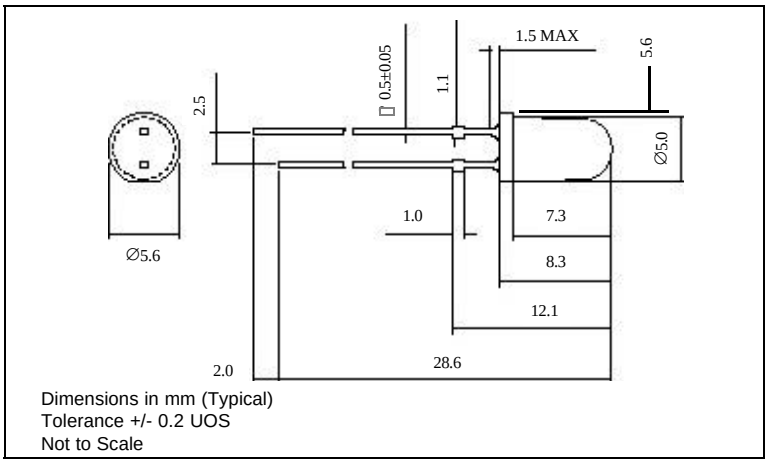
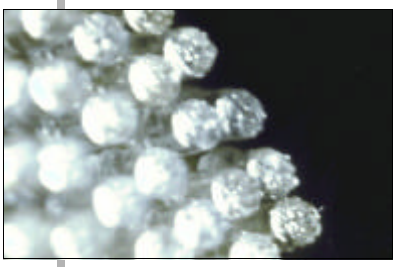
DISCRETE LEDs - Ø 5mm White



Dimensions in mm (Typical)
Tolerance +/- 0.2 UOS
Not to Scale

- High intensity
- Also available as a 3mm device and in SMT format
- Solid state reliability
- Can be supplied in bulb replacement and panel mounting formats



110140 SERIES

MLQ = 50

Ordering Information & Typical Technical Characteristics (Ta = 25°C)

Mean Time Between Failure = 100,000 Hours. * Duty Cycle <=1/10, Pulse Width <= 10msec

PART NUMBER	COLOUR	TYP. FWD VOLTAGE V_f @ I_{opr}	MAX FWD VOLTAGE V_f @ I_{opr}	FORWARD CURRENT I_{opr}	MAX REV CURRENT $I_r(V_r=5V)$	LUMINOUS INTENSITY Iv@Iopr	CHROMATICITY COORDINATES	VIEWING ANGLE $2\theta^1/_2$
OPTICAL / ELECTRICAL CHARACTERISTICS (T_a = 25°C)								
110140	White	3.6	4.0	20	50	1560	0.31 / 0.32	50
UNITS	Water Clear	V	V	mA	µA	mcd	x / y	deg

PART NUMBER	COLOUR	FORWARD CURRENT I_{opr}max	PEAK FWD CURRENT I_{fp} *	REVERSE VOLTAGE Vr max	POWER DISSIPATION $P_d$max	PEAK WAVELENGTH Typ. λp	OPERATING TEMP T_{opr}	STORAGE TEMP T_{stg}
ABSOLUTE MAXIMUM RATINGS (T_a = 25°C)								
110140	White	30	80	5	120		-30 to +85	-40 to +100
UNITS	Water Clear	mA	mA	Vdc	mW	nm	°C	°C

PRECAUTIONS FOR HANDLING ELECTROSTATIC SENSITIVE LEDs

Static Electricity and Surge

Static electricity and surge will damage the LED and a high standard of care must be taken during handling. It is recommended that a wristband, conductive mat or anti-electrostatic glove is used when handling the LEDs. All devices, equipment (e.g. soldering iron points) and machinery must be properly grounded.

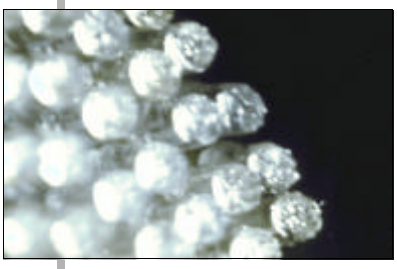
SAFETY PRECAUTIONS FOR HANDLING HIGH BRIGHTNESS LEDs

The light output of the Products may cause injuries to human eyes in circumstances where they are viewed directly with unshielded eyes for more than a few seconds.

Please refer to European Standard BSEN 100015-1 1992 for further information.

Optosource • Fax: +44 (0)1229 580012 • email: sales@optosource.com • website: www.optosource.com • Telephone +44 (0)1229 484623

a division of Marl International Limited



WHITE DISCRETES

MLQ = 50

USAGE INFORMATION ON WHITE LEDS

White LEDs are produced by combining blue LEDs and special phosphors and consequently the colour can vary slightly if different operating currents are used.

Lead Forming

During forming the leads should be bent at a point at least 3mm from the base of the epoxy. The base of the leadframe should not be used as a fulcrum during lead forming.

Lead forming should be carried out before soldering.

Do not apply any bending stress to the base of the lead as the stress may damage the LED.

When mounting the LED onto a PCB, the holes drilled on the PCB should be exactly aligned with the leads on the LED because if the LEDs are mounted with stress at the leads degradation of the epoxy resin could result.

Soldering Conditions

Do not solder the LEDs at a distance closer than 3mm from the base of the epoxy. Soldering the LED below the stand off is recommended.

Maximum allowable soldering conditions

Soldering

Soldering iron: 30W max

Temperature: 300° max
Soldering time: 3 seconds max
Position: No closer than 3mm from the base of the epoxy

Solder Dipping

Pre heat: 100°C max
Pre heat time: 60 seconds max
Solder bath temp: 260° C max
Dipping time: 5 seconds max
Dipping position: No lower than 3mm from the epoxy

Do not apply any stress to the lead particularly when heated.

The LEDs must not be repositioned after soldering

After soldering the LED, the epoxy bulb should be protected from mechanical shock or vibration until the LED returns to room temperature.

Direct soldering onto a PC board should be avoided. Mechanical stress to the epoxy may be caused from warping of the PC board or from the cutting of the leadframes. When it is absolutely necessary, the LEDs may be mounted directly onto the board but the user must assume responsibility for any problems.

Direct soldering should only be done after testing has confirmed that no damage will occur.

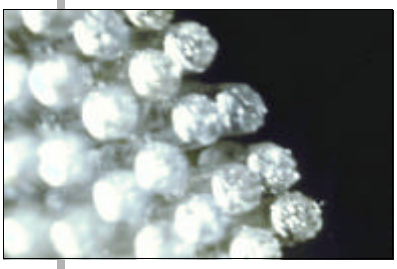
LEDs should not be soldered directly onto double sided PCB's because the heat will deteriorate the epoxy resin.

When it is necessary to clamp the LED to prevent soldering failure it is important to minimise the mechanical stress on the LED.

Cut the LED leadframe at room temperature as cutting at high temperature can lead to failure of the LED.

Optosource • Fax: +44 (0)1229 580012 • email: sales@optosource.com • website: www.optosource.com • Telephone +44 (0)1229 484623

a division of Marl International Limited



WHITE DISCRETES

MLQ = 50

USAGE INFORMATION ON WHITE LEDS Ctd.

Static Electricity and Surges

Both of the above will damage the LED. It is recommended to use a wrist band or antistatic glove when handling the LEDs. In addition all devices, equipment and machinery must be properly grounded.

Typical static electricity resistance figures are

Withstand voltage:	50V (C=200pf)
Standard test method:	EIAJ ED-4701 (1992.2) C-111
Condition A	

Heat Generation

This must be taken into account when using the LEDs as the temperature gets higher when the LEDs are densely mounted. It is necessary to design the circuit so that the operating temperatures are within the absolute maximum ratings of the device.

The operating current should be decided after consideration of the maximum ambient temperature when the LEDs are illuminated.

Cleaning

Avoid exposure to chemicals as they may discolour and damage the epoxy. When washing is required isopropyl alcohol should be used.

The influence of ultrasonic cleaning depends on how the LEDs are mounted and factors such as speed of oscillation. Before cleaning using this method tests should be carried out to ensure the LED will not be damaged.

Other points

Care must be taken so that reverse voltage will not exceed the absolute maximum rating when using LEDs with a matrix driver.

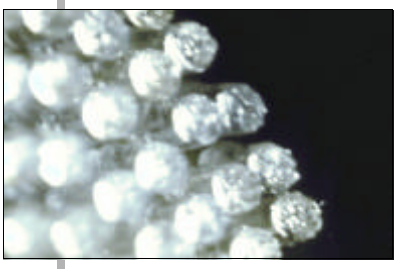
As the leads are silver plated they may become discoloured with Hydrogen Sulphide and other gaseous chemicals. Precautions must be taken to maintain a clean storing atmosphere.

The LED light output is strong enough to damage the human eye and precautions must be taken to prevent looking directly at the LED with unaided eyes for more than a few seconds.

Optosource • Fax: +44 (0)1229 580012 • email: sales@optosource.com • website: www.optosource.com • Telephone +44 (0)1229 484623

a division of Marl International Limited

COLOUR CO-ORDINATES AND RANKING INFORMATION



WHITE DISCRETES

MLQ = 50

Colour Ranks

(IF=20MA,Ta=25˚C)

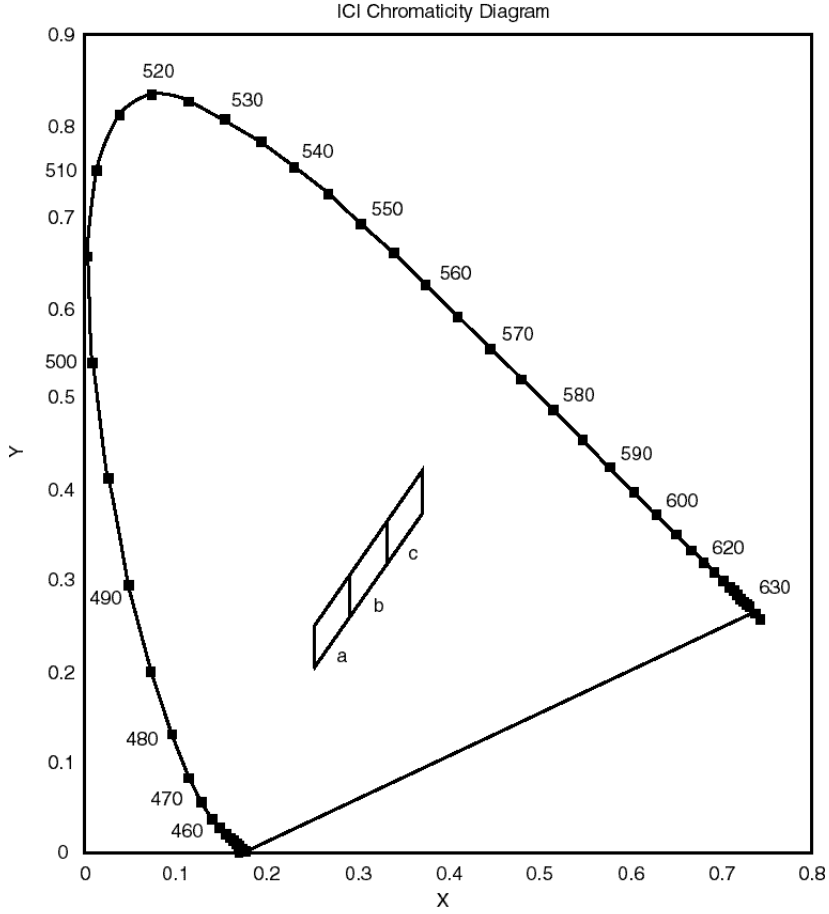
	Rank a			
x	0.250	0.250	0.290	0.290
y	0.205	0.250	0.305	0.260

	Rank b			
x	0.290	0.290	0.330	0.330
y	0.260	0.305	0.365	0.320

	Rank c			
x	0.330	0.330	0.370	0.370
y	0.320	0.365	0.420	0.375

Measurement Uncertainty of the Colour Coordinates: ±0.02

ICI Chromaticity Diagram

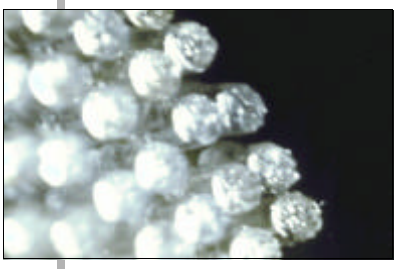


Rank B is supplied as standard.
Other ranks (a and c) may be available upon request.

Optosource • Fax: +44 (0)1229 580012 • email: sales@optosource.com • website: www.optosource.com • Telephone +44 (0)1229 484623

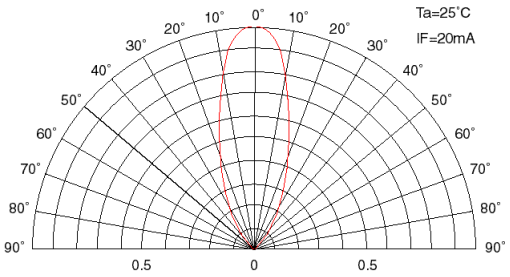
a division of Marl International Limited

WHITE LED VIEWING ANGLES

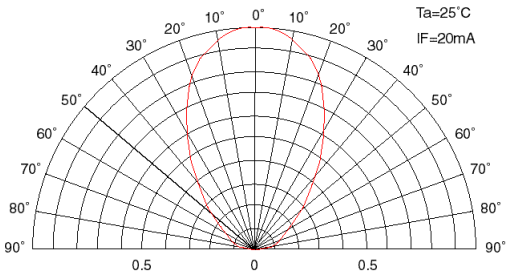


WHITE DISCRETES

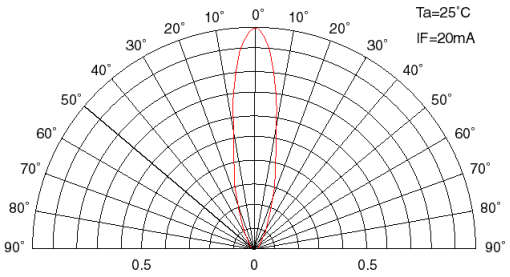
MLQ = 50



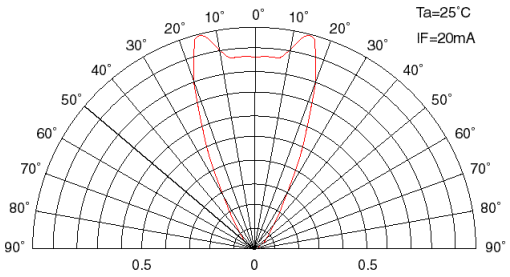
100059 01



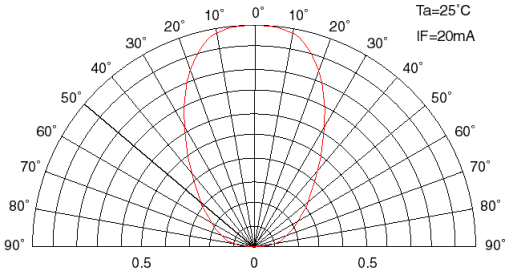
100053 01



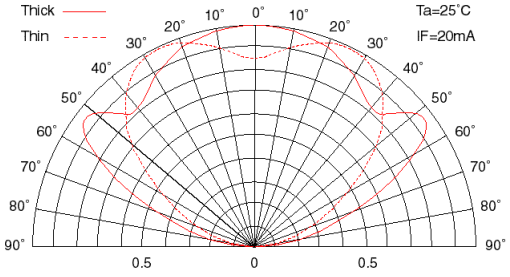
110147 01



110140 01



110155 01

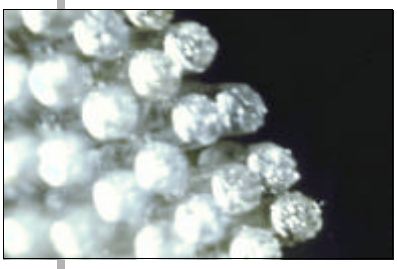


110163 01

Optosource • Fax: +44 (0)1229 580012 • email: sales@optosource.com • website: www.optosource.com • Telephone +44 (0)1229 484623

a division of Marl International Limited

WHITE LED TECHNICAL DATA

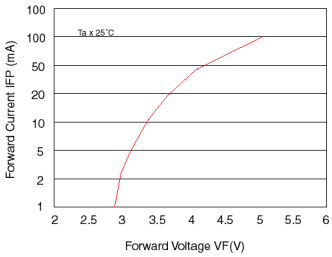


WHITE DISCRETES

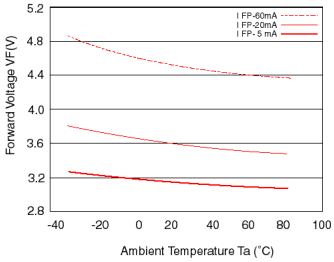
MLQ = 50

Typical Characteristics

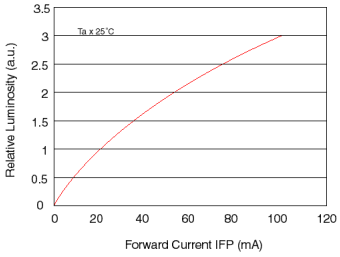
Forward Voltage vs. Forward Current



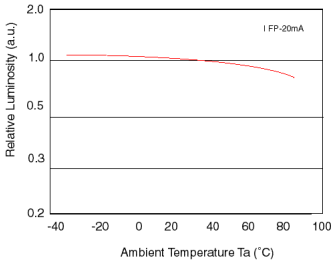
Ambient Temperature vs. Forward Voltage



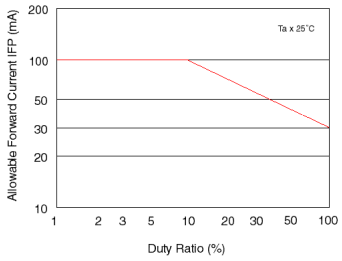
Forward Current vs. Relative Luminosity



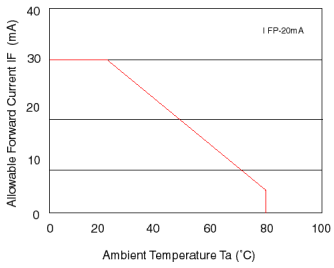
Ambient Temperature vs. Relative Luminosity



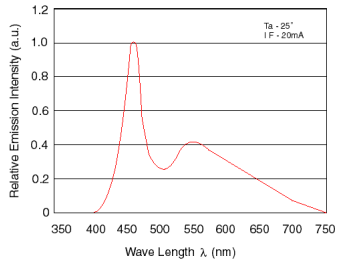
Duty Ratio vs. Allowable Forward Current



Ambient Temperature vs. Allowable Forward Current



Spectrum



Optosource • Fax: +44 (0)1229 580012 • email: sales@optosource.com • website: www.optosource.com • Telephone +44 (0)1229 484623

a division of Marl International Limited