

Cree® XLamp® 7090 UVV LEDs

Note: This is an unreleased product with no release date currently scheduled. User assumes responsibility for applicability and reliability in any circuit solution.

BENEFITS

- Industry's most powerful 1-watt package
- Easy integration with secondary optics
- Small footprint — 7 mm x 9 mm
- ESD > 2000V
- Designed for automated assembly and reflow
- Available on reels for high-volume assembly

Absolute Maximum Ratings

Characteristic	Unit	
DC Forward Current	mA	350
Reverse Voltage	V	See Note*
LED Junction Temperature	°C	125
Storage Temperature	°C	-20 to +100
Operating Temperature	°C	-20 to +80
ESD Classification (HBM per Mil-Std-883D)		Class 2

Standard Order Codes – Ultraviolet					
Order Code	Bins	Peak Wavelength (nm)		Radiant Flux (mW)	
		Min.	Max.	Min.	Max.
XR7090UV-L1-0001	ALL	390	405	ALL	

Standard Bins – Ultraviolet				
Radiant Flux (mW)	350	XR7090UV-L1-UV7-13-0001	XR7090UV-L1-UV8-13-0001	XR7090UV-L1-UV9-13-0001
	300	XR7090UV-L1-UV7-12-0001	XR7090UV-L1-UV8-12-0001	XR7090UV-L1-UV9-12-0001
	250	XR7090UV-L1-UV7-11-0001	XR7090UV-L1-UV8-11-0001	XR7090UV-L1-UV9-11-0001
	210	XR7090UV-L1-UV7-10-0001	XR7090UV-L1-UV8-10-0001	XR7090UV-L1-UV9-10-0001
175				
	390	395	400	405
Peak Wavelength (nm)				

Absolute Maximum Ratings

Color	Max. Forward Voltage (Volts)	Thermal Resistance, junction to solder point Typical (°C/K)	Radiant Flux (mW) Typical 350 mA
UVV	4.0	8	200

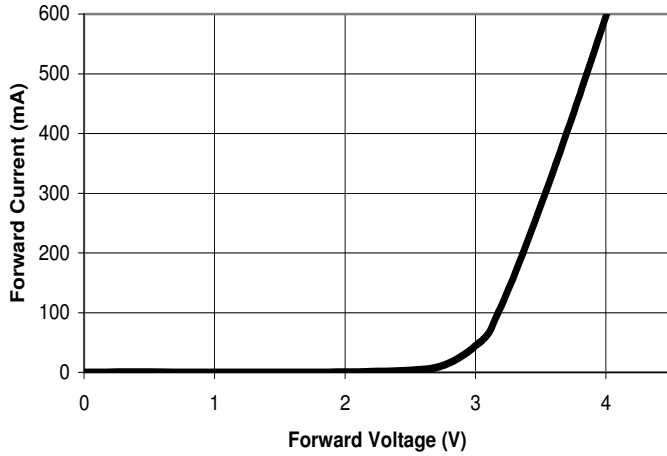
Note: Temperature coefficient of Voltage: -2.8 to 3.0 mV/°C

Heat management is critical when designing LED-based applications. The coefficient of temperature increase per input of electric power at room temperature is about .05°C/mW at the LED’s active layer or higher when LEDs are densely mounted. Operating current should be decided after considering the ambient maximum temperature when the LEDs are operating.

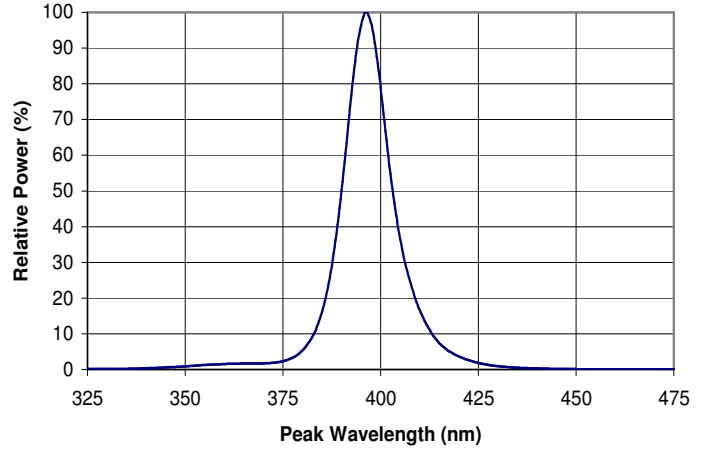
XLamp 7090 UVV LEDs should never be operated with reverse bias.

Electrical Characteristics

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

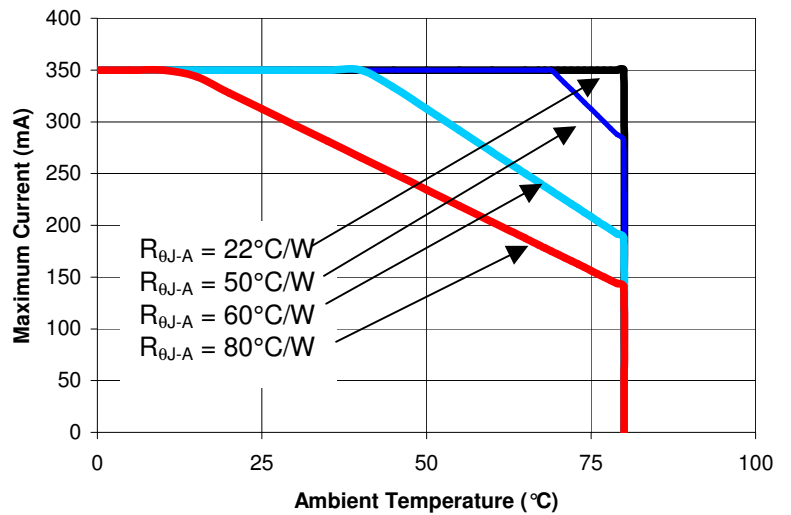


Relative Power vs. Peak Wavelength
($T_J = 25^\circ\text{C}, I_f = 350\text{ mA}$)



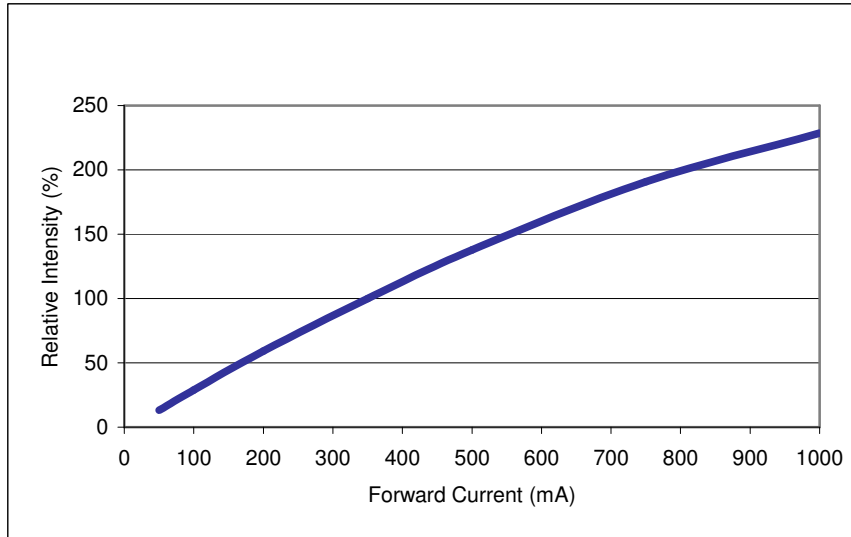
Thermal Design

The maximum forward current is determined by the thermal resistance between the LED junction and ambient. Given an existing thermal resistance of $8^\circ\text{C}/\text{W}$ between the junction and solder point, it is crucial for the application design to minimize the thermal resistance from solder point to ambient in order to optimize lamp life and optical characteristics.

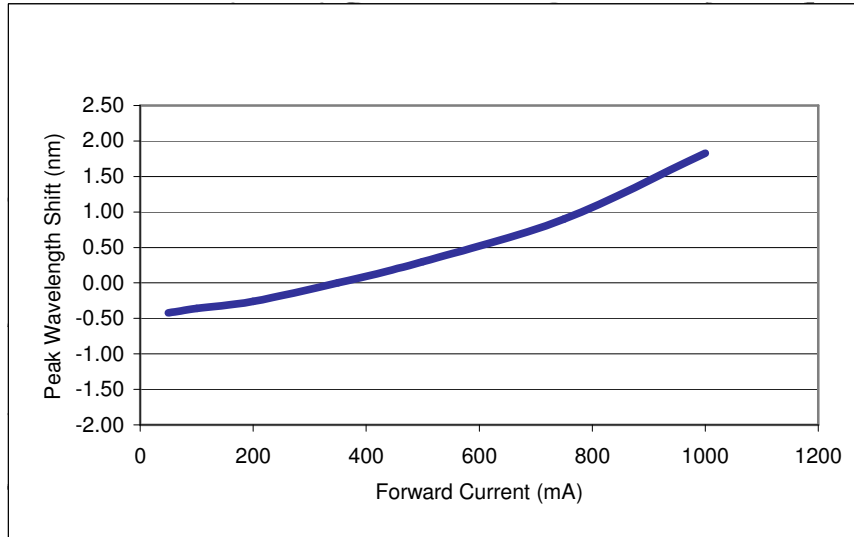


Optical Characteristics

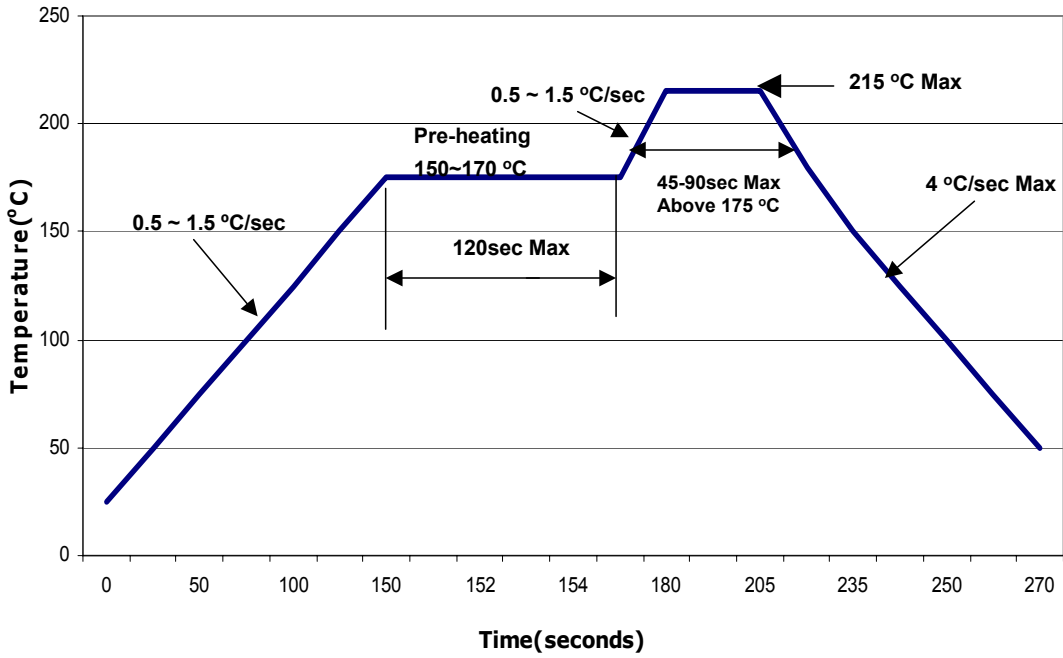
Relative Intensity vs. Current ($T_A = 25^\circ\text{C}$)



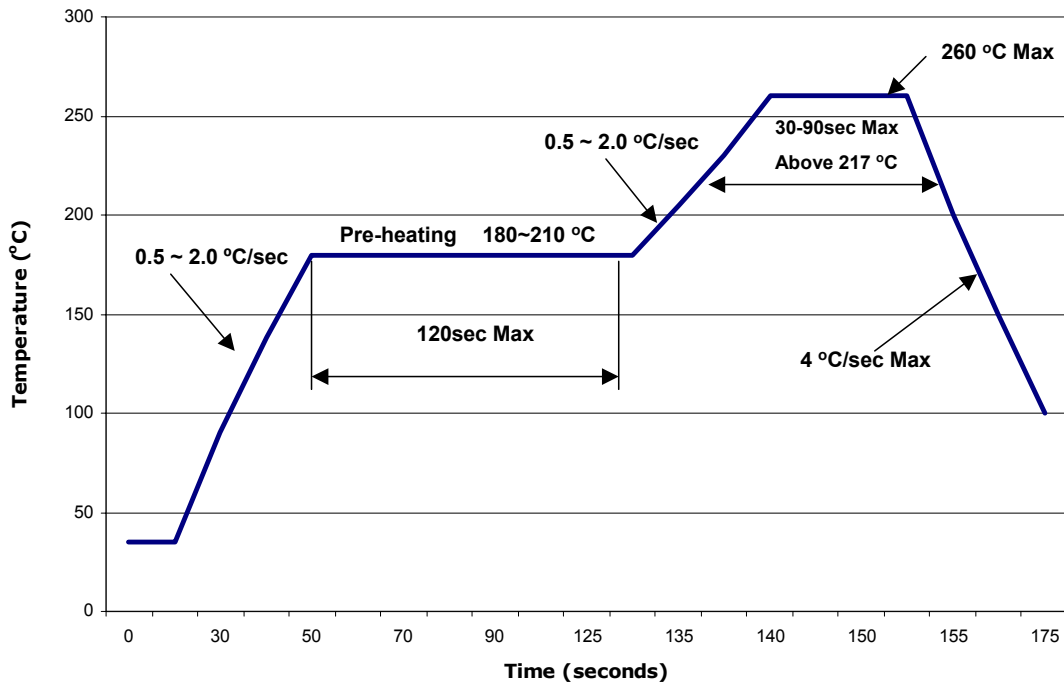
Peak Wavelength Shift vs. Current ($T_A = 25^\circ\text{C}$)



Soldering



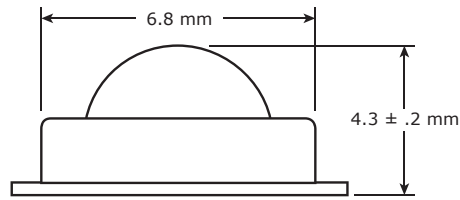
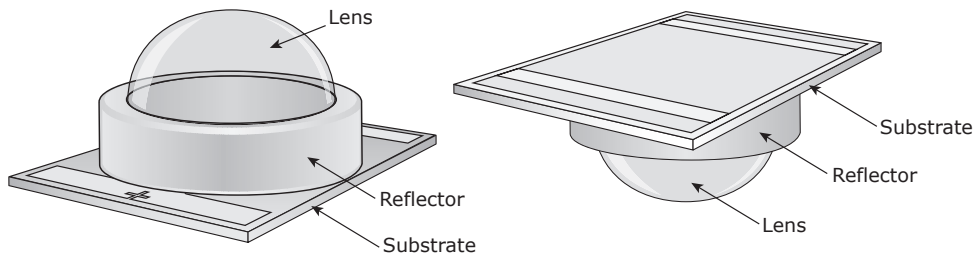
Lead-Based Solder Profile



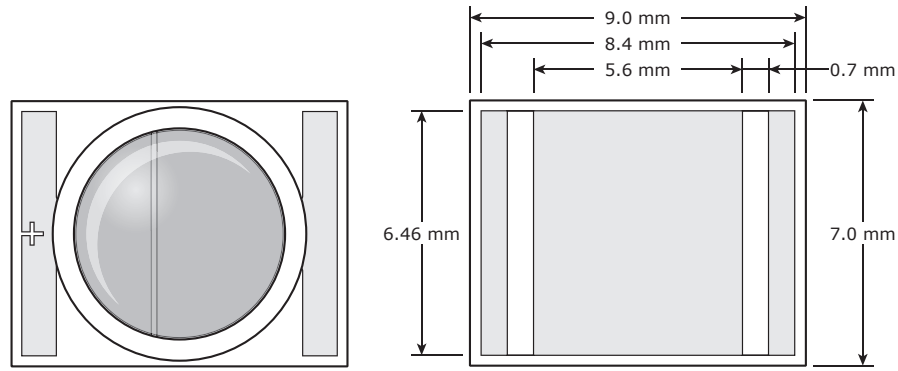
Lead-Free Solder Profile

Mechanical Dimensions

All measurements are ± 0.1 mm unless otherwise indicated.

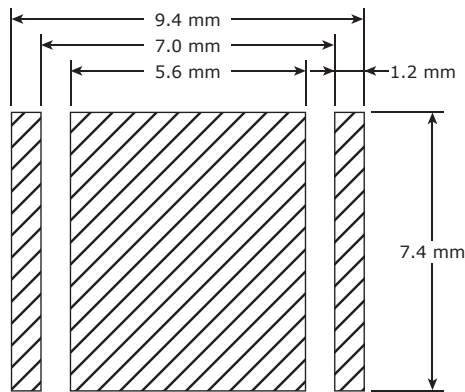


Side View



Top View

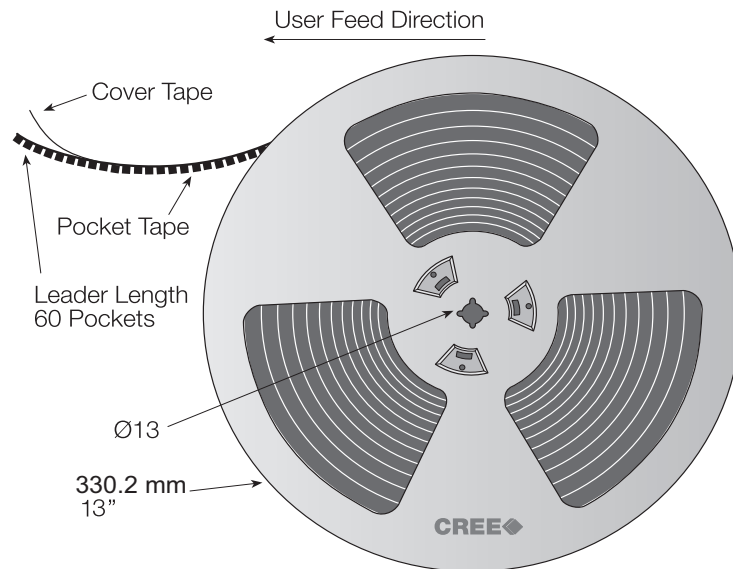
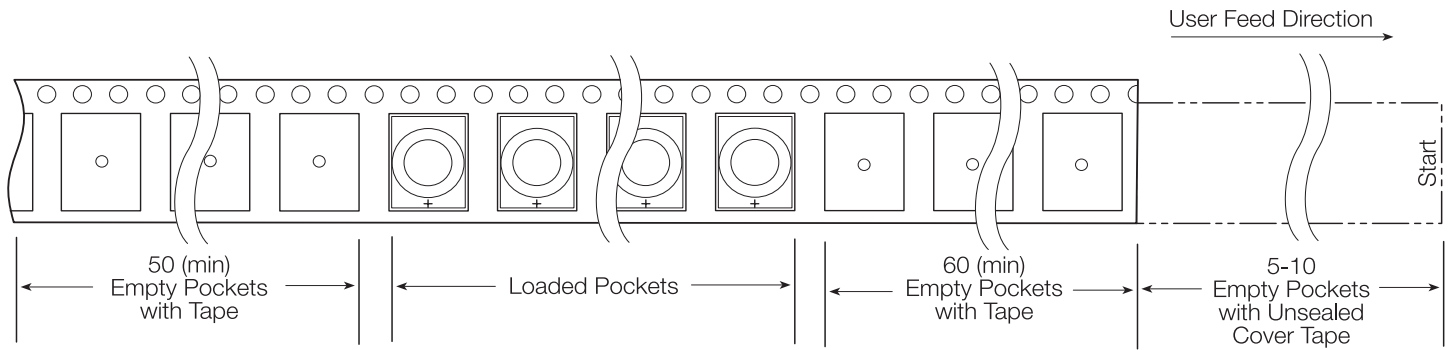
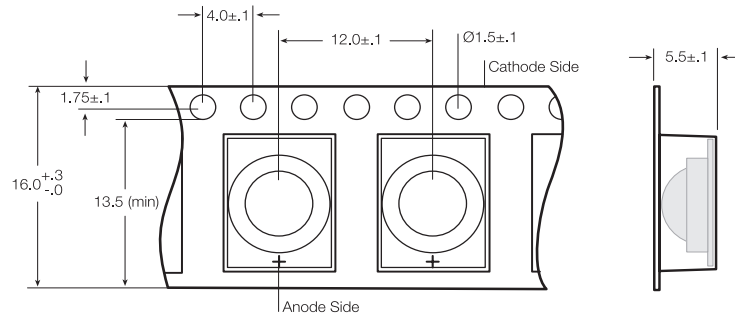
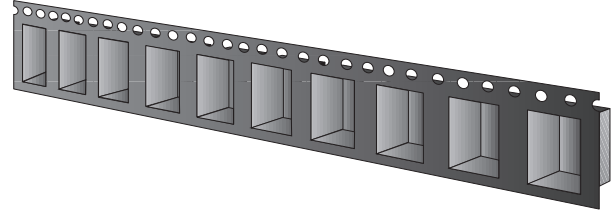
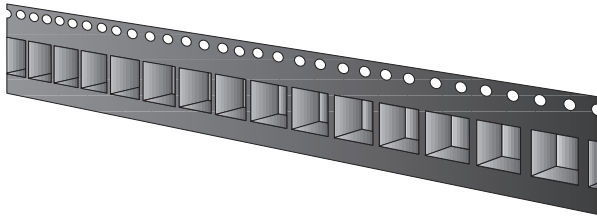
Bottom View



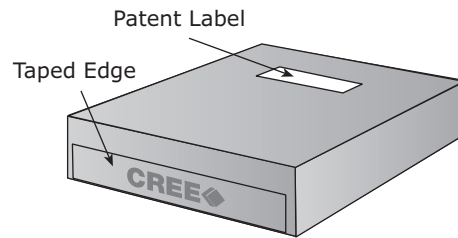
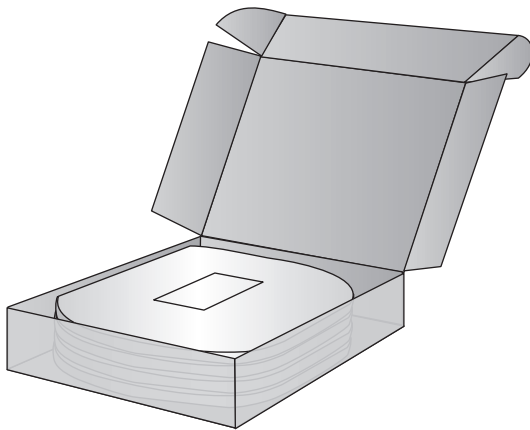
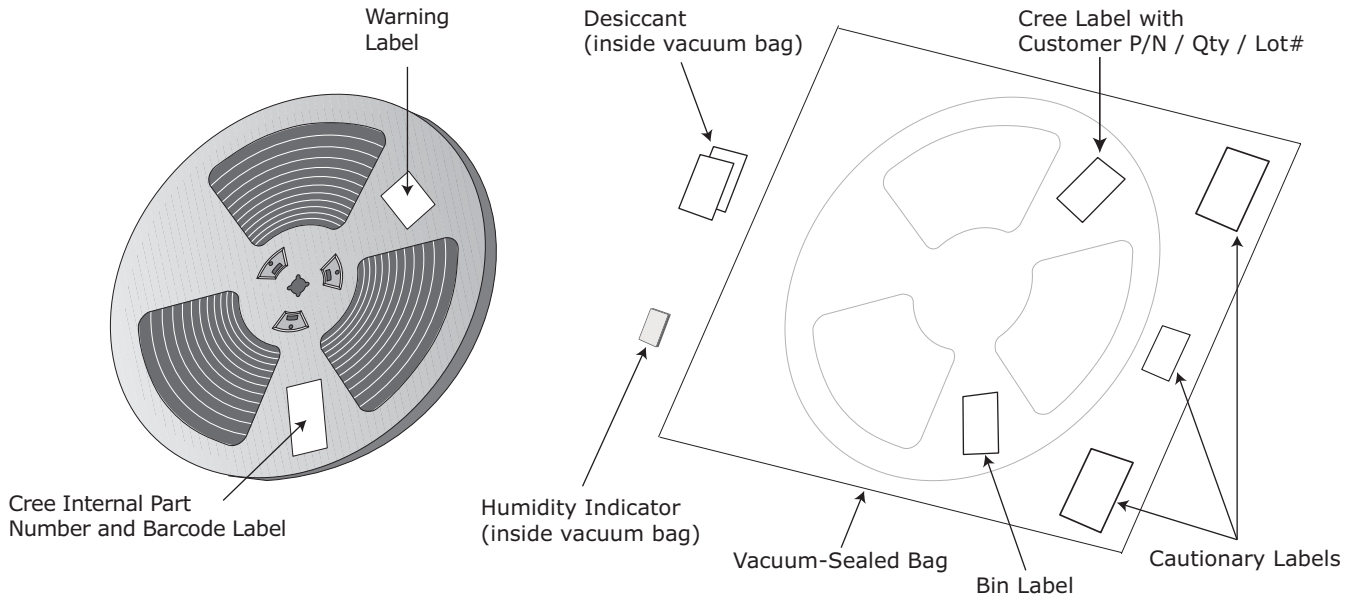
Recommended PC Board Solder Pad

Tape and Reel

All dimensions in mm.



Dry Packaging and Packaging



Caution!

XLamp 7090 UVV LEDs EMIT ULTRAVIOLET RADIATION!

These devices radiate intense ultraviolet (UV) light when operated. Most of the UV light emitted is not visible. **Exposure to UV radiation can be harmful to your health. Protect your eyes and skin during operation.**