Cree® XLamp[™] 7090 LEDs

Cree XLamp 7090 LEDs combine the brightness of power LED chips with a rugged package capable of operating in excess of one watt. Cree XLamp LEDs lead the solid-state lighting industry in brightness while providing a reflow solderable design that is optimized for ease-of-use and thermal management. Lighting applications featuring XLamp LEDs maximize light output and increase design flexibility, while minimizing environmental impact.

Cree XLamp 7090 LEDs bring the power of brightness to a wide range of lighting and backlighting applications including portable lighting and flashlights, computer and television screens, signaling, architectural, landscaping and entertainment/advertising.

BENEFITS

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- Industry's brightest 350mA package
- Surface mount technology reflow solderable
- Wide range of colors
 - White, Royal Blue, Blue, Cyan, Green, Amber, Red-Orange and Red
- Low operating voltage
- Electrically neutral thermal path
- RoHS compliant lead-free
- Integrated lens
- Small footprint 7.0 mm x 9.0 mm
- ESD > 2000V

Characteristics

Color	Dominant wavelength (nm) or CCT (K)		Typical Luminous or Radiant flux @
	Min.	Max.	350mA
White	4500K	8000K	45 lm
Royal Blue	455nm	465nm	255 mW
Blue	465nm	475nm	19 lm
Cyan	500nm	510nm	45 lm
Green	520nm	535nm	45 lm
Amber	585nm	595nm	27 lm
Red-Orange	610nm	620nm	49 lm
Red	620nm	635nm	34 lm



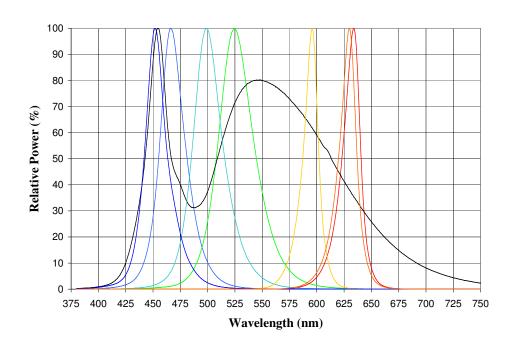
et: DS-00002, Revision D

Characteristics

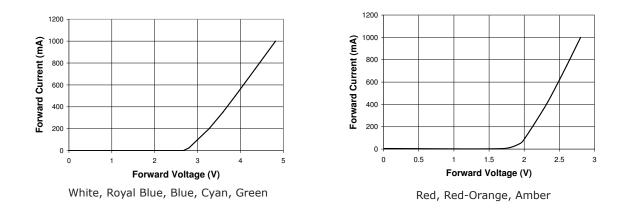
Characteristics	Unit	XLamp 7090
Thermal Resistance, junction to solder point	°C/W	17
Maximum forward voltage @ 350mA (white, royal blue, blue, cyan, green)	V	4
Maximum forward voltage @ 350mA (amber, red-orange, red)	V	3
Viewing angle	degrees	100
Temperature coefficient of voltage (royal blue, blue, cyan, green, white)	mV/°C	-3.0 to -2.8
Temperature coefficient of voltage (amber, red-orange, red)	mV/°C	-3.2 to -3.0
ESD Classification (HBM per Mil-Std-883D)		Class 2
Maximum DC Forward Current	mA	350
Maximum Reverse Voltage	V	5
Maximum LED Junction Temperature	°C	125
Minimum Operating Temperature	°C	-40
Maximum Operating Temperature	°C	85

Note: For details on Cree's procedures for sorting, binning and labeling and a list of standard order codes, see application note: *Cree XLamp 7090 LED Binning and Labeling*.

Relative Spectral Power

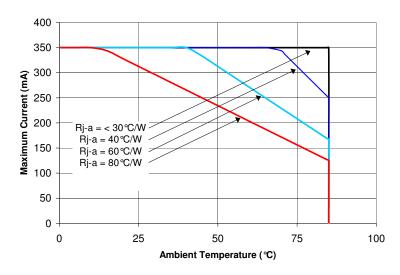


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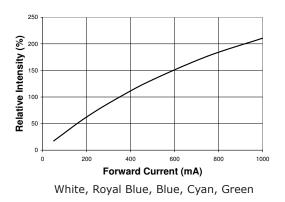


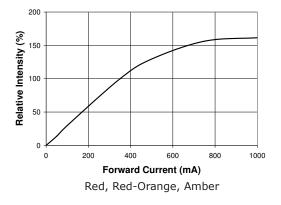
Thermal Design

The maximum forward current is determined by the thermal resistance between the LED junction and ambient. Given an existing thermal resistance of 17 °C/W between the junction and the solder point, it is crucial for the end product to be designed in a manner that minimizes the thermal resistance from the solder point to ambient in order to optimize lamp life and optical characteristics.



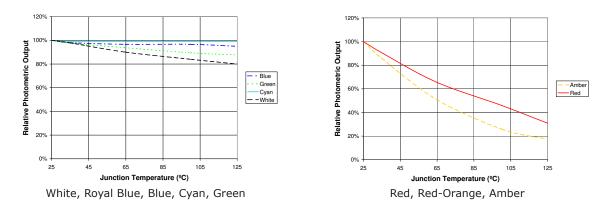
Relative Intensity vs. Current ($T_a = 25^{\circ}C$)





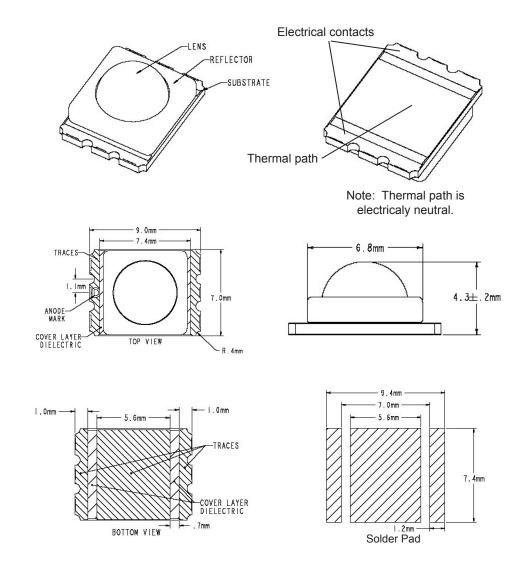
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Photometric Output vs. Junction Temperature (I,= 350mA)



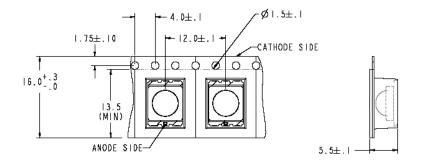
Mechanical Dimensions

All measurements are ±.1mm unless otherwise indicated.

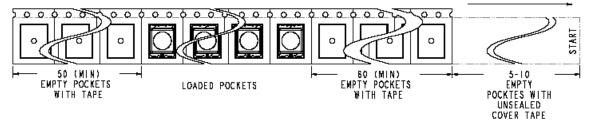


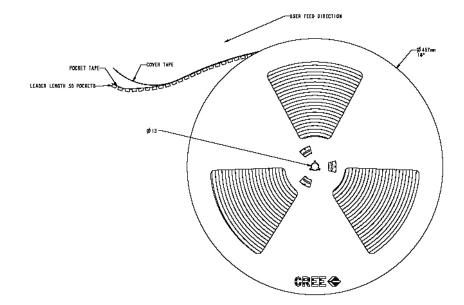
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All dimensions in mm.

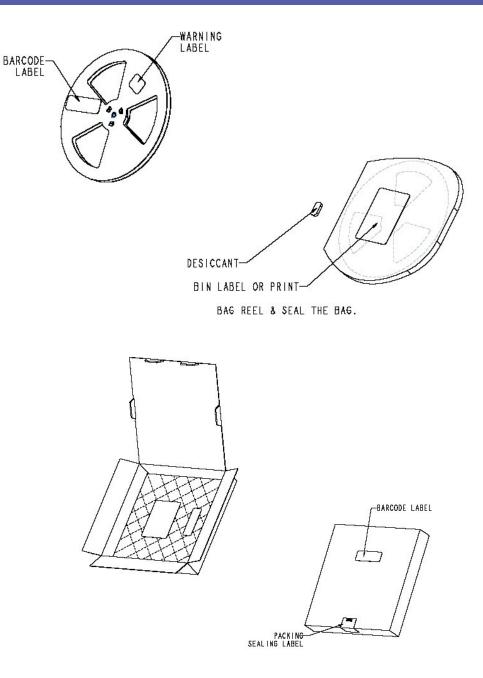


USER FEED DIRECTION





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Notes

If the LEDs have been exposed to greater than 45% relative humidity for more than 168 hours after opening the vacuumsealed package, the exposed reels must be baked at 80°C for 24 hours. The reels should be removed from the plastic bag before baking. Exposure to temperatures higher than 80°C could result in damage to the tape and/or reel.

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