	TYPE	PRICE
621-050	Tri-colour 8mm LED Red/Green.....	£0.65

10mm LEDs

HIGH INTENSITY 10mm LED. A range of high intensity 10mm LEDs housed in a diffused coloured package. Highly visible, particularly suited to warning devices and alarms etc.



	I _F max.	V _F typ.	V _F max.	V _R max.	Int.at I _F mcd.	View angle	Wave length
Red	30mA	1.7V	2V	5V	100 @ 20mA	100°	625
Green	30mA	2.2V	2.5V	5V	70 @ 20mA	100°	565
Yellow	30mA	2.1V	2.5V	5V	70 @ 20mA	100°	590

CODE	TYPE	PRICE
LED560	10mm LED Red.....	£0.30
LED570	10mm LED Green.....	£0.30
LED580	10mm LED Yellow.....	£0.30
LED590	10mm LED Amber.....	£0.30

ULTRA BRIGHT 10mm LED A high brightness LED housed in a 10mm water clear package. The device is particularly suited to warning devices, alarms and indication etc. The white LED has a InGaN dice.



Technical specification

I _F max	V _F typ	V _F max	V _R max	lum.int.(mcd) @I _F (20mA)	View angle	Chromaticity coordinates*
30mA	3.65V	4.2V	5V	600	15°	x=0.33 y=0.34

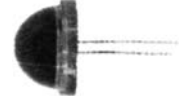
*Typical values based on CIE1931

CODE	TYPE	PRICE
17-0022	Ultrabright 10mm LED 600mcd White.....	£0.99

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20mm LEDs

HIGH INTENSITY 20mm LEDs. A range of high intensity 20mm diameter LEDs housed in a diffused package. Each comprises of six LEDs connected in series parallel. These highly visible devices with large viewing area are particularly suited for use in display panels, warning signals, security systems etc.



	I _F max.	V _F typ.	V _F max.	V _R max.	Int.at I _F mcd.	View angle	Wave length
Red	30mA	6V	8.4V	15V	45 @ 20mA	120°	625
Green	30mA	6.6V	8.4V	15V	40 @ 20mA	120°	565
Yellow	30mA	6.3V	8.4V	15V	30 @ 20mA	120°	590

CODE	TYPE	PRICE
LED582	20mm LED Red.....	£1.99
LED585	20mm LED Green.....	£1.99
LED587	20mm LED Yellow.....	£1.99

LED CLUSTERS

26MM LED CLUSTER an LED cluster array enclosed in a 26mm housing containing 7 GaAIAs ultrabright red LEDs and 8 GaP bright green LEDs. LEDs are connected in series providing typical supply voltages of 12V and 16V for red and green LEDs respectively. The cluster is suited to illuminated sign production where a bi-colour LED output is required.



Technical Specification

	typ.I _F =20mA max	GaAIAs(red)	GaP (green)
Forward voltage		12.3V	16.8V
		14.0V	19.2V
Reverse current (V _R =24V)		70µA	80µA
Luminous intensity max (I _F =20mA)		2500mcd	1600mcd
Wavelength		660nm	565nm
Spectrum radiation band width		20nm	30nm
Frequency response		8MHz	4MHz
Forward current max		30mA	30mA
Power dissipation max		0.4W	0.6W
Reverse voltage max		24V	24V
Temperature range		-25 to +60°C	

CODE	TYPE	PRICE
622-149	26mm LED Cluster.....	£6.99

52MM LED CLUSTER an LED cluster array enclosed in a waterproof 52mm housing containing 50 GaAIAs ultrabright red 5mm LEDs connected in series parallel. The cluster provides a luminous intensity in excess of 23000mcd which makes it particularly suited to external illuminated sign systems. Supply voltage 9.6 to 11.2V DC.



Technical Specification

	(I _F =200mA)
Forward voltage	9.6V typ. 11.2V max.
Reverse current (V _R =18V)	100µA
Luminous intensity(I _F =200mA)	16000mcd (min) - 23000mcd (max)
Wavelength	660nm
Spectrum radiation bandwidth	20nm
Frequency response	8MHz
Full viewing angle	40°
Forward current max	250mA
Power dissipation	2.5W
Reverse voltage (max)	5V
Operating temperature	-5° to +65°C

CODE	TYPE	PRICE
622-152	52mm LED Cluster.....	£13.99

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FLASHING LEDs

Flashing LEDs have an inbuilt IC to produce a continuous flash at a frequency of about 3Hz and in the supply voltage range of 9-12V dc no series resistor is required, useful in alarms and warning devices and to great effect in many modelling applications.

FLASHING 3mm LED. A range of 3mm LEDs in a diffused coloured package with an inbuilt IC to produce a continuous flash at a frequency of 3Hz. No series resistor required in the supply range 9-12V dc.



	I _F max.	V _F typ.	V _F max.	V _R max.	Int.at I _F mcd.	View angle	Wave length
HE Red	38-56mA	9-12V	13V	0.5V	32 @ 9V	60°	625
Green	38-56mA	9-12V	13V	0.5V	20 @ 9V	60°	565
Yellow	38-56mA	9-12V	13V	0.5V	20 @ 9V	60°	590
Blue	20mA	5-14V	4.2V	5V	60 @ 9V	60°	468

CODE	TYPE	PRICE
LED591	Flashing LED 3mm Red Pack of 2.....	£1.50
LED601	Flashing LED 3mm Green Pack of 2.....	£1.50
LED611	Flashing LED 3mm Yellow Pack of 2.....	£1.50
620-064	Flashing LED 3mm Blue SINGLE.....	£2.50

RAINBOW COLOUR CYCLING 5MM LED Innovative, eye catching colour change LEDs. The 5mm LED contains an inbuilt IC that causes the LED to cycle through red, green and blue elements, individually and then in combination. Colour cycles at a frequency of 1.5Hz. Water clear or diffused lens types. Ideal for use in warning devices, indication panels, alarm systems, mood lighting and toys.



Technical specification							
Colour	I _F max	V _F typ	V _F max	V _R max	lum.int.(mcd) @I _F =30mA	View angle	Wave length (nm)
Red wc	30	5	6	5	1200	30°	640
Green wc	30	5	6	5	3000	30°	520
Blue wc	30	5	6	5	1500	30°	470
Red dif	30	5	6	5	200	30°	640
Green dif	30	5	6	5	500	30°	520
Blue dif	30	5	6	5	300	30°	470

wc = Water Clear
dif = Diffused

CODE	TYPE	PRICE
17-0010	Flashing LED 5mm Rainbow Clear Package.....	£0.79
17-0012	Flashing LED 5mm Rainbow Diffused Package...	£0.79

FLASHING LED 5mm. A range of 5mm LEDs in a diffused coloured package with an inbuilt IC to produce a continuous flash at a frequency of 3Hz. No series resistor required in the supply range of 9-12V dc.



	I _F max.	V _F typ.	V _F min.	V _R max.	Int.at I _F mcd.	View angle	Wave length
Red	50mA	9-12V	3.5V	0.5V	8 @ 9V	120°	660
Green	50mA	9-12V	3.5V	0.5V	32 @ 9V	120°	565
Yellow	50mA	9-12V	3.5V	0.5V	32 @ 9V	120°	590
Blue	20mA	5-14V	4.2V	5V	80 @ 9V	60°	468

CODE	TYPE	PRICE
LED620	Flashing LED 5mm Red Pack of 2.....	£1.20
LED630	Flashing LED 5mm Green Pack of 2.....	£1.20
LED640	Flashing LED 5mm Yellow Pack of 2.....	£1.20
620-065	Flashing LED 5mm Blue SINGLE.....	£2.50

5mm FLASHING LED A range of high brightness 5mm LEDs in a water clear package. Each LED contains an IC that produces a continuous blink at a frequency of 1.5Hz. Superior weather resistance. Supply voltage 4.5 to 6.0V. Suitable for warning devices, alarms and indicators etc.



Technical specification

Colour	I _{OP} max	I _{OL} typ	V _{DD} min	V _{DD} max	lum.int.(mcd) @I _F =20mA	View angle	Wave length
	(mA)	(mA)	(V)	(V)			(nm)
Red	40	25	4.5	6.0	1560	30°	625
Yellow	40	25	4.5	6.0	1560	30°	590
Green	40	25	4.5	6.0	4200	30°	525
Blue	40	25	4.5	6.0	3000	30°	470

CODE	TYPE	PRICE
17-0014	Flashing LED Red.....	£0.30
17-0016	Flashing LED Yellow.....	£0.30
17-0018	Flashing LED Green.....	£0.30
17-0020	Flashing LED Blue.....	£0.30
17-0021	Flashing LED White.....	£0.70

FLASHING LED 8mm. A range of 8mm LEDs in a diffused coloured package with an inbuilt IC to produce a continuous flash of 3Hz. Within the supply voltage of 9-12V dc no series resistor is required.



	I _F typ.	V _F typ.	V _F min.	V _R max.	Int.at I _F mcd.	View angle	Wave length
Red	45mA	9-12V	3.5V	0.5V	100 @ 9V	140°	625
Green	45mA	9-12V	3.5V	0.5V	70 @ 9V	140°	565
Yellow	45mA	9-12V	3.5V	0.5V	70 @ 9V	140°	595
Blue	20mA	5-14V	4.2V	5V	75 @ 9V	60°	468

CODE	TYPE	PRICE
LED650	Flashing LED 8mm Red Each.....	£0.95
LED660	Flashing LED 8mm Green Each.....	£0.95
LED670	Flashing LED 8mm Yellow Each.....	£0.95
620-066	Flashing LED 8mm Blue SINGLE.....	£2.60

FLASHING LED 10mm. A range of 10mm LEDs in a diffused coloured package with an inbuilt IC to produce a continuous flash of 3Hz. Within the supply voltage of 9-12V dc no series resistor is required.



	I _F max.	V _F typ.	V _F min.	V _R max.	Int.at I _F mcd.	View angle	Wave length
Red	56mA	9-12V	3.5V	0.5V	100 @ 9V	60°	625
Green	56mA	9-12V	3.5V	0.5V	70 @ 9V	60°	565
Yellow	56mA	9-12V	3.5V	0.5V	70 @ 9V	60°	590
Blue	20mA	5-14V	4.2V	5V	70 @ 9V	60°	468

CODE	TYPE	PRICE
LED673	Flashing LED 10mm Red EACH.....	£0.95
LED675	Flashing LED 10mm Green EACH.....	£0.95
LED677	Flashing LED 10mm Yellow EACH.....	£0.95
620-067	Flashing LED 10mm Blue SINGLE.....	£2.99

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LED PANEL CLIPS AND HOLDERS

LENS MOUNTS 3mm a range of combined lens and panel clips suitable for use with 3mm LED's. The lenses are available in colours to suit corresponding LED colour employed and acts to diffuse the light and offer improved protection to the LED. The clip is inserted into a 4.34mm hole the LED clips firmly into place from the rear. Available in standard or low profile versions. Standard type is suitable for panel thickness between 0.8 and 1.6mm and the low profile is suitable for 1.6 to 3.2mm. Sold individually.



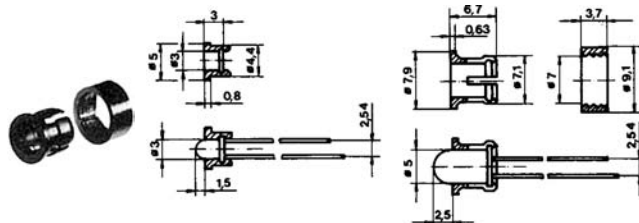
CODE	TYPE	PRICE
17-1000	L. Profile Lens Mount Red.....	£0.35
17-1002	L. Profile Lens Mount Clear.....	£0.35
17-1004	Standard Lens Mount Red.....	£0.35
17-1006	Standard Lens Mount Clear.....	£0.35

LENS MOUNTS 5mm a range of combined lens and panel clips suitable for use with 5mm LED's. The lenses are available in colours to suit corresponding LED colour employed and acts to diffuse the light and offer improved protection to the LED. The clip is inserted into a 6.35mm hole the LED clips firmly into place from the rear. Available in standard or low profile versions, the standard clips protrude 5mm above front panel. A retaining ring is available to suit the low profile version for use with panels less than 4.8mm thick. Standard type is suitable for panel thickness between 1.6 and 3.2mm and the low profile is suitable for 0.8 to 6.35mm. Sold individually.



CODE	TYPE	PRICE
621-250	L. Profile Lens Mount Red.....	£0.35
621-255	L. Profile Lens Mount Amber.....	£0.35
621-260	L. Profile Lens Mount Green.....	£0.35
621-265	L. Profile Lens Mount Yellow.....	£0.35
621-270	L. Profile Lens Mount Clear.....	£0.35
621-272	L. Profile Lens Mount Blue.....	£0.35
621-275	Retaining Ring L. Profile Lens.....	£0.20
621-280	Standard Profile Lens Mount Red.....	£0.35
621-285	Standard Profile Lens Mount Amber.....	£0.35
621-290	Standard Profile Lens Mount Green.....	£0.35
621-295	Standard Profile Lens Mount Yellow.....	£0.35
621-300	Standard Profile Lens Mount Clear.....	£0.35
621-302	Standard Profile Lens Mount Blue.....	£0.35

LED PANEL CLIPS one part 3mm and two part 5mm clips to suit the 3 and 5mm LED's listed.



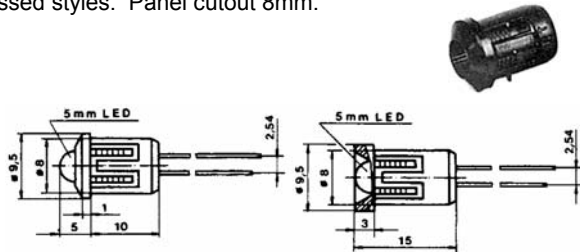
CODE	TYPE	PRICE
LEC680	3mm LED Panel Clip Pack of 10.....	£0.75
LEC690	5mm LED Panel Clip Pack of 10.....	£0.99

RAPID ASSEMBLY 5mm LED CLIPS a panel mounting single part 5mm LED clip employing a novel design enabling the user to mount the led assembly from front or rear. Panel cutout 8mm. Maximum panel thickness 1.2mm manufactured in black samporene. Sold in Packs of 5.



CODE	TYPE	PRICE
621-200	Rapid Assembly 5mm LED Clip Pack of 5.....	£0.75

5mm BEZEL CLIPS attractive push fit panel clips in black nylon, offering a professional appearance at low cost. Prominent or recessed styles. Panel cutout 8mm.



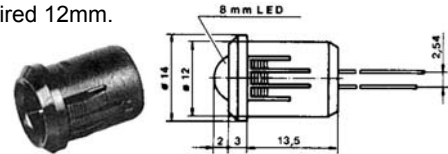
CODE	TYPE	PRICE
LEC702	5mm Bezel Clip Prominent Pack of 5.....	£1.50
LEC705	5mm Bezel Clip Recessed Pack of 5.....	£1.50

CHROME BEZEL LED HOLDERS attractive chrome plated brass recessed LED bezels which form a high quality panel product. The LED is held in position by a simple retaining mount which push fits into the rear of the holder. Supplied complete with mounting nut and washer. Panel cutout for the 5mm type - 8mm, and 6.3mm for the 3mm type.



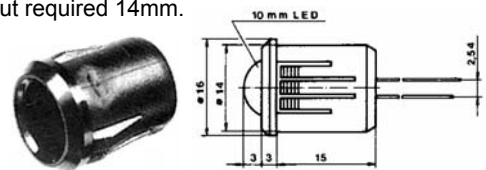
CODE	TYPE	PRICE
LEC710	Chrome Bezel LED Holder 3mm.....	£0.70
LEC720	Chrome Bezel LED Holder 5mm.....	£0.70

8mm BEZEL PANEL CLIP attractive push fit panel clip for 8mm LED's in black nylon offering a professional finish at low cost. Panel cutout required 12mm.



CODE	TYPE	PRICE
LEC730	8mm Bezel Panel Clip EACH.....	£0.35

10mm BEZEL PANEL CLIP attractive push fit panel clips for 10mm LED's in black nylon offering a professional finish at low cost. Panel cutout required 14mm.



CODE	TYPE	PRICE
LEC740	10mm Bezel Panel Clip EACH.....	£0.40

LED AND DIODE MOUNTS mounting blocks for wire-ended LED's and axial lead components, e.g. diodes, capacitors etc. The LED mounting block can accept 3 or 5mm diameter LED's and allows them to be mounted, raised from or at right angles to the PCB. Leads are kept separated to avoid short circuits and the LED body fits into a circular recess. The diode cradle can be used for diodes or other axial leaded components which have to be mounted vertically, due to space considerations or PCB modifications. With components fitted in this fashion, the risk of damage to PCB tracks caused by pressure on the component, is greatly reduced. Sold individually.



CODE	TYPE	PRICE
622-500	LED Mount.....	£0.25
622-505	Diode Cradle.....	£0.15

SQUIRES MODEL & CRAFT TOOLS

LED SPACER MOUNTS LED mounting spacers featuring an internally tapered barrier which guides the leads and eliminates the possibility of bending or shorting. The internal configuration also assures positive self-alignment on 0.1" centres. Sold individually.



CODE	TYPE	Length	PRICE
622-510	3mm LED Spacer	3.0mm.....	£0.20
622-515	3mm LED Spacer	9.1mm.....	£0.22
622-520	3mm LED Spacer	23.5mm.....	£0.22
622-525	5mm LED Spacer	3mm.....	£0.20
622-530	5mm LED Spacer	7.6mm.....	£0.22
622-535	5mm LED Spacer	12.7mm.....	£0.22
622-540	5mm LED Spacer	19mm.....	£0.22

SOLDERLESS LED CONNECTOR

SOLDERLESS LED CONNECTOR a novel LED connector with 200mm leads pre-stripped and tinned, which simply clips to the rear of the LED and is retained in position by a patented clamping device. Suitable for use with all LED's with leads on a 2.54mm pitch. Dimensions 14.5 x 2.6mm. Moulded in Toray with UL94V-0.



CODE	TYPE	PRICE
621-350	LED Connector.....	£0.89

LED LENS/LIGHTPIPES

COMBINED LENS/LIGHTPIPE this range of combined lens and lightpipes is panel mounted and suitable for PCB mounted or surface mount LEDs. The lens end has Fresnel rings which increase the viewing angle and the other end is concave to collect the light. To increase stability, a grommet is available for shorter lengths, whilst a metal spring clip is for longer lengths.

Overall lengths available:
5.8, 10.9, 16.0, 21.1,
26.2, 31.2, 36.3, 41.4,
46.5 and 51.6mm.



Technical Specification

Mounting hole diameter:	4.32mm
Lens diameter:	4.83mm
Height above panel:	0.76mm
Min panel thickness:	1.57mm
Material:	lens/lightpipe clear optical grade acrylic grommet black polyethylene spring clip spring steel

CODE	TYPE	PRICE
622-866	Combined Lens/Lightpipe 5.8mm.....	£0.45
622-868	Combined Lens/Lightpipe 10.9mm.....	£0.45
622-870	Combined Lens/Lightpipe 16.0mm.....	£0.45
622-872	Combined Lens/Lightpipe 21.1mm.....	£0.45
622-874	Combined Lens/Lightpipe 26.2mm.....	£0.50
622-876	Combined Lens/Lightpipe 31.2mm.....	£0.50
622-878	Combined Lens/Lightpipe 36.3mm.....	£0.50
622-880	Combined Lens/Lightpipe 41.4mm.....	£0.50
622-882	Combined Lens/Lightpipe 46.5mm.....	£0.50
622-884	Combined Lens/Lightpipe 51.6mm.....	£0.50
622-886	Grommet.....	£0.20
622-888	Spring Clip.....	£0.25

SHAPED LEDS

RECTANGULAR 5 X 2mm LEDS. A range of rectangular profile 5 x 2mm LEDs in a diffused coloured package with a matt finish top to the device provides an even spread of lighted area. Sold individually.



	IF	V _F	V _F	V _R	Int.at IF	View	Wave
	max.	typ.	max.	max.	mcd.	angle	length
Red	30mA	2.0V	2.5V	5V	8.0 @10mA	90°	660
Green	30mA	2.2V	2.5V	5V	3.5 @10mA	90°	565
Yellow	30mA	2.1V	2.5V	5V	8.0 @10mA	90°	590

CODE	TYPE	PRICE
621-425	Rect. LED 5 x 2mm Red.....	£0.20
621-430	Rect. LED 5 x 2mm Green.....	£0.20
621-435	Rect. LED 5 x 2mm Yellow.....	£0.20

RECTANGULAR 5 X 2mm FLANGELESS LEDS. A range of rectangular profile 5 x 2mm LEDs in a diffused coloured package with a flangeless construction allowing stacking without leaving gaps. Sold individually.



	IF	V _F	V _F	V _R	Int.at IF	View	Wave
	max.	typ.	max.	max.	mcd.	angle	length
Red	20mA	2.0V	2.5V	5V	1.25@10mA	120°	660
HE Red	20mA	2.0V	2.5V	5V	2.0 @10mA	120°	625
Super Red	20mA	1.85V	2.5V	5V	12.5@10mA	120°	660
Green	20mA	2.2V	2.5V	5V	8.0 @10mA	120°	565
Yellow	20mA	2.1V	2.5V	5V	8.0 @10mA	120°	590
Amber	20mA	2.1V	2.5V	5V	8.0 @10mA	120°	625

CODE	TYPE	PRICE
621-450	Rect. LED 5 x 2mm Flangeless Red.....	£0.20
621-455	Rect. LED 5 x 2mm Flangeless HE Red.....	£0.20
621-460	Rect. LED 5 x 2mm Flangeless S. Red.....	£0.20
621-465	Rect. LED 5 x 2mm Flangeless Green.....	£0.20
621-470	Rect. LED 5 x 2mm Flangeless Yellow.....	£0.20
621-475	Rect. LED 5 x 2mm Flangeless Amber.....	£0.20

RECTANGULAR 5 X 2.5mm FLANGELESS LEDS. A range of rectangular profile 5 x 2.5mm LEDs in a diffused coloured package with a flangeless construction which permits stacking with no gaps. The cathode is the shorter lead. Sold individually.



	IF	V _F	V _F	V _R	Int.at IF	View	Wave
	max.	typ.	max.	max.	mcd.	angle	length
Red	20mA	2.0V	2.5V	5V	1.25@10mA	100°	660
Green	30mA	2.2V	2.5V	5V	8.0 @10mA	100°	565
Yellow	30mA	2.1V	2.5V	5V	8.0 @10mA	100°	590
Amber	30mA	2.0V	2.5V	5V	12.5@10mA	100°	625

CODE	TYPE	PRICE
621-400	Rect. LED 5 x 2.5mm Flangeless Red.....	£0.20
621-405	Rect. LED 5 x 2.5mm Flangeless Green.....	£0.20
621-410	Rect. LED 5 x 2.5mm Flangeless Yellow.....	£0.20
621-415	Rect. LED 5 x 2.5mm Flangeless Amber.....	£0.20

RECTANGULAR 7 X 2.5mm FLANGELESS LEDS. A range of rectangular profile 7 x 2.5mm LEDs in a diffused coloured package with a flangeless construction which permits stacking with no gaps. Sold individually.



	IF	V _F	V _F	V _R	Int.at IF	View	Wave
	max.	typ.	max.	max.	mcd.	angle	length
Red	20mA	2.0V	2.5V	5V	12.5@10mA	100°	660
Green	30mA	2.2V	2.5V	5V	8.0 @10mA	100°	565
Yellow	30mA	2.1V	2.5V	5V	8.0 @10mA	100°	590

CODE	TYPE	PRICE
621-485	Rect. LED 7 x 2.5mm Flangeless Red.....	£0.25
621-490	Rect. LED 7 x 2.5mm Flangeless Green.....	£0.25
621-495	Rect. LED 7 x 2.5mm Flangeless Yellow.....	£0.25

SQUIRES MODEL & CRAFT TOOLS

5 X 5MM SQUARE LED A range of 5 x 5mm square profile LED's housed in coloured diffused packages. Diffused top to LED provides a wide viewing angle. Compatible with AEG-Telefunken TLS5301 series.



Technical specification

	IF max	VF typ.	VF max.	VR max.	Lum.int.(mod) @IF(10mA)	View angle	Wave length
Red	25mA	2.0V	2.5V	5V	2.0	110°	700
HE Red	30mA	2.0V	2.5V	5V	12.5	110°	625
Super red	30mA	1.85V	2.5V	5V	100.0	110°	660
Green	25mA	2.2V	2.5V	5V	8.0	110°	565
Yellow	30mA	2.1V	2.5V	5V	8.0	110°	590
Orange	30mA	2.0V	2.5V	5V	12.5	110°	625

CODE	TYPE	PRICE
622-545	LED Square Red	£0.20
622-550	LED HE Square Red.....	£0.20
622-555	LED Square Super Red.....	£0.25
622-560	LED Square Green.....	£0.20
622-565	LED Square Yellow.....	£0.20
622-570	LED Square Orange.....	£0.20

RECTANGULAR 7 X 2.5mm BI-COLOUR FLANGELESS LED. A rectangular profile 7 x 2.5mm bi-colour LED in a diffused white package with a flangeless construction which permits stacking with no gaps. Red and green diodes are internally connected in inverse parallel configuration. Sold individually.



	IF max.	VF typ.	VF max.	VR max.	Int.at IF mcd.	View angle	Wave length
Red	30mA	2.0V	2.5V	5V	3.2 @10mA	100°	625
Green	30mA	2.2V	2.5V	5V	3.2 @10mA	100°	565

CODE	TYPE	PRICE
621-500	Rect. LED 7 x 2.5mm Flangeless Bi-Colour.....	£0.75

TRIANGULAR 3 X 4.5mm LEDs. A range of triangular profile 3 x 4.5mm LEDs in a diffused coloured package. Sold individually.



	IF max.	VF typ.	VF max.	VR max.	Int.at IF mcd.	View angle	Wave length
Red	20mA	2.0V	2.5V	5V	1.6 @10mA	100°	660
Green	30mA	2.2V	2.5V	5V	1.2 @10mA	100°	565
Yellow	30mA	2.1V	2.5V	5V	1.8 @10mA	100°	590

CODE	TYPE	PRICE
621-550	Triangular LED 3 x 4.5mm Red.....	£0.25
621-555	Triangular LED 3 x 4.5mm Green.....	£0.25
621-560	Triangular LED 3 x 4.5mm Yellow.....	£0.25

LED INDICATORS

3mm LED INDICATORS a range of 3mm LEDs housed in high quality bright satin chromium-plated brass to form high quality panel indicators at modest cost. Available in either recessed or prominent styles. The short lead is the cathode and bezel diameter is 7.6mm, thread M6 x 0.75 and the mounting hole is 6.1mm.



Technical Specification

Type	IF max.	VF typ.	VR max.	Int.at IF mcd.	View angle	Wavelength	
Red	30mA	2.0V	2.5V	5V	32 @ 10mA	60°	660
Green	25mA	2.2V	2.5V	5V	20 @ 10mA	60°	565
Yellow	30mA	2.1V	2.5V	5V	20 @ 10mA	60°	590

CODE	TYPE	PRICE
18-0600	3mm Chrome Recessed LED Indicator Red.....	£1.50
18-0605	3mm Chrome Recessed LED Indicator Green.....	£1.50
18-0610	3mm Chrome Recessed LED Indicator Yellow.....	£1.50
18-0620	3mm Chrome Prominent LED Indicator Red.....	£1.50
18-0625	3mm Chrome Prominent LED Indicator Green.....	£1.50
18-0630	3mm Chrome Prominent LED Indicator Yellow....	£1.50

POWER LED MODULES the LT-001 series is a ready to use range of power LED modules that feature Kingbrights XPower surface mount LED mounted on an aluminium substrate which acts as a heat sink to allow the module to be driven at higher current levels. The design of the substrate and the two flying leads allows the module to be easily used in a wide range of practical applications. It has a high luminance and is a ready made alternative to filament lamps. Applications include portable light sources, signal & symbol illumination, marker lights and indoor and outdoor commercial, architectural lighting etc. Available in a range of colours.



Technical Specification

Colour	Red/orange InGaAlP	Super yellow InGaAlP	Green AlInGaN	Blue AlInGaN	White AlInGaN
Dominant wavelength (nm)	625	588	530	466	-
Chromaticity coordinates*	-	-	-	-	x = 0.33, y = 0.34
Lum.int. typ. LV @ 350mA (cd)	32	9	6	1.4	5
Viewing angle** @ 50% lum.int.	120°	120°	120°	120°	120°
Power dissipation (W)	1.3	1.3	1.35	1.45	1.45
IF (mA)	400	400	400	400	400
IFM (mA)***	700	700	700	700	700
IR (µA)	10	10	Not designed for reverse operation		
VF typ. @ IF=350mA (V)	2.5	2.5	3.3	3.5	3.5
Thermal resistance (°C/W)	45	50	43	45	45
Operating temp. (°C)	-40 to +85	-40 to +85	-40 to +85	-40 to +85	-40 to +85

* @ IF = 350mA according to CIE 1931

** Viewing angle = angle from optical centreline where luminous intensity is 1/2 the optical centreline value

*** 1/10 Duty cycle, 0.1ms pulse width

CODE	TYPE	PRICE
17-1846	Power LED Module Red/Orange.....	£6.99
17-1844	Power LED Module Super Yellow.....	£6.99
17-1842	Power LED Module Green.....	£6.99
17-1848	Power LED Module Blue.....	£9.99
17-1840	Power LED Module White.....	£13.99

1W POWER LED a range of high power, high brightness LEDs that offer up to 60 lumens and they have been designed to satisfy a wide range of solid state lighting applications such as general lighting, reading lights, flashlights, uplighters and downlighters, indoor and outdoor commercial lighting, LCD backlights and light guides. More energy efficient than incandescent and halogen lamps with a long operational life, low voltage DC operation, lambertian radiation pattern for wide viewing angle and a wide operating temperature range. Available in various colours including white and warm white. Package diameter is 8mm, lens diameter 6mm, and overall height 5.1mm. Note: These LEDs are fully dimmable - for suitable drivers see LED & display drivers in Integrated Circuits section.



Technical Specification

Colour	White 10,000K	Warm white 3800K	Red 630nm	Amber 595nm	Green 535nm	Blue 475nm
Dominant wavelength max./ colour temperature max.	10,000K	3800K	630nm	595nm	535nm	475nm
Viewing angle	120°	120°	120°	120°	150°	150°
DC Forward current max.	350mA	350mA	350mA	350mA	350mA	350mA
Peak pulse current	-	-	500mA	500mA	500mA	500mA
Reverse voltage max.	-	-	5V	5V	5V	5V
Luminous flux typ. @ (IF=350mA, Tj=25°C)	56lm	43lm	45lm	40lm	60lm	15lm
Forward voltage max. @ (IF=350mA, Tj=25°C)	4.0V	4.0V	3.0V	3.0V	4.0V	4.3V

CODE	TYPE	PRICE
17-1839	1W Power LED White.....	£3.99
17-1853	1W Power LED Warm White.....	£3.99
17-1855	1W Power LED Red.....	£3.99
17-1857	1W Power LED Amber.....	£3.99
17-1859	1W Power LED Green.....	£3.99
17-1861	1W Power LED Blue.....	£3.99

SQUIRES MODEL & CRAFT TOOLS

LED ARRAYS

LED ARRAY 5 SEGMENT an end stackable LED array encapsulated in a single in line 10 pin package in a variety of colours for PCB mounting. The housing has been designed to push fit into the appropriate panel cutout. Particularly suited to level indication, meters etc. LED face size 1.8 x 5.3mm. Sold individually.



	I _F max.	V _F typ.	V _F max.	V _R max.	Int.at I _F mcd.	View angle	Wave length
Red	20mA	2.0V	2.5V	5V	1.0 @10mA	110°	660
Green	30mA	2.2V	2.5V	5V	3.0 @10mA	110°	565
Yellow	30mA	2.1V	2.5V	5V	3.0 @10mA	110°	590

CODE	TYPE	PRICE
621-600	LED Array 5 Segment Red.....	£1.25
621-605	LED Array 5 Segment Green.....	£1.25
621-610	LED Array 5 Segment Yellow.....	£1.25

LED ARRAY 12 SEGMENT a 12 segment LED array comprising 12 4 x 1.5mm rectangular profile LED's housed in a compact PCB or panel mounting package with a black face and grey segments to maximise on/off contrast. Particularly suited to level indication, meters etc. Overall dimensions 58 x 7 x 12mm. Sold individually.

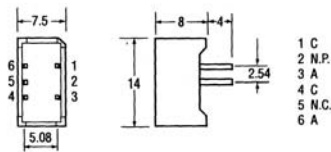


Per Segment	I _F max.	V _F typ.	V _F max.	V _R max.	Int.at I _F mcd.	View angle	Wave length
Green	25mA	2.2V	2.5V	5V	2.0 @10mA	50°	565

CODE	TYPE	PRICE
621-625	LED Array 12 Segment Green.....	£2.75

LED LIGHT BARS

7.5 X 14MM LIGHT BAR a range of large rectangular, solid construction LED comprising two LEDs housed in a diffused package which scatters light evenly over the emitting surface. Ideally suited to back lighting, bargraph displays, etc. Package style 30.

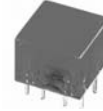


Technical specification

	I _F max.	V _F typ.	V _F max.	V _R max.	Lum.int.(mcd) @I _F (10mA)	View angle	Wave length
HE Red	30mA	2.0V	2.5V	5V	18	120°	625
Green	25mA	2.2V	2.5V	5V	15	120°	565

CODE	TYPE	PRICE
620-101	7.5 x 14mm Light Bar HE Red.....	£0.95
620-103	7.5 x 14mm Light Bar Green.....	£0.95

10 x 10MM LIGHT BAR a range of large rectangular, solid construction LEDs comprising four high efficiency LEDs housed in a diffused package which scatters light evenly over the emitting surface. Ideally suited to back lighting, bargraph displays, etc.



Technical specification

Colour	I _F max.	V _F typ.	V _F max.	V _R max.	Lum.int.(mcd) @I _F (10mA)	View angle	Wave length
HE Red	30mA	2.0V	2.5V	5V	20	120°	625
Green	25mA	2.2V	2.5V	5V	20	120°	565
Yellow	30mA	2.1V	2.5V	5V	20	120°	590

CODE	TYPE	PRICE
620-106	10 x 10mm Light Bar HE Red.....	£1.20
620-108	10 x 10mm Light Bar Green.....	£1.20
620-111	10 x 10mm Light Bar Yellow.....	£1.20

10 x 22MM LIGHT BAR a range of large rectangular, solid construction LEDs comprising eight high efficiency LEDs housed in a diffused package which scatters light evenly over the emitting surface. Ideally suited to back lighting and bargraph displays, etc.



Technical specification

Colour	I _F max.	V _F typ.	V _F max.	V _R max.	Lum.int.(mcd) @I _F (10mA)	View angle	Wave length
HE Red	30mA	2.0V	2.5V	5V	20	120°	625
Green	25mA	2.2V	2.5V	5V	20	120°	565
Yellow	30mA	2.1V	2.5V	5V	20	120°	590

CODE	TYPE	PRICE
620-113	10 x 22mm Light Bar HE Red.....	£2.45
620-116	10 x 22mm Light Bar Green.....	£2.45
620-118	10 x 22mm Light Bar Yellow.....	£2.45

LED 5mm LIGHT BARS a comprehensive range of 5mm light bars containing either 2 or 4 LED chips encapsulated in a highly efficient diffused package which scatters light to form a uniformly illuminated package. The bars may be PCB or panel mounted in both axes with 0.1" lead spacing. Applications include back lighting, front panel indication and legend illumination. Anodes connected to even pin numbers. Sold individually.



Overall Dimensions
 Style 1 L10 x W5 x D9.1mm
 Style 2 L20 x W5 x D9.1mm

	I _F max.	V _F typ.	V _F max.	V _R max.	Int.at I _F mcd.	View angle	Wave length
Style 1							
Red	30mA	2.0V	2.5V	5V	25 @20mA	120°	625
Super Red	30mA	1.85V	2.5V	5V	40 @20mA	120°	660
Green	25mA	2.2V	2.5V	5V	25 @20mA	120°	565
Yellow	30mA	2.1V	2.5V	5V	18 @20mA	120°	590
Style 2							
Red	30mA	2.0V	2.5V	5V	50 @20mA	120°	625
Super Red	30mA	1.85V	2.5V	5V	80 @20mA	120°	660
Green	25mA	2.2V	2.5V	5V	50 @20mA	120°	565
Yellow	30mA	2.1V	2.5V	5V	38 @20mA	120°	590

CODE	TYPE	PRICE
621-700	LED Light Bar 5mm Style 1 Red.....	£1.35
621-705	LED Light Bar 5mm Style 1 Super Red.....	£1.55
621-710	LED Light Bar 5mm Style 1 Green.....	£1.35
621-715	LED Light Bar 5mm Style 1 Yellow.....	£1.35
621-720	LED Light Bar 5mm Style 2 Red.....	£2.00
621-725	LED Light Bar 5mm Style 2 Super Red.....	£2.25
621-730	LED Light Bar 5mm Style 2 Green.....	£2.00
621-735	LED Light Bar 5mm Style 2 Yellow.....	£2.00

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SQUIRES MODEL & CRAFT TOOLS

LED 10mm LIGHT BARS a comprehensive range of 10mm light bars containing either 4 or 8 LED chips encapsulated in a highly efficient diffused package which scatters light to form a uniformly illuminated package. The bars may be PCB or panel mounted in both axes with 0.1" lead spacing. Applications include back lighting, front panel indication and legend illumination. Sold individually.

Overall Dimensions
 Style 3 L10 x W5 x D9.1mm
 No of Seg. 2 of 8.89 x 3.81mm
 Style 4 L20 x W5 x D9.1mm
 No of Seg. 1 of 8.89 x 8.89mm
 Style 5 L10 x W5 x D9.1mm
 No of Seg. 4 of 8.89 x 3.81mm
 Style 6 L20 x W5 x D9.1mm
 No of Seg. 2 of 8.89 x 8.89mm
 Style 7 L10 x W5 x D9.1mm
 No of Seg. 1 of 19.05 x 8.89mm



	I _F	V _F	V _F	V _R	View	Wave
	max.	typ.	max.	max.	angle	length
Red	30mA	2.0V	2.5V	5V	120°	625
Super Red	30mA	1.85V	2.5V	5V	120°	660
Green	25mA	2.2V	2.5V	5V	120°	565
Yellow	30mA	2.1V	2.5V	5V	120°	590

CODE	TYPE	PRICE
	Style 4 (4 LED)	
621-760	LED Light Bar 10mm Red 45mcd@10mA.....	£1.25
621-765	LED Light Bar 10mm Super Red 80mcd@10mA.....	£1.35
621-770	LED Light Bar 10mm Green 50mcd@10mA.....	£1.25
621-775	LED Light Bar 10mm Yellow 35mcd@10mA.....	£1.35
	Style 5 (8 LED)	
621-780	LED Light Bar 10mm Red 25mcd@10mA.....	£1.80
	Style 7 (8 LED)	
621-795	LED Light Bar 10mm Red 80mcd@10mA.....	£1.80
621-800	LED Light Bar 10mm Super Red 150mcd@10mA.....	£1.95
621-805	LED Light Bar 10mm Green 100mcd@10mA.....	£1.80
621-810	LED Light Bar 10mm Yellow 70mcd@10mA.....	£1.80

LED BARGRAPH DISPLAYS

LED 10 BAR BARGRAPH DISPLAY a range of 10 element bargraph displays comprising intensity matched LED's housed in a 20 pin SIL package to form a neat compact display which may be end stacked to create bar graphs of various lengths. All LED's are individually packaged in the display and therefore light leakage between individual LED's is removed. Available in red, super red, green and yellow with white diffused segments and grey display surface to maximise on/off contrast. Sold individually.



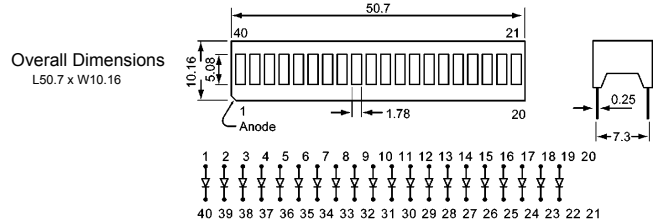
Overall Dimensions
 L25.27 x W10.16 x D11.8mm

Per Segment	I _F max.	V _F typ.	V _F max.	V _R max.	Int.at I _F mcd.	View angle	Wave length
Red	30mA	2.0V	2.5V	5V	5.6 @10mA	50°	625
Super Red	30mA	1.85V	2.5V	5V	31 @10mA	50°	660
Green	30mA	2.2V	2.5V	5V	5.6 @10mA	50°	565
Yellow	30mA	2.1V	2.5V	5V	5.6 @10mA	50°	590

CODE	TYPE	PRICE
621-820	LED 10 Bar Bargraph Red.....	£1.75
621-830	LED 10 Bar Bargraph Green.....	£1.75
621-835	LED 10 Bar Bargraph Yellow.....	£1.75

**POST FREE DELIVERY ON ALL ORDERS
 WITHIN THE UNITED KINGDOM
 MINIMUM ORDER VALUE £15.00
 You may mix your order from
 ANY of our catalogues**

LED 20 BAR BARGRAPH DISPLAY a range of 20 element bargraph displays comprising intensity matched LED's housed in a 40 pin DIL package to form a neat compact display which may be end stacked to create bar graphs of various lengths. All LED's are individually packaged in the display and therefore light leakage between individual LED's is removed. Available in red, super red, green and yellow with white diffused segments and grey display surface to maximise on/off contrast. Anodes connected to pins 1-20. Sold individually.



Per Segment	I _F max.	V _F typ.	V _F max.	V _R max.	Int.at I _F mcd.	View angle	Wave length
Super Red	30mA	1.85V	2.5V	5V	31 @10mA	50°	660
Green	30mA	2.2V	2.5V	5V	5.6 @10mA	50°	565
Yellow	30mA	2.1V	2.5V	5V	5.6 @10mA	50°	590

CODE	TYPE	PRICE
621-855	LED 20 Bar Bargraph Super Red.....	£3.50
621-860	LED 20 Bar Bargraph Green.....	£3.25
621-865	LED 20 Bar Bargraph Yellow.....	£3.25

SEGMENT DISPLAYS

LED 0.4" SEVEN SEGMENT DISPLAY a range of 7 segment LED displays available in red, high efficiency red and green. All displays are categorised for luminous intensity with white diffused segments and grey display surface to maximise on/off contrast. Sold individually.



Per Segment	I _F max.	V _F typ.	V _F max.	V _R max.	Int.at I _F mcd.	View angle	Wave length
Red	20mA	2.0V	2.5V	5V	2.2 @10mA	50°	660
HE Red	20mA	2.0V	2.5V	5V	9.0 @10mA	50°	625
Green	20mA	2.2V	2.5V	5V	5.6 @10mA	50°	565

CODE	TYPE	PRICE
621-875	LED 0.4" 7 Segment C. Anode Red.....	£1.25
621-880	LED 0.4" 7 Segment C. Cathode Red.....	£1.25
621-885	LED 0.4" 7 Segment C. Anode HE Red.....	£1.50
621-890	LED 0.4" 7 Segment C. Cathode HE Red.....	£1.50
621-895	LED 0.4" 7 Segment C. Anode Green.....	£1.50

LED 0.8" SEVEN SEGMENT DISPLAY a range of 7 segment LED displays available in high efficiency red with a right hand decimal point. All displays are categorised for luminous intensity with white diffused segments and grey display surface to maximise on/off contrast. Sold individually.



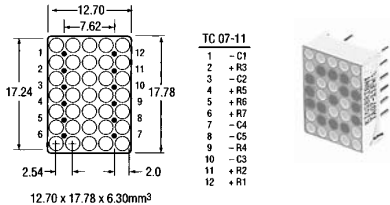
Per Segment	I _F max.	V _F typ.	V _F max.	V _R max.	Int.at I _F mcd.	View angle	Wave length
HE Red	20mA	2.0V	2.5V	5V	9.0 @10mA	50°	660

CODE	TYPE	PRICE
621-900	LED 0.8" 7 Segment C. Anode HE Red.....	£1.95
621-905	LED 0.8" 7 Segment C. Cathode HE Red.....	£1.95
621-196	LED 0.8" 7 Segment C. Cathode HE Blue.....	£2.99

SQUIRES MODEL & CRAFT TOOLS

LED DOT MATRIX DISPLAYS

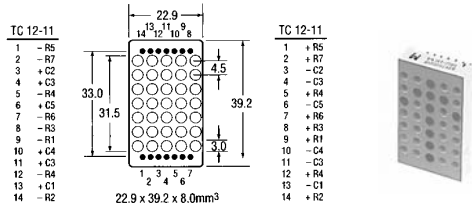
17.3mm DOT MATRIX DISPLAY a range of miniature 5 x 7 dot matrix displays with X-Y select. Available in row anode configuration in high efficiency red. Displays are end or side stackable. All displays are categorised for luminous intensity with white diffused segments and grey display surface to maximise on/off contrast. Package type 93.



Technical specification

Per segment	I _F	V _F	V _F	V _R	Lum.int.(mcd)	Wave length	PRICE
max	typ.	max	max	max	@I _F (10mA)		
HE Red	30mA	2V	2.5V	5V	5.6	625	
CODE	TYPE						PRICE
622-460	17.3mm Dot Matrix Display Green.....						£3.50
622-457	17.3mm Dot Matrix Display HE Red.....						£3.50

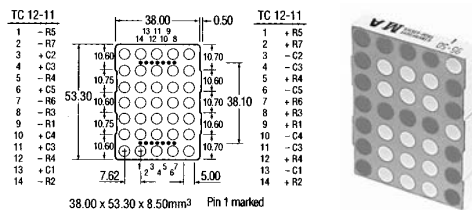
31.5mm DOT MATRIX DISPLAY a miniature 5 x 7 dot matrix display with X-Y select. Available in row anode configuration in high efficiency red. Displays are side stackable. All displays are categorised for luminous intensity with white diffused segments and grey display surface to maximise on/off contrast. Package type 95.



Technical specification

Per segment	I _F	V _F	V _F	V _R	Lum.int.(mcd)	Wave length	PRICE
max	typ.	max	max	max	@I _F (10mA)		
HE Red	30mA	2V	2.5V	5V	9.0	625	
CODE	TYPE						PRICE
622-459	31.5mm Dot Matrix Display HE Red.....						£3.70

50.8mm DOT MATRIX DISPLAY a range of 5 x 7 dot matrix LED displays with X-Y select. Available in row anode or cathode configurations in high efficiency red or super red employing advanced GaAIAs technology to produce a very high output display. Displays are end or side stackable. All displays are categorised for luminous intensity with white diffused segments and grey surface to maximise on/off contrast. Package type 97.



Technical specification

Per segment	I _F	V _F	V _F	V _R	Lum.int.(mcd)	Wave length	PRICE
max	typ.	max	max	max	@I _F (10mA)		
Super Rd30mA	1.85V	2.5V	5V	5V	31.0	660	
CODE	TYPE						PRICE
622-466	50.8mm Dot Matrix Display Super Red Anode.....						£5.25

INFRA RED LED'S AND SENSORS

INFRA RED SOURCE AND SENSOR a spectrally matched infra red source and sensor moulded in similar epoxy housings. When used as a coupled pair separation up to 25mm can be achieved. Readily interfaced with logic. Kingbright types L-34F3C and L-32P3C. Cathode identified by flat on body.

Technical Specification Diode

V_F Max at I_F 20mA, 1.6V

Technical Specification Phototransistor

V_{CEO} max. 30V

Max Dissipation 100mW @25°C

Light Current at 20mW/cm²

7mA typ. V_{CE} = 5V

Dark Current at V_{CE} = 10V

100nA typ.

Rise Time 3µs. Fall Time 3µs.

CODE	TYPE	PRICE
621-950	Infra Red Source.....	£0.40
621-955	Infra Red Sensor.....	£0.40

MATCHED T1 INFRA RED EMITTER AND PHOTOTRANSISTOR PAIR

a range of spectrally matched GaAs and high power GaAlAs infra red emitter with filtered narrow acceptance angle (24°) silicon phototransistor. The SFH309F has an integral black daylight cutoff filter. The devices are in standard T1 (3mm) plastic packages.

Technical Specification Emitter SFH409

V_F Max (I_F 100mA) 1.3V.

V_R Max 5V.

Surge Current (t=10µs) 3A.

Power Dissipation 165mW.

Radiant Power (I_F 100mA) 15mW.

Peak Wave Length 950nm

Technical Specification Detector SFH309F

Peak Wave Length 900nm.

Rise/Fall Time 7µs.

V_{CEO} max. 35V.

I_C (max) 15mA.

Max Dissipation 165mW.

Dark Current 200nA.

Photocurrent 0.4-3.2mA 0.4 -2mA.

(Y=950nm, V_C = 5V)

Operating Temp. -55°C to +100°C.

CODE	TYPE	PRICE
621-960	Infra Red Emitter SFH409.....	£0.95
621-965	Infra Red Filtered Transistor SFH309F.....	£0.95

INFRARED PHOTO MODULE 38kHz

Miniaturized receivers for infrared remote control systems. Pin diode and preamplifier are assembled on lead frame, the epoxy package is designed as IR filter. Demodulated output signal can directly be decoded by a microprocessor. Highly reliable, no external parts, inner shield. Highly sensitive, long transmission range. High immunity against ambient light, power noise and electro magnetic interference. Low power consumption, TTL and CMOS compatibility.

Technical specification

Supply voltage (max.)	6V
Supply voltage (recommended)	4.5V to 5.5V
Supply current (max.)	5mA
Output voltage	6V
Output current	5mA
Carrier frequency	38kHz
Operating temperature	-25°C to +85°C
Storage temperature	-25°C to +85°C
Power dissipation	50mW
Soldering temperature	+260°C
High output pulse width (typical)	600µs
Low output pulse width (typical)	600µs
Receiving distance (typical)	33m

CODE	TYPE	PRICE
17-0029	Infrared Photo Module 2.4-5.5V.....	£1.25

SQUIRES MODEL & CRAFT TOOLS

IR RECEIVER MODULE 38kHz This device is a miniaturised receiver for infrared remote control systems. A PIN diode and pre-amplifier are mounted on the lead frame and the epoxy package is utilised as an IR filter. The demodulated output signal can directly be decoded by a microprocessor. 38kHz carrier frequency, supports all major transmission codes. Photodetector and preamplifier in one package, internal filter for PMC frequency. Improved shielding against electrical field disturbance, TTL and CMOS compatibility. Output active low and low power consumption. Improved immunity against ambient light. Suitable burst length >10 cycles/burst.



Technical specification	
Supply voltage (max.)	6V
Supply voltage (recommended)	4.5V to 5.5V
Supply current (max.)	5mA
Output voltage	6V
Output current	5mA
Power dissipation	50mW
Operating temperature	-25°C to +85°C
Storage temperature	-25°C to +85°C
Junction temperature	+100°C
Soldering temperature	+260°C
Directivity	±45°
Receiving distance (typical)	35m

CODE	TYPE	PRICE
17-0030	IR Receiver Module 38kHz TSOP4838.....	£1.25

5MM INFRARED SOURCE AND SENSOR A mechanically and spectrally matched infrared emitter and transistor. Standard 5mm LED package. NPN phototransistor.



Technical specification						
Emitter	Material	I _F	V _F	Radiant power typ	Peak wave length	View angle
		max	typ	@20mA		
L-7113F3BT	GaAs	50mA	1.2	20	940	20°
Phototransistor	V _{br}	V _{BR}	V _{CE}	I _{CEO}	T _R	T _F
	ceo	eco	sat	dark current	μS	μS
		max				
L-7113P3C	30V	5V	0.8V	100nA	3	3

CODE	TYPE	PRICE
17-0032	Emitter L-7113F3BT.....	£0.35
17-0034	Phototransistor L-7113P3C.....	£0.35

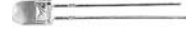
NPN PHOTOSENSOR An NPN photosensor in a black, sideways looking plastic package. The sensor consists of two phototransistors with their collectors commoned.



Technical specification	
V _{CEO} max	30V
Max dissipaton	100mW
Collector dark current	100nA
On state collector current	0.12mA
Rise time	16μs
Fall time	18μs

CODE	TYPE	PRICE
17-0036	NPN Photosensor.....	£0.30

HIGH POWER INFRA RED SOURCE AND SENSOR a range of spectrally matched near infra red emitters and sensors. The infra red emitters have very high power output and are housed in a standard 5mm clear package. The sensor is a high speed PIN photo diode with high sensitivity housed in a black infra red transmissive epoxy moulding.



Technical Specification	
Emitter	HIGH POWER
Radiant Output Power	20mW.
Wave Length	880nm.
V _F (max)	1.7V.
I _F (max)	100mA.
Power Dissipation	120mW.
Viewing Angle	30°
Temperature Range	-30°C to +80°C
Sensor	
Breakdown (I _R =100μA)	32V min.
Dark Current (V _R =10V)	2nA typ.
Light Current (V _R =5V)	45μA typ.

CODE	TYPE	PRICE
621-975	Infra Red High Power Emitter.....	£0.75
621-980	Infra Red Sensor.....	£1.95

INFRA-RED EMITTING DIODE - SIDE LOOKING An infra-red emitting diode in a flat, side looking water clear package. Sold individually.



Technical specification			
Material	Wave length	Po(mW/sr)	View angle
GaAs	940	@20mA(typ)	
		Water clear	5
			150°

CODE	TYPE	PRICE
622-590	Infra-Red Diode - side looking	£0.30

LIGHT DEPENDENT RESISTORS

MINIATURE LIGHT DEPENDENT RESISTOR A compact low cost cadmium sulphide light dependent resistor housed in a small package just 5mm in diameter. Clear epoxy finish. Resistance reduces as the light falling on the device increases.



Technical specification	
Dark resistance	1MΩ
Resistance @ 10 Lux	10-20KΩ
Resistance @ 100 Lux	2-4kΩ
Peak spectral response	540nm
Max. voltage	150V peak AC or DC
Power dissipation	100mW
Operating temperature	-30° to +70°C

CODE	TYPE	PRICE
622-468	Miniature Light Dependent Resistor.....	£0.89

LIGHT DEPENDENT RESISTOR NORPS12 Redesigned cadmium sulphide light dependent resistor housed in a robust plastic package with clear end window. Resistance reduces as the light falling on the device increases. Type NORPS12.



Technical specification	
Dark resistance	1MΩ
Resistance @ 1ftc	5.4kΩ min, 12.6kΩ max.
Peak spectral response	550nm
Max. voltage	250V peak AC or DC
Power dissipation	250mW max.
Operating temperature	-60° to +75°C
Dimensions	13mm dia x 6.9mm high
	9.5mm pitch pins

CODE	TYPE	PRICE
622-471	Light Dependent Resistor NORPS12.....	£1.80

IF THERE ARE OTHER PRODUCTS THAT YOU WOULD LIKE US TO STOCK, PLEASE FEEL FREE TO LET US KNOW.

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LIGHT SENSOR A RoHS compliant alternative to conventional Cadmium Sulphide technology. Specially designed built-in amplifier strictly controls photo-sensor, highly efficient on and off switching. Produces a pronounced spike of sensitivity at the eye-response wavelength of 568nm. Steep noise-free front commences from relative sensitivity of 20% @ 350nm. Peak sensitivity of 568nm is spread over just 25nm. Steep trailing edge. Excellent linearity and a low dark current (0.3µA) allowing precise photometry over a wide range of visible light.

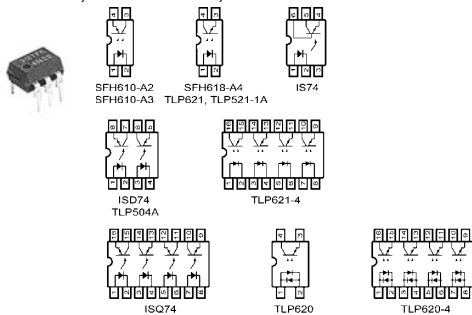


Photocurrent	5mA
Peak spectral response (typical)	580nm
Dark current (max.)	0.3µA
Light current at 5 Lux (max)	16.9µA
Light current at 100 Lux (typical)	260µA
Rise time	8.5ms
Fall time	8.5ms
Power dissipation	40mW

CODE	TYPE	PRICE
17-0038	Light Sensor.....	£1.75

OPTOISOLATORS

TRANSISTOR/DARLINGTON OUTPUT OPTOISOLATORS a comprehensive range of transistor/darlington output isolators without base connection from Toshiba, Siemens and Iscom. The SFH610-A2, SFH615-A3 and SFH618-A4 are approved to IEC65, IEC950, BS6301, BSEN60065, BSEN60950 and EN410003.



Technical Specification.		Channels Voltage	Curr. Trans. Ratio	Breakdown V _{BR}	Manufac.	Manu. Type
Isolation (pk)		Min @ I _F	CEO min			
Transistor Output						
Single	5300 DC	63% @ 10mA	70V	Siemens	SFH610-A2	
Single	5300 DC	100% @ 10mA	70V	Siemens	SFH615-A3	
Single	5300 DC	160% @ 1mA	70V	Siemens	SFH618-A4	
Single	1500	12.5% @ 10mA	20V	Isocom	IS-74	
Single	5000 rms	100% @ 5mA	55V	Toshiba	TLP621	
Single	2500 rms	50% @ 5mA	55V	Toshiba	TLP521-1A	
Dual	1500	12.5% @ 10mA	20V	Isocom	ISD-74	
Dual	2500 rms	50% @ 5mA	55V	Toshiba	TLP504A	
Quad	5000 rms	100% @ 5mA	55V	Toshiba	TLP621-4	
Quad	1500	12.5% @ 10mA	20V	Isocom	ISQ-74	
AC input, Transistor output						
Single	5000 rms	50% @ 5mA	55V	Toshiba	TLP620	
Darlington Output						
Quad	5000 rms	50% @ 5mA	55V	Toshiba	TLP620-4	

CODE	TYPE	PRICE
622-400	Optoisolator SFH610-A2.....	£1.50
622-407	Optoisolator SFH618-A3.....	£1.50
622-410	Optoisolator SFH618-A4.....	£1.85
622-415	Optoisolator IS-74.....	£0.95
622-425	Optoisolator TLP521-1A.....	£0.65
622-430	Optoisolator ISD-74.....	£1.95
622-431	Optoisolator TLP621-2.....	£1.25
622-432	Optoisolator CYN74-2H.....	£1.25
622-435	Optoisolator TLP504A.....	£1.25
622-440	Optoisolator TLP621-4.....	£2.95
622-443	Optoisolator ISQ-74.....	£2.95
622-445	Optoisolator ISQ-74.....	£2.95
622-450	Optoisolator TLP620.....	£1.25
622-455	Optoisolator TLP620-4.....	£2.99

VERY HIGH SPEED LOGIC GATE OPTOCOUPLER DIL-8 The 6N137 single-channel optocoupler consists of a 850nm AlGaAs Led, optically coupled to a very high speed integrated photodetector logic gate with a strobable output. This output features an open collector, thereby permitting wired OR outputs. A maximum input signal of 5mA will provide a minimum output sink current of 13mA. An internal noise shield provides superior common mode rejection. Very high speed 10Mbit/s. superior CMR 10kV/µs. 480V working voltage compared to industry standard 220V. Logic gate output, wired OR-open collector. Application include ground loop elimination, ISTTL to TTL, LSTTL or 5V CMOS, line receiver, data transmission, data multiplexing. switching power supplies, pulse transformer replacement, computer/peripheral interface, etc. UL recognised.

Technical specification	
Forward input current IF	50mA
Reverse input voltage VR	5V
Input power dissipation PD	100mW
Output current IO	50mA
Detector supply voltage VCC	7V
Collector output PO	85mW
Common mode rejection CMR	10kV/µs
Withstand insulation test voltage VISO	2500 V RMS
Output rise time (10% to 90%) TR	50ns
Output fall time (90% to 10%) TF	12ns
Operating temperature	-40°C to +85°C
Storage temperature	-55°C to +125°C



CODE	TYPE	PRICE
17-0042	Logic Gate Optocoupler 6N137.....	£0.99

HIGH VOLTAGE DARLINGTON OUTPUT OPTOISOLATOR an optically coupled isolator (optisolator) consisting of an infrared light emitting diode and a high voltage NPN silicon photo darlington. In a Standard 6-pin DIL plastic package with integral base-emitter resistor which optimises switching speed, high isolation voltage, high current transfer ratio, high collector-emitter breakdown voltage, low collector dark current and low input current. UL recognised and approved to VDE0884.

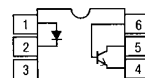
Technical Specification

Isolation voltage:	5.3kV rms (7.5kV peak)
Forward current (max):	60mA (3A peak)
Reverse voltage (max):	3V
Input current IF:	1mA
Collector output current (max) IC:	100mA
Turn-on time (typ):	5µs
Turn-off time (typ):	100µs
Collector-emitter breakdown voltage (max)	100V
Collector-base breakdown voltage (max)	100V
Collector-emitter dark current (max):	100nA
Storage temperature:	-55°C to +150°C
Operational temperature:	-55°C to +100°C



CODE	TYPE	PRICE
17-0044	High Voltage Darlington Output Optoisolator.....	£1.25

TRANSISTOR OUTPUT OPTOISOLATOR a range of industry standard 4N25 and 4N26 optoisolators comprising a Gallium Arsenide infra red emitting diode and a NPN silicon phototransistor mounted in a standard 6 pin DIL package. The 4N25X, 4N35X and 4N36X are approved to VDE0884. Sold individually.



Technical Specification	Isolation Voltage	Transfer ratio typ.	Breakdown V _{BR} CEO min.
4N25	5300V	20% @ 10mA	30V
4N25X	5300V	20% @ 10mA	30V
4N35X	5300V	100% @ 10mA	30V
4N36X	5300V	100% @ 10mA	30V

CODE	TYPE	PRICE
622-025	Optoisolator 4N25.....	£0.65
622-026	Optoisolator 4N25SM.....	£0.65
622-600	Optoisolator 4N35X.....	£0.95
622-605	Optoisolator 4N36X.....	£0.95

SQUIRES MODEL & CRAFT TOOLS

AXIAL ANALOGUE OPTICAL ISOLATOR the VTL5C6 is an analogue optical isolator (AOI) using an optical link between input and output. The input element is an LED, the output element is a photocell (LDR). Together the pair act as an electrically variable potentiometer. As the output element of the AOI is a resistor, the voltage applied to this resistor may be DC and/or AC and the magnitude may be as low as zero or as high as the maximum voltage rating. Because the input will control the magnitude of a complex waveform in a proportional manner, this type of isolator is an analogue-control element. It has a large dynamic range, high dark resistance and a low temperature coefficient of resistance. Supplied in a four lead axial package. Note: This product contains cadmium sulphide, the use of which is restricted by the RoHS directive.



CODE	TYPE	PRICE
17-0146	Axial Analogue Optical Isolator.....	£7.99

H11L1 SCHMITT TRIGGER ISOLATOR the H11L1 is an optically coupled isolator that consists of a Gallium Arsenide infrared emitting diode in conjunction with a microprocessor compatible Schmitt trigger output. The devices isolation properties along with its ability to eliminate noise and transients makes it especially suitable for applications such as logic to logic isolation, programmable current level sensor and AC to TTL conversion. Housed in a DIL-6 package with high data rate - typically 1MHz (NRZ), microprocessor compatible drive, logic compatible output, high isolation voltage 7.5kV_{PK}, high common mode rejection ratio and fast switching characteristics typically 100ns. The wide supply voltage range is compatible with all popular logic systems. Guaranteed ON/OFF threshold hysteresis.

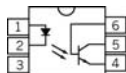


Technical Specification

Input	
Reverse current max.:	10µA
Forward voltage max.:	6V
Capacitance max.:	100pF
Output	
Operating voltage range:	3 to 15V
Supply current max.:	5mA
Total power dissipation:	170mW
Lead soldering temperature:	260°/10s
Operating temperature:	-40°C to +85°C
Storage temperature:	-40°C to +125°C

CODE	TYPE	PRICE
17-0046	H11L1 Schmitt Trigger Isolator.....	£0.99

6-PIN TRANSISTOR OPTOISOLATORS The CNY17 series are optically coupled isolators consisting of a gallium arsenide infrared emitting diode and a NPN silicon phototransistor mounted in a standard 6 pin DIL package. All types feature a high isolation voltage and the CNY17-3X is approved to VDE0884. Sold individually.

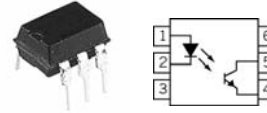


Technical Specification

Type	Isolation Voltage	Curr trans ratio min @ I _F	Breakdown V _{BR} CEO min.
CNY17-1X	5300V	40% @ 10mA	70V
CNY17-2	3750 rms	63-125% @ 10mA	32V
CNY17-3	3750 rms	100-200% @ 10mA	32V
CNY17-3X	5300V	100% @ 10mA	70V
CNY17-4X	5300V	160% @ 10mA	70V

CODE	TYPE	PRICE
622-610	Optoisolator CNY17-1X.....	£0.90
622-613	Optoisolator CNY17-2.....	£0.50
622-616	Optoisolator CNY17-3.....	£0.50
622-620	Optoisolator CNY17-3X.....	£1.25
622-625	Optoisolator CNY17-4X.....	£0.95

NON-BASE LEAD TRANSISTOR OPTOISOLATORS The MOC810X series of optically coupled isolators consist of infra red light emitting diodes and NPN silicon phototransistors in a standard 6 pin DIL package with the base lead unconnected for improved noise immunity in high EMI environments. All types are approved to VDE0884. Sold individually.



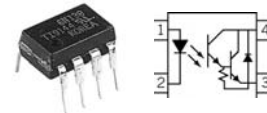
Technical Specification

Device	Isolation Voltage	Output collector current	Breakdown V _{BR} CEO min.	Turn on time	Turn off time
MOC8103X	5300V	10.8mA	30V	7.5µs	5.7µs

CODE	TYPE	PRICE
622-640	Optoisolator MOC8103X.....	£1.10

SINGLE AND DUAL DARLINGTON OUTPUT OPTOISOLATORS

A range of single and dual output darlington optoisolators. The HCPL4701 and HPCL4731 are suited to CMOS LSTTL and general low power applications. All types are UL recognised. Sold individually.



Technical Specification

Channels	Curr.trans.ratio min @ I _F	VCC max	Manfr type
Single	300% @ 1.6mA	7V	6N138
Single	400% @ 0.5mA	18V	6N139

CODE	TYPE	PRICE
622-070	Optoisolator 6N138.....	£2.15
622-075	Optoisolator 6N139.....	£2.15
622-072	Optoisolator IS4N46.....	£2.15

HIGH SPEED TRANSISTOR OPTOCOUPLER DIL8 the 6N136 optocoupler consists of an AlGaAs LED optically coupled to a high speed photodetector transistor. A separate connection for the bias of the photodiode improves the speed by several orders of magnitude over conventional phototransistor optocouplers by reducing the base-collector capacitance of the input transistor. An internal noise shield provides superior common mode rejection and an improved DIL-8 package allows superior insulation. Applications include line receivers, pulse transformer replacement, output interface is to CMOS-LSTTL-TTL, wide bandwidth analogue coupling, etc. It has a high speed of 1Mbit/s and a superior CMR of 10kV/µs. The working voltage is 480V compared to an industry standard of 220V. Current transfer ratio guaranteed at 0 to +70°C and UL recognised.



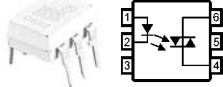
Technical Specification

Forward input current I _F :	25mA
Reverse input voltage V _R :	5V
Input power dissipation P _D :	100mW
Output current I _O :	8mA
Detector supply voltage VCC:	-0.5V to 30V
Current transfer ratio CTR:	30%
Common mode rejection CMR:	10kV/µs
Withstand insulation test voltage VISO:	2500 V RMS
Operating temperature:	-55°C to +100°C
Storage temperature:	-55°C to +125°C

CODE	TYPE	PRICE
17-0058	High Speed Transistor Optocoupler DIL-8.....	£0.99

SQUIRES MODEL & CRAFT TOOLS

TRIAC DRIVER OPTOISOLATORS a range of optocouplers with light actuated silicon bi-lateral switch detectors specifically designed for applications requiring isolated triac triggering. Sold individually.



Technical Specification Type	Isolation Voltage (pk)	I _F Trigger (max)	Blocking Voltage (min)	rms forward Current @25°C (max)	Manufacturer
MOC3020	7500V	30mA	400V	100mA	FCH
MOC3020X	7500V	30mA	400V	100mA	Isocom
MOC3041	7500V	15mA	400V	100mA	FCH
TLP3041(S)	6000V	15mA	400V	100mA	Toshiba
TLP3042	6000V	10mA	400V	100mA	Toshiba

CODE	TYPE	PRICE
17-0890	Optoisolator Triac Driver MOC3020.....	£1.65
17-0870	Optoisolator Triac Driver MOC3020X.....	£1.65
17-0892	Optoisolator Triac Driver MOC3041.....	£1.65
17-0544	Optoisolator Triac Driver TLP3041(S).....	£1.65
622-115	Optoisolator Triac Driver TLP3042.....	£1.65

AC INPUT PHOTOCOUPLER a general purpose single transistor photocopler housed in a standard DIP package and offering high isolation. Each channel contains two GaAs LEDs and an NPN silicon phototransistor. It has 5kV rms isolation voltage, AC input and is available in single, dual and quad versions. High sensitivity version available. UL and VDE0884 approved.

Technical Specification

Isolation voltage:	5kV
Forward current:	±50mA
VCEO:	35V
CTR:	20% to 300% max



CODE	TYPE	PRICE
17-0920	Single AC Input Photocopler.....	£0.50
17-0922	Dual AC Input Photocopler.....	£0.60
17-0924	Quad AC Input Photocopler.....	£1.50

AC INPUT DARLINGTON OUTPUT PHOTOCOUPLER a general purpose Darlington transistor photocopler housed in a standard DIP package and offering high isolation. Each channel contains two GaAs LEDs and an NPN silicon phototransistor. It has 5kV rms isolation voltage, AC input and is available in single, dual and quad versions. High sensitivity version available. UL and VDE0884 approved.

Technical Specification

Isolation voltage:	5kV
Forward current:	±50mA
VCEO:	35V
CTR:	600% to 7500% max



CODE	TYPE	PRICE
17-0048	KB8141 AC Input Darlington Output Photocopler	£0.99
17-0050	KB8241 AC Input Darlington Output Photocopler	£0.99

TRANSISTOR OUTPUT OPTOSWITCH a single transistor output opto switch available in a choice of current ratings with or without mounting flanges. The aperture comprises an infra-red emitter and sensor housed in a black polycarbonate body. The 3 x 6mm slot allows the beam to be broken with a sensitive core of 1mm². Ideal for event counting, level detection, etc.



Technical Specification

I _C mA @	I _F mA	t _{on} μs typ.	t _{off} μs typ.	V _{CE} (sat) max.	Package
1	20	8	50	0.4	Without tabs
1	20	8	50	0.4	Without tabs
4	20	8	50	0.4	With tabs

CODE	TYPE	PRICE
17-0052	H22A1 Transistor Output Optoswitch.....	£2.50
17-0054	H21A1 Transistor Output Optoswitch.....	£2.50
17-0056	H21A6 Transistor Output Optoswitch.....	£2.50

TRANSISTOR/DARLINGTON PHOTO INTERRUPTER a range of PCB mounting single transistor or Darlington output slotted photo interrupter with or without mounting flanges and featuring an aperture comprising an infra-red emitter and sensor housed in a black polycarbonate body. Available with 3 x 6mm or 5 x 7mm slot and ideal for event counting, level detection, etc. Easily interfaced with logic.



Technical Specification

5 x 7mm slot	KTIR0611S	KTIR0621DS
Output device	Single transistor	Darlington
Peak emission wavelength	940nm	940nm
CTR min	2.5% 20mA (IF)	50% 2mA (IF)
Rise time	20μs	80μs
Fall time	20μs	70μs
Input forward current	50mA	50mA
Output collector current	20mA	20mA
Output V _{CEO}	35V	35V
Output V _{ECO}	6V	6V
Mounting	PCB	PCB

3 x 6mm slot	KTIR0121DS	KTIR0221DS
Output device	single transistor	Darlington
Peak emission wavelength	940nm	940nm
CTR min	50% 1mA (IF)	50% 1mA (IF)
Rise time	80μs	80μs
Fall time	70μs	70μs
Input forward current	50mA	50mA
Output collector current	40mA	40mA
Output V _{CEO}	35V	35V
Output V _{ECO}	6V	6V
Mounting	PCB	Mounting flange

CODE	TYPE	PRICE
17-0066	Trans/Darlington Photo-interrupter KTIR0611S...	£0.75
17-0060	Trans/Darlington Photo-interrupter KTIR0621DS.	£0.75
17-0062	Trans/Darlington Photo-interrupter KTIR0121DS.	£0.75
17-0064	Trans/Darlington Photo-interrupter KTIR0221DS.	£0.75

REFLECTIVE OPTO SWITCH a compact reflective opto switch with phototransistor output designed for direct PCB mounting. EE-SY171 has a low profile of just 3mm. EE-SY113 has a filter to reduce effects of external light. Sensing distance 3.5mm (4.4mm for EE-SY113).



Technical Specification

	EE-SY171	EE-SY113
Sensing distance	3.5mm	4.4mm
	(white paper with reflection factor 0f 90%)	
Output V _{CEO}	30V	30V
Collector current	20mA	20mA
I _{np} forward current	50mA	50mA
Emitter forward voltage	1.5V	1.5V
Peak spectral sensitivity	850nm	850nm
Rise time	30μs	30μs
Fall time	30μs	30μs
Body dimensions	14 x 4.2 x 3mm	12 x 6.2 x 6mm

CODE	TYPE	PRICE
17-0080	Reflective Opto Switch EE-SY171.....	£5.99
17-0082	Reflective Opto Switch EE-SY113.....	£5.99

IF THERE ARE OTHER PRODUCTS THAT YOU WOULD LIKE US TO STOCK, PLEASE FEEL FREE TO LET US KNOW.