

# CREE® XLAMP™ 7090 LED

## DATA SHEET

Data Sheet: DS-00002, Rev B

### > XLamp™ 7090 Packaged 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

Cree XLamp 7090 LEDs provide:

- Industry's brightest 1-Watt 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

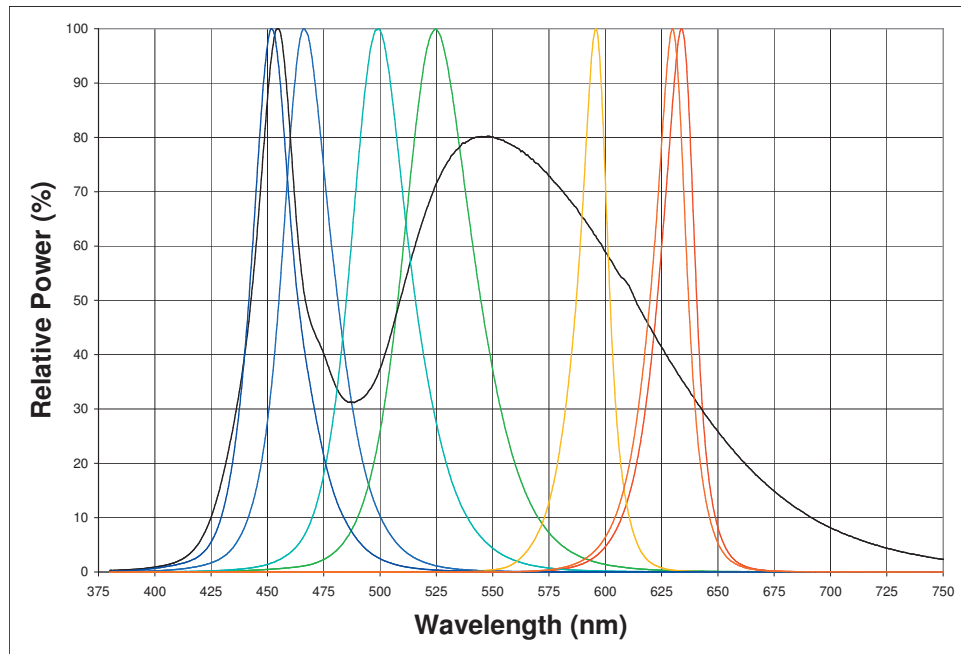
| Color      | Dominant wavelength (nm)<br>or CCT (K) |       | Typical Luminous<br>or Radiant flux @<br>350mA |
|------------|----------------------------------------|-------|------------------------------------------------|
|            | Min.                                   | Max.  |                                                |
| White      | 4500K                                  | 8000K | 45lm                                           |
| Royal Blue | 455nm                                  | 465nm | 255mW                                          |
| Blue       | 465nm                                  | 475nm | 19lm                                           |
| Cyan       | 500nm                                  | 510nm | 30lm                                           |
| Green      | 520nm                                  | 535nm | 45lm                                           |
| Amber      | 585nm                                  | 595nm | 27lm                                           |
| Red-Orange | 610nm                                  | 620nm | 49lm                                           |
| Red        | 620nm                                  | 635nm | 34lm                                           |

\*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

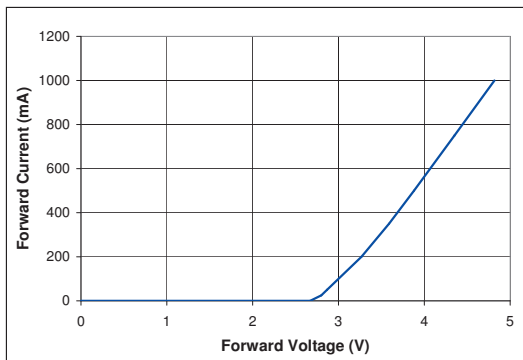
| Characteristics                                                           | Unit    | XLamp 7090  |
|---------------------------------------------------------------------------|---------|-------------|
| Thermal resistance, junction to solder point                              | °C/W    | 17          |
| 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 - -2.8 |
| Temperature coefficient of voltage (amber, red-orange, red)               | mV/°C   | -3.2 - -3.0 |
| ESD Classification<br>(HBM per Mil-Std-883D)                              |         | Class 2     |

|                                  | Unit | XLamp 7090 |
|----------------------------------|------|------------|
| Maximum DC Forward Current       | mA   | 350        |
| Maximum Reverse Voltage          | V    | 5          |
| Maximum LED Junction Temperature | °C   | 125        |
| Minimum Operating Temperature    | °C   | -20        |
| Maximum Operating Temperature    | °C   | 85         |

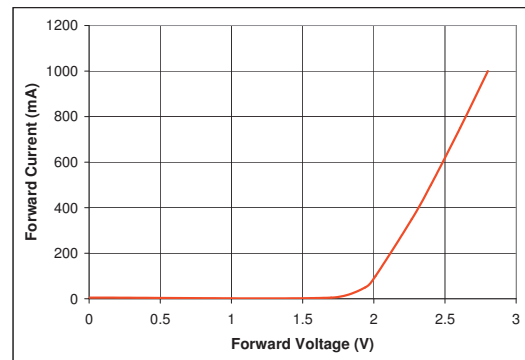
## > Relative Spectral Power



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



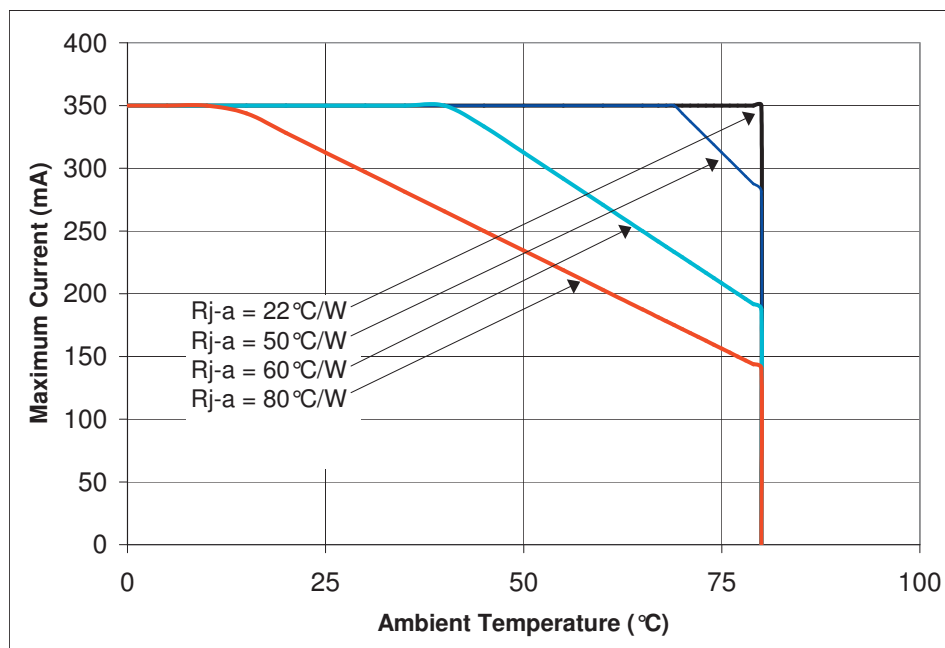
Royal Blue, Blue, Cyan, Green, White



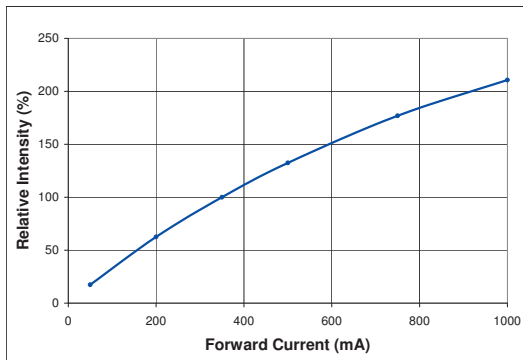
Amber, Red-Orange, Red

## > Thermal Design

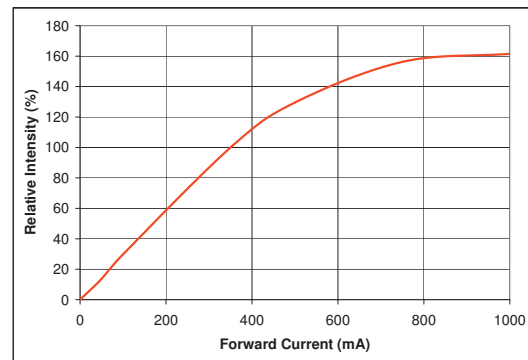
The maximum forward current is determined by the thermal resistance between the LED junction and ambient. Given an existing thermal resistance of  $17^\circ\text{C/W}$  between the junction and the solder point, it is crucial for the end product to be designed in a manner that minimizes the thermal resistance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



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

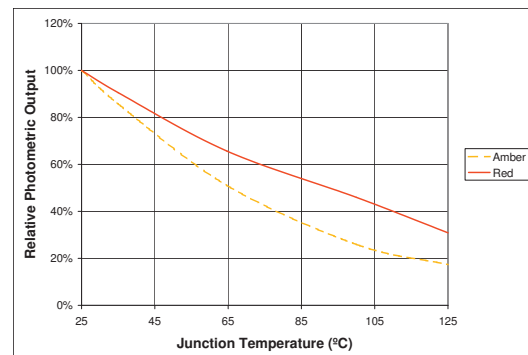
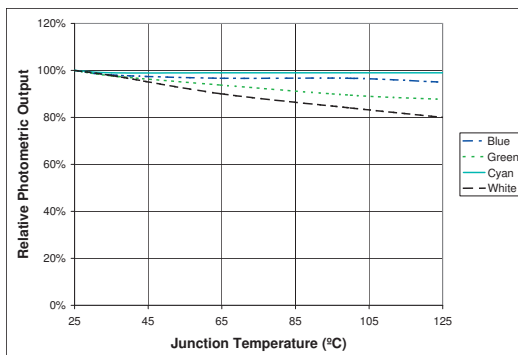


Royal Blue, Blue, Cyan, Green, White



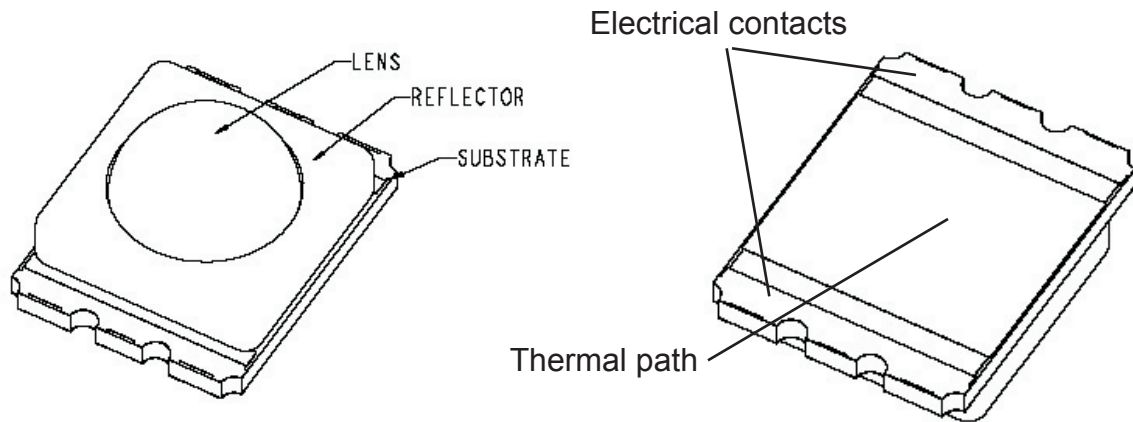
Amber, Red-Orange, Red

> Photometric Output vs. Junction Temperature,  $I_f = 350\text{mA}$

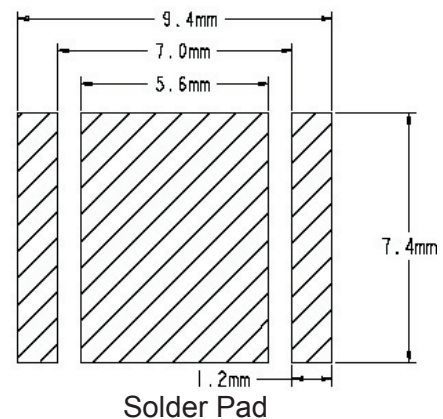
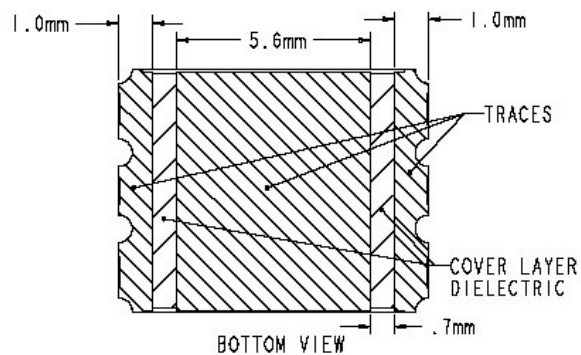
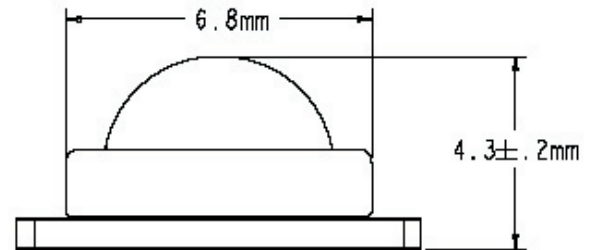
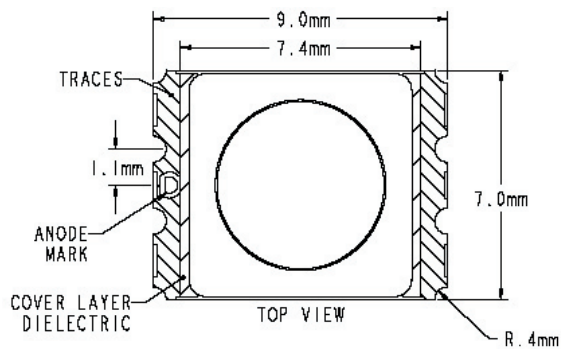


## > Mechanical Dimensions

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

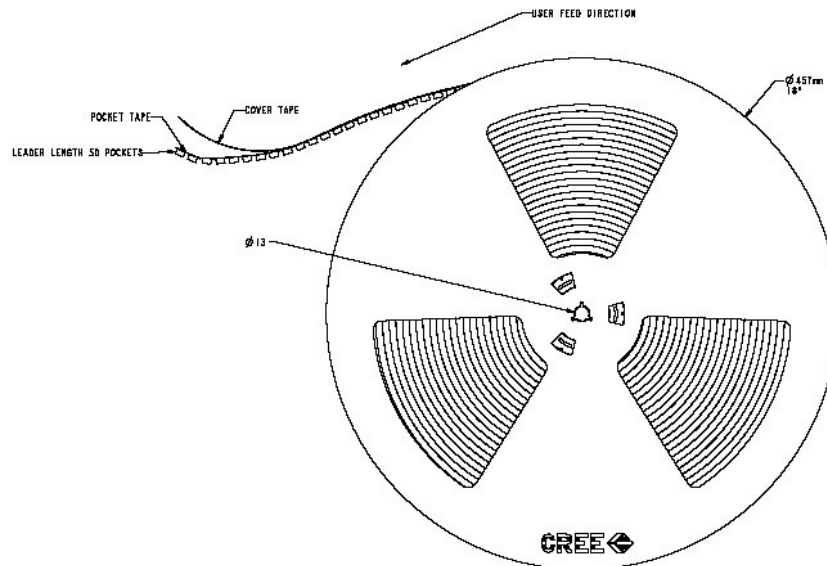
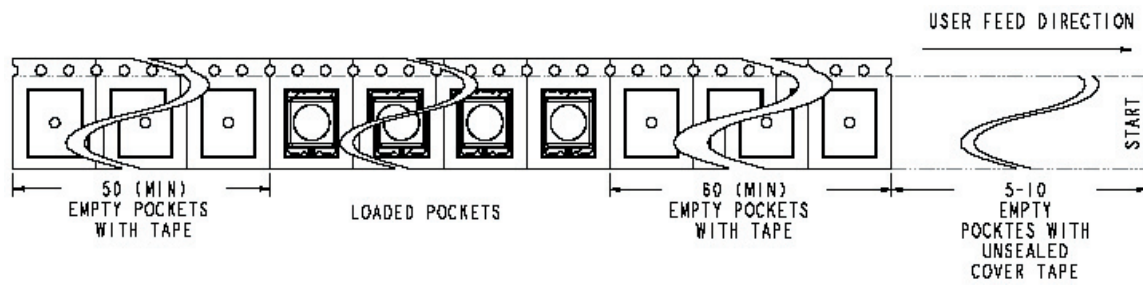
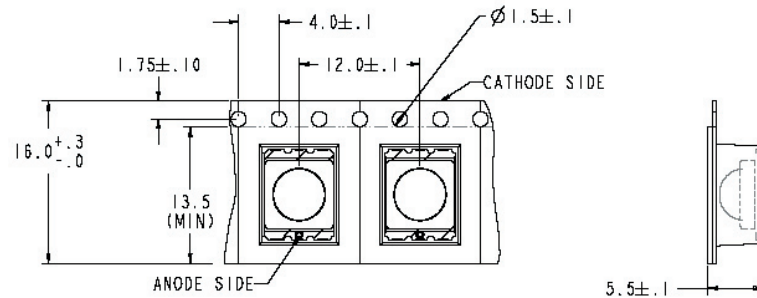


Note: Thermal path is electrically neutral.

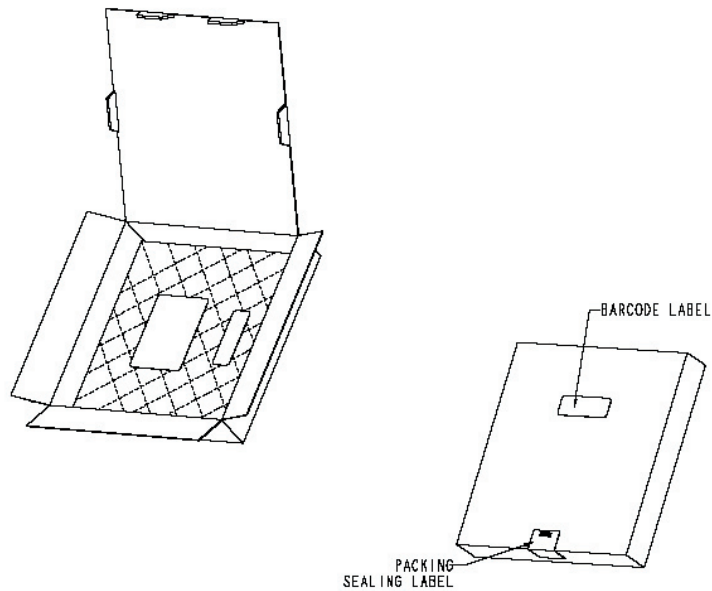
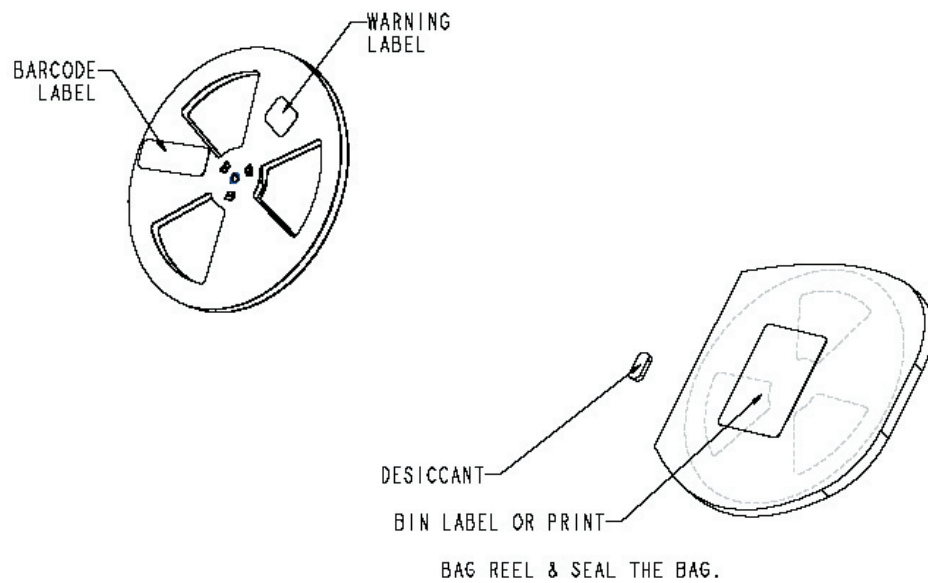


## > Tape and Reel

All dimensions in mm.



## > Dry Packing and Packaging





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