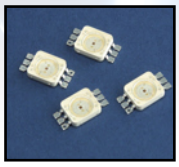
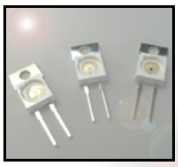
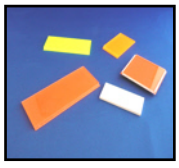
The Optoelectronic Manufacturing Corporation

TO-220 High Power LED - 1W







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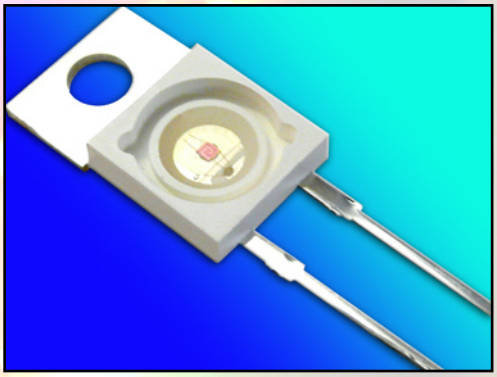
Technical Datasheet

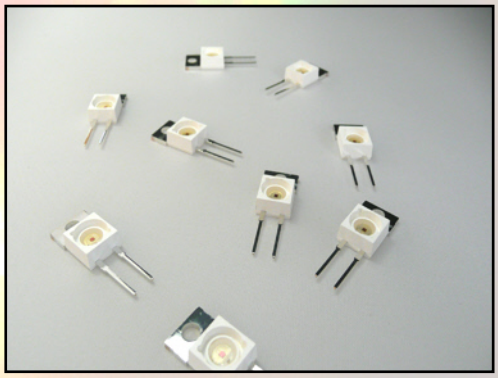
A range of 1W, high power light-emitting diodes in the industry standard TO-220 package. Available with 3 compact lens options, this is the first range of high power LEDs to be compatible with the vast range of TO-220 heatsinks, mounting solutions and accessories already available off-the-shelf from many component suppliers.

Key Features:



- Industry standard TO-220 Package
- Compatible with existing auto-insertion machinery
- Fits "off the shelf" heatsink and mounting solutions
- TO-220 leadframe requires no heatspreader
- Well-established thermal properties, low thermal resistance
- High luminous flux per source
- Exceptional ease of use and robustness
- Compact lensing options
- Colour range: Red, Green, Blue, Amber, Daylight & Warm White
- In-built electrostatic protection
- In-built reverse polarity protection
- RoHS Compliant

Typical Applications:



- Accent lights
- Up- and down-lighters
- Battery powered torches
- Automotive illumination
- Energy efficient lighting
- Replacement for filament sources
- Mood lighting
- Wall washers
- Signalling
- Strip lights
- Solar powered lighting

Typical electro-optical characteristics at forward current = 350mA and Tj=25°C

Part no.	Colour & dominant λ / colour temp	Luminous Flux (typ.) lumens	Luminous Flux (max.) lumens	Forward Voltage (V)
T21D1	Daylight White 6500K	80	100	3.5
T21W1	Warm White 3000K	70	87	3.5
T21R1	Red 625nm	23	30	2.2
T21G1	Green 525nm	30	40	3.8
T21B1	Blue 465nm	10	14	3.5
T21Y1	Amber 590nm	23	30	2.2

Colours are for ease of reference only and do not indicate exact shade of LED output.

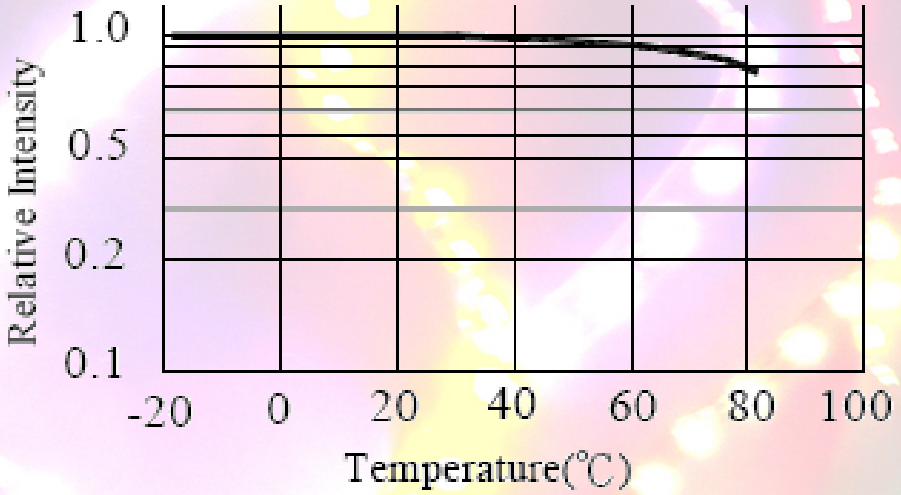
Typical Thermal Characteristics at If = 350mA, Tj=25°C

Quantity	Rating
Thermal Resistance (Semiconductor Junction to Board)	12 K/W
Forward Voltage Temperature Coeff.	-2 mV/K
Reverse Current (at reverse voltage of 5V)	5×10^{-5} A

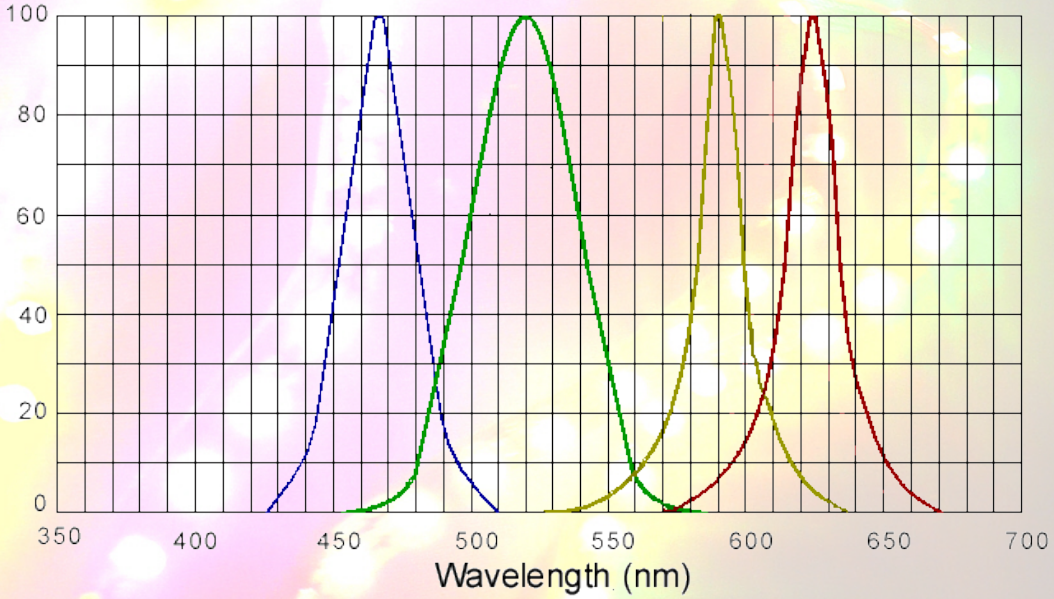
Absolute Maximum Ratings at Tj=25°C

Quantity	Rating
Reverse Voltage	5V
Semiconductor Junction Temperature	120°C
Operating Temperature Range	-35°C to +75°C
Temperature Range in Storage	-35°C to +100°C
Lead soldering temperature (at 2mm from LED body for max 5 sec)	260°C
Forward DC Current	350mA
Power dissipation	1.4W

Relative Intensity vs Junction Temperature



Power Spectra for Blue, Green, Amber and Red



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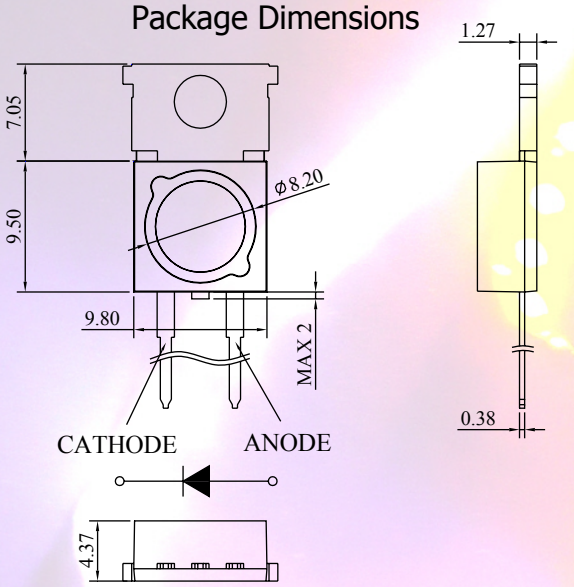
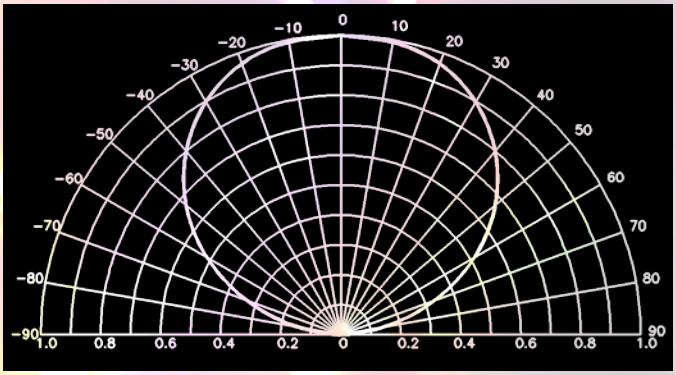
Package Dimensions



Typical beam pattern when unlensed (for lensed patterns, see lens datasheet)
Lens part numbers: PLT2R, PLT2O



All dimensions are in mm. Tolerance ±0.5mm.

Application notes

- Junction temperature should be kept below maximum by managing power dissipation.
- Current spikes should be avoided, especially during power up. It is best practice to initially connect LED to inactivated supply, then gradually ramp up supply to desired level.
- Proper management of the thermal path from the junction should be observed. Relevant thermal resistances should be used to calculate temperature increase from ambient to junction by multiplying by power dissipation, to determine maximum ambient temperature of application.
- Proper thermal conduction layers should be introduced at all interfaces to prevent insulating air gaps in the thermal path from junction to ambient.
- If the LED package has a lens fitted, do not use reflow soldering as the lens should not be taken above 110°C.
- As with all semiconductor devices, it is good practice to avoid electrostatic discharge.
- High power LEDs are best driven using constant-current power supplies.
- Please ensure the metal tab is electrically isolated in any circuit design.
- Do not connect to a constant voltage source without suitable current limiting measures.
- Further information regarding soldering and storage precautions may be obtained by contacting OMC's technical department.

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