

Cree® XLamp™ 3 7090 LEDs

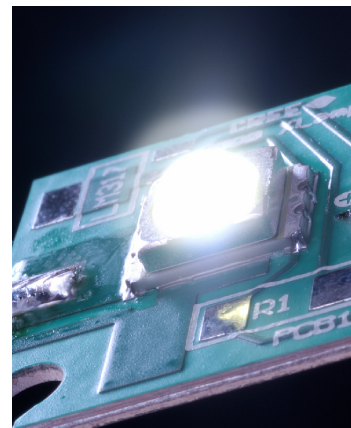


Cree XLamp 3 7090 LEDs combine the brightness of power LED chips with a rugged package capable of operating in excess of three watts. Cree XLamp LEDs lead the solid-state lighting industry in brightness while providing a reflow solderable design that is optimized for ease-of-use and thermal management. Lighting applications featuring XLamp LEDs maximize light output and increase design flexibility, while minimizing environmental impact.

Cree XLamp 3 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

- Industry's brightest 700mA 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 @ 700mA
	Min.	Max.	
White	4500K	8000K	76 lm
Royal Blue	455nm	465nm	385 mW
Blue	465nm	475nm	28 lm
Cyan	500nm	510nm	75 lm
Green	520nm	535nm	80 lm
Amber	585nm	595nm	57 lm
Red-Orange	610nm	620nm	86 lm
Red	620nm	635nm	61 lm

Subject to change without notice.
www.xlamp.com

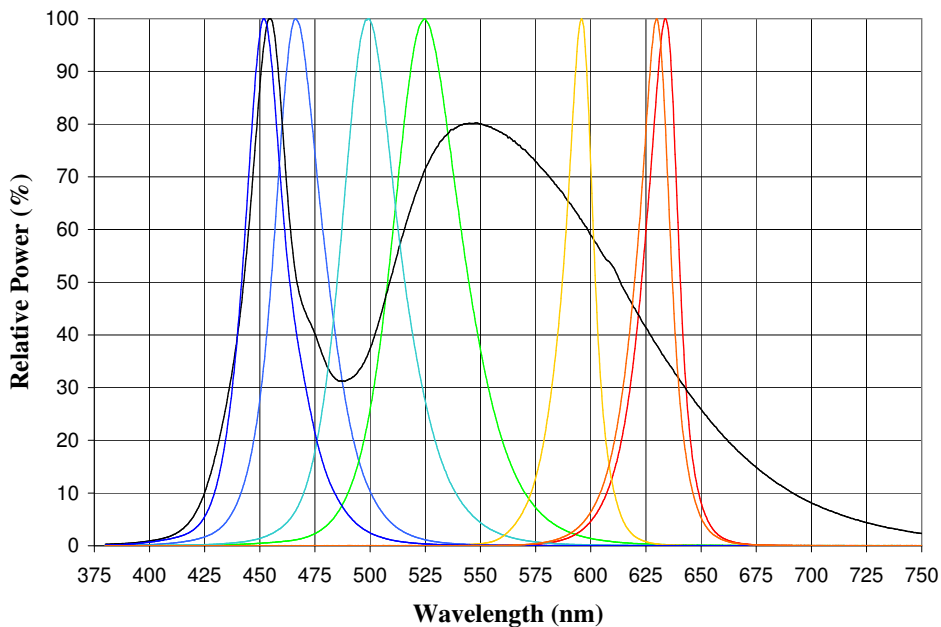


Characteristics

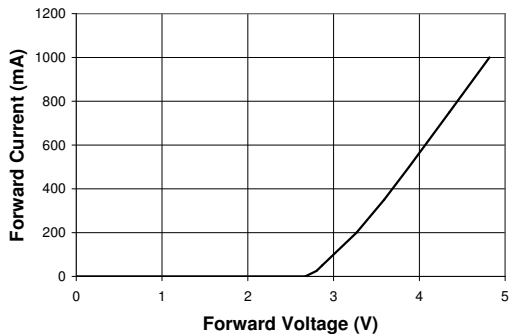
Characteristics	Unit	XLamp 3 7090
Thermal Resistance, junction to solder point	°C/W	17
Maximum forward voltage @ 350mA (white, royal blue, blue, cyan, green)	V	4.5
Maximum forward voltage @ 350mA (amber, red-orange, red)	V	3.0
Viewing angle	degrees	100
Temperature coefficient of voltage (royal blue, 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	700
Maximum Reverse Voltage	V	5
Maximum LED Junction Temperature (royal blue, blue, cyan, green, white)	°C	145
Maximum LED Junction Temperature (amber, red-orange, red)	°C	130
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*.

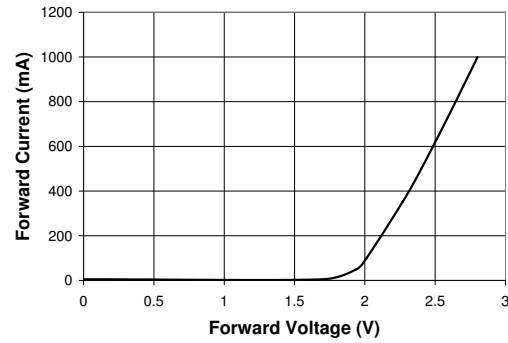
Relative Spectral Power



Electrical Characteristics ($T_A = 25^\circ\text{C}$)



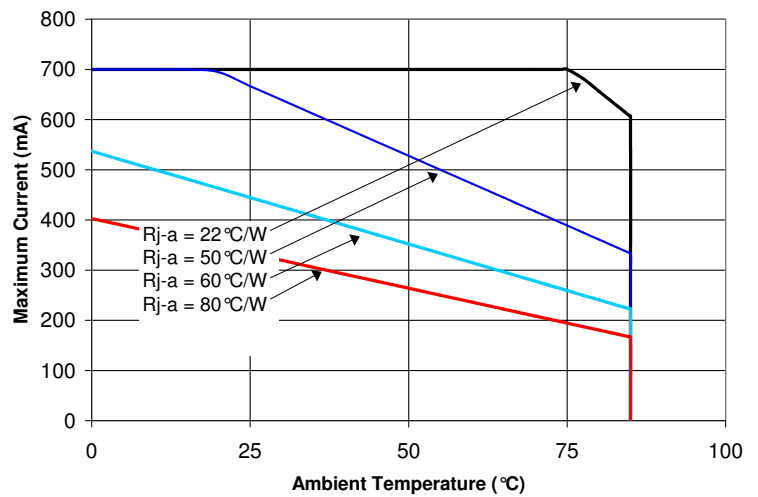
White, Royal Blue, Blue, Cyan, Green



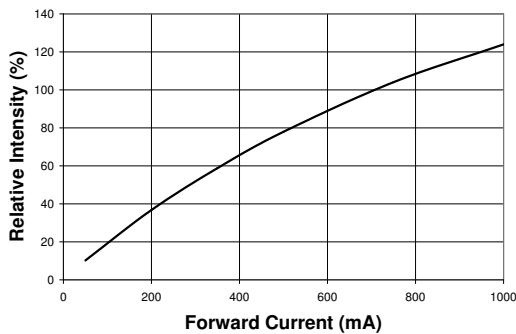
Red, Red-Orange, Amber

Thermal Design

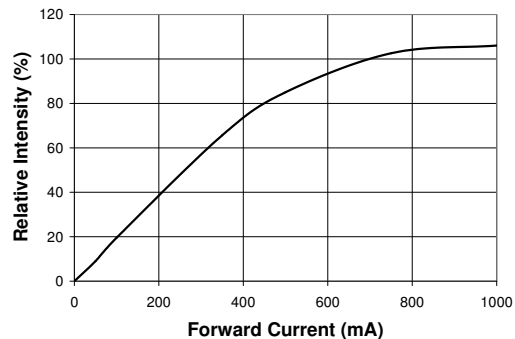
The maximum forward current is determined by the thermal resistance between the LED junction and ambient. Given an existing thermal resistance of 17°C/W between the junction and the solder point, it is crucial for the end product to be designed in a manner that minimizes the thermal resistance from the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



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

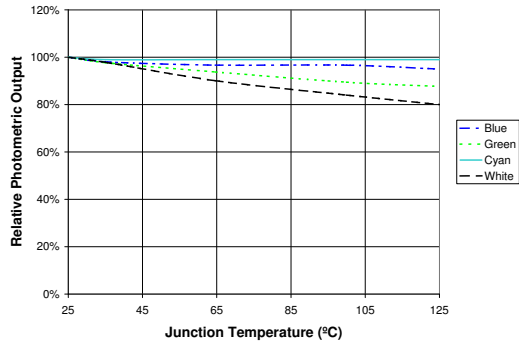


White, Royal Blue, Blue, Cyan, Green

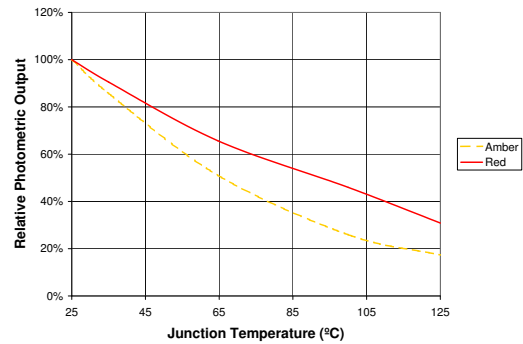


Red, Red-Orange, Amber

Photometric Output vs. Junction Temperature ($I_f = 700\text{mA}$)



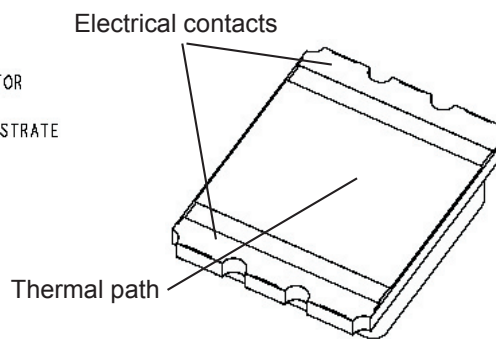
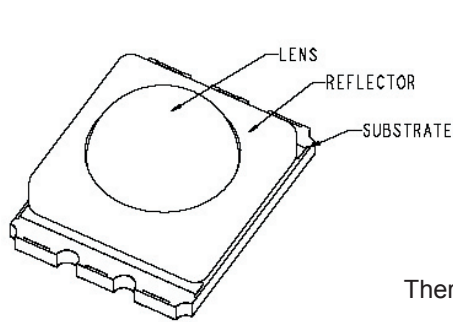
White, Royal Blue, Blue, Cyan, Green



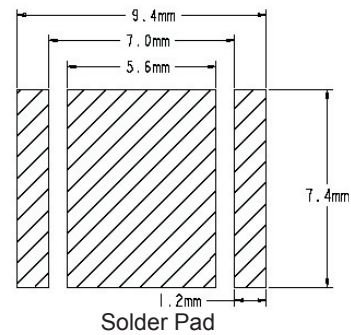
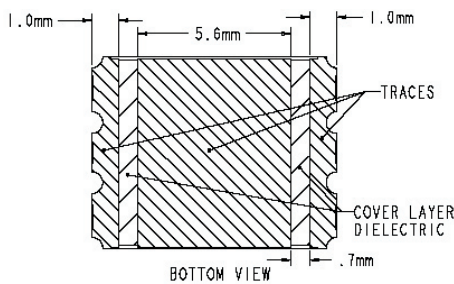
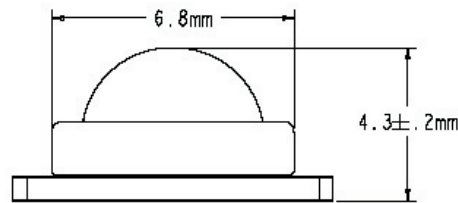
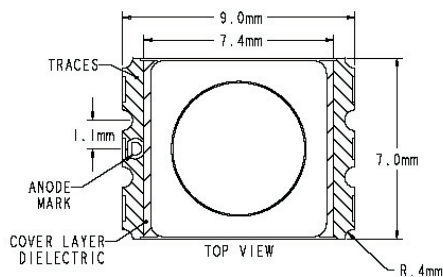
Red, Red-Orange, Amber

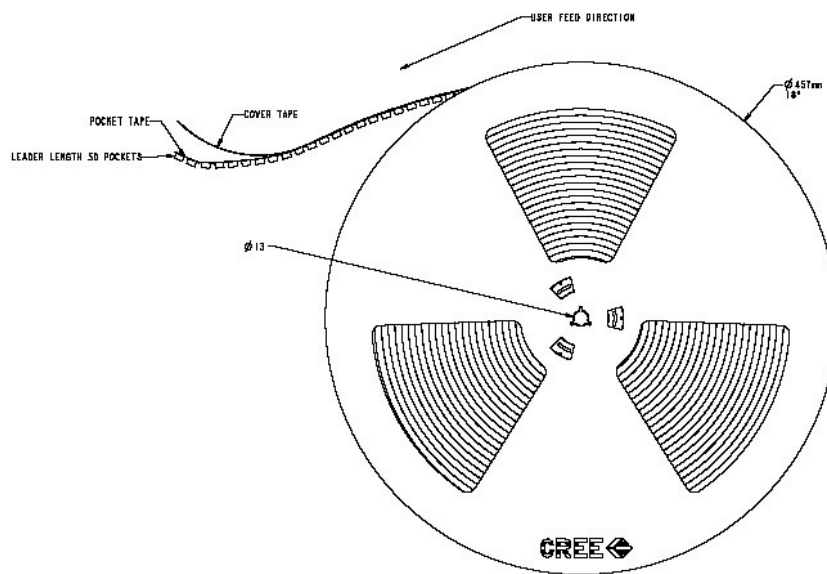
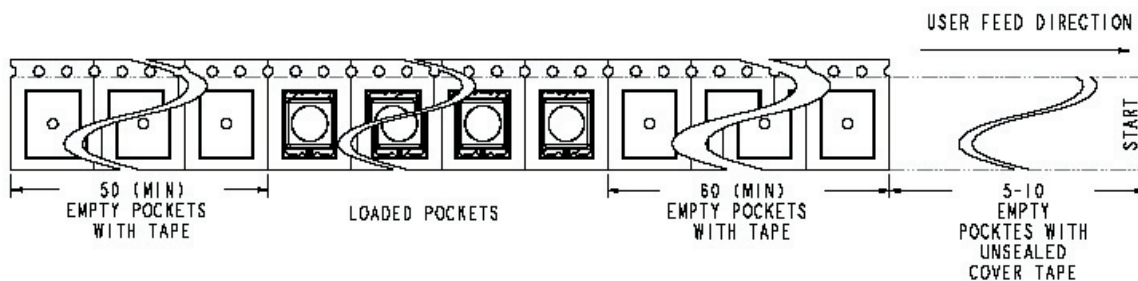
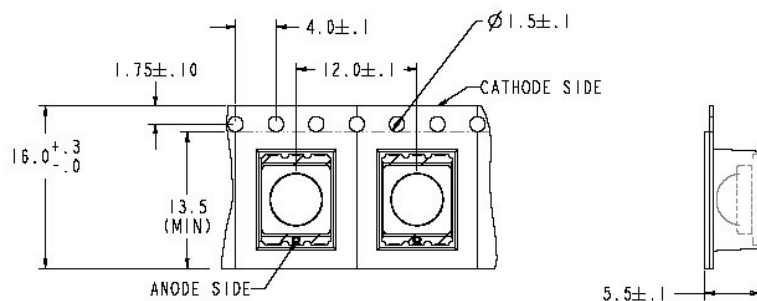
Mechanical Dimensions

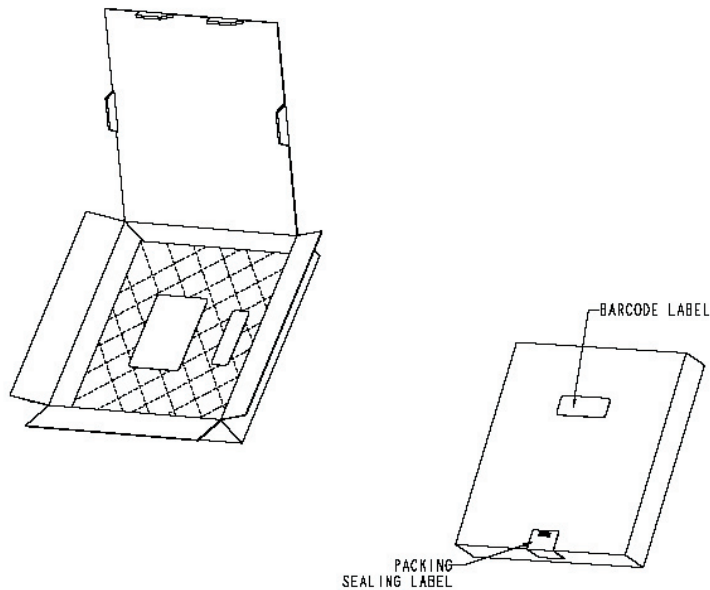
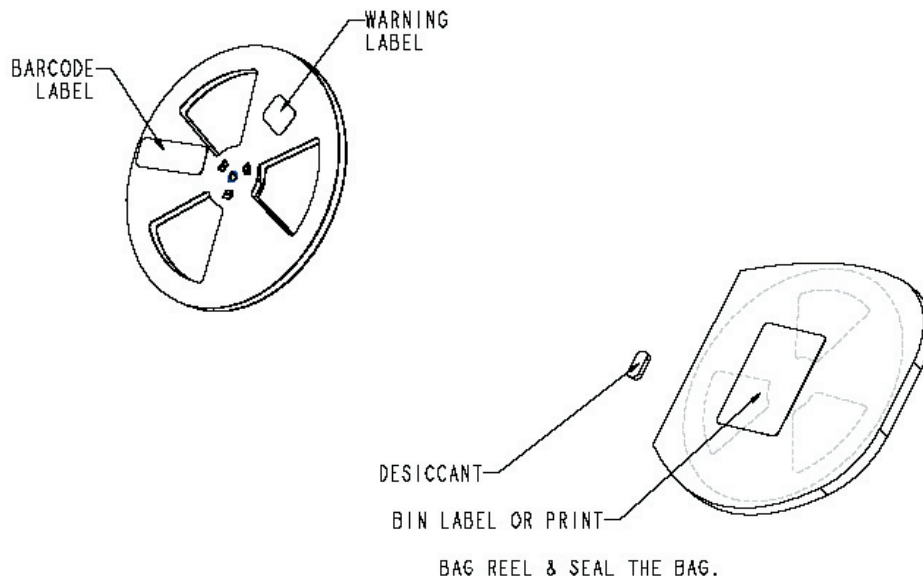
All measurements are $\pm 0.1\text{mm}$ unless otherwise indicated.



Note: Thermal path is electrically neutral.







Notes

If the LEDs have been exposed to greater than 45% relative humidity for more than 168 hours after opening the vacuum-sealed 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.