

# Cree® XLamp® 7090 Secondary Optics

Cree XLamp LEDs combine the brightness of power LED chips with a robust package capable of operating from half of a watt to 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.

The XLamp LED family brings 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.



XLSL-7090-144B

## FEATURES

- Specifically designed for Cree's XLamp 7090 package
- High light-collection efficiency of > 90%
- Uniform CCT across the beam
- Precision molded in optical grade PMMA (acrylic)
- Fits easily with holder



XLSL-7090-144C

Typically, XLamp 7090 and XLamp 3 7090 LEDs provide a 100-degree viewing angle. Cree recognizes the need for different beam shapes and angles for specialized applications and is working with a number of optics designers and manufacturers to develop a line of secondary optics for use with its XLamp products. Initial efforts have resulted in the development of three, high-quality, collimator secondary optics that efficiently collect and direct light from Cree XLamp 7090 and XLamp 3 7090 LEDs using the industry-standard Total Internal Reflection (TIR) technique. Details for the three new optics are provided on the following pages. Cree is also working on designing additional collimators as well as reflectors that extend the options for beam and viewing-angle control.



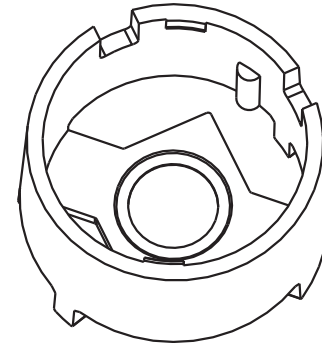
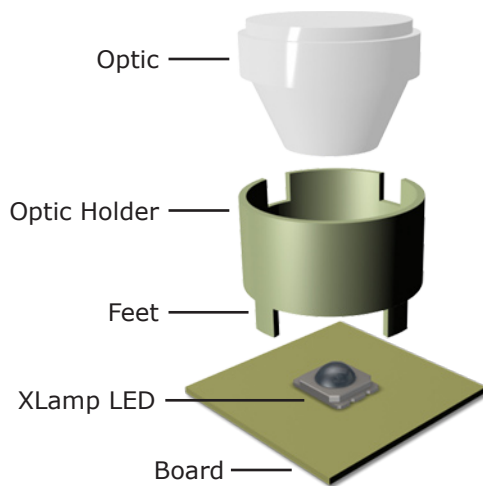
XLSL-7090-144E

Designs for the three secondary optics are available from Cree at no charge to customers utilizing XLamp LEDs in their lighting applications. In addition, Cree is working with several third-party suppliers to make these secondary optics available for purchase by Cree XLamp customers on a standardized part-number basis. To obtain a free copy of these designs or to obtain more information on where to purchase these optics, please contact your sales representative.

## Characteristics

Part Number	Typical Beam Full Width Half Maximum (°)	
	Color	White
XLSL-7090-144B	12	26
XLSL-7090-144C	10	19
XLSL-7090-144E	10	18

## Mechanical Dimensions and Assembly

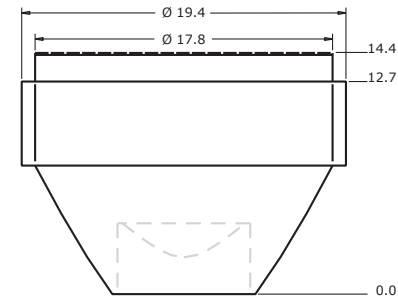


Top View—optic holder for 144B, 144C, 144E

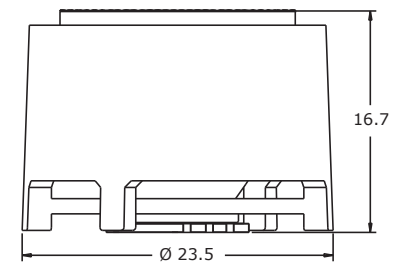
To assemble the optic with the holder:

1. Align the optic with the holder and press-fit the optic into place.
2. Align the holder with the LED and glue feet onto circuit board.\*
3. LED must be handled with care to avoid damage to the lens. For more information see: AP-04: *Cree XLamp LED Soldering and Handling*.

\* Cree recommends using a high-strength adhesive such as 3M™ Scotch-Weld™ Epoxy Adhesive DP190.

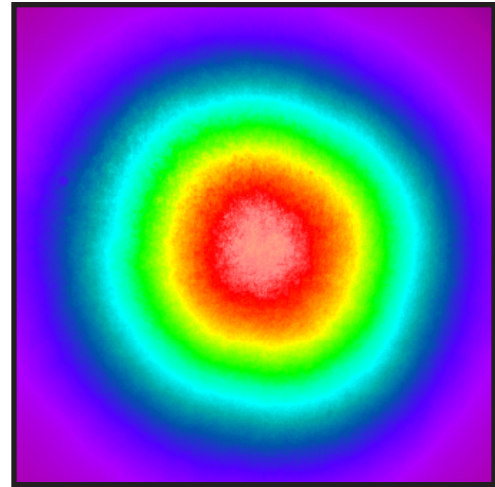
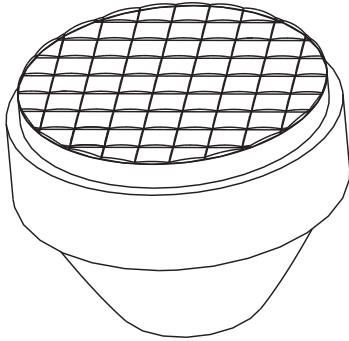


Mechanical Dimensions - 144B, 144C, 144E (dimensions in mm.)



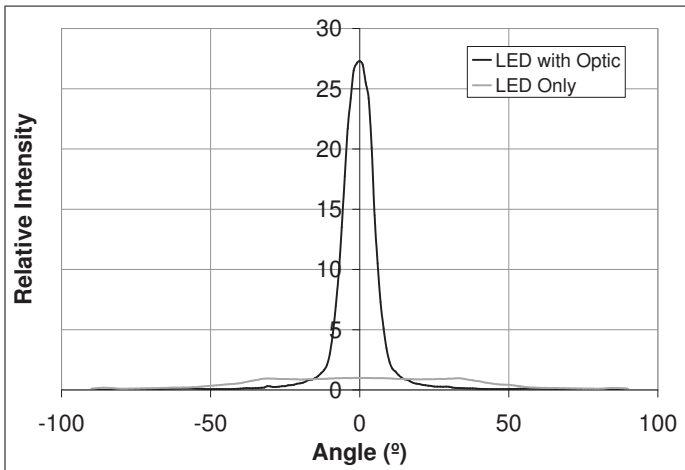
Mechanical Dimensions - optic holder with optic 144B, 144C or 144E (dimensions in mm.)

**Big Pillow Secondary Optic: 144B**

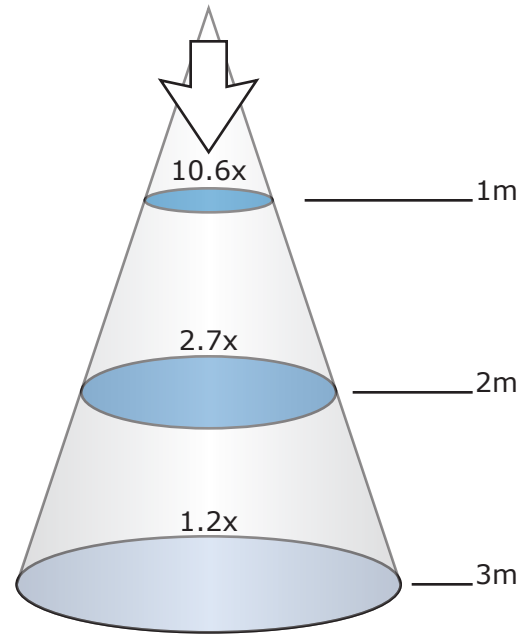
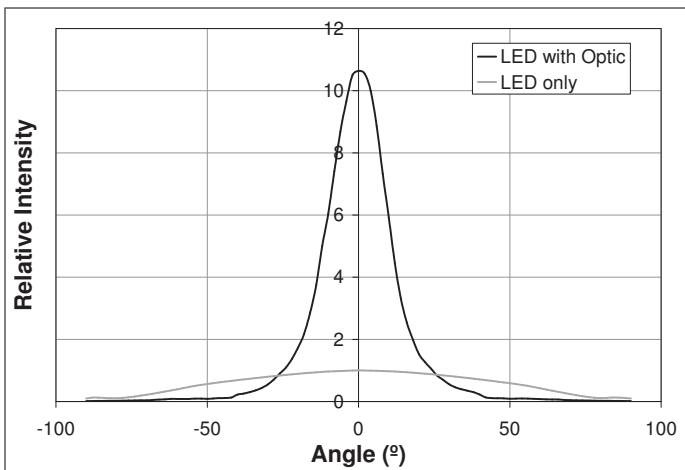


Beam Pattern

**Lens 144B – Monochromatic Source**



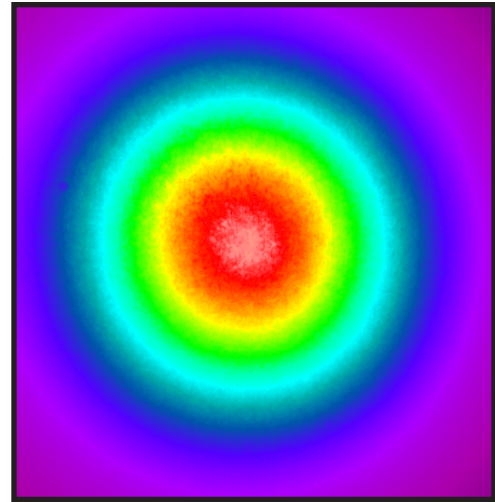
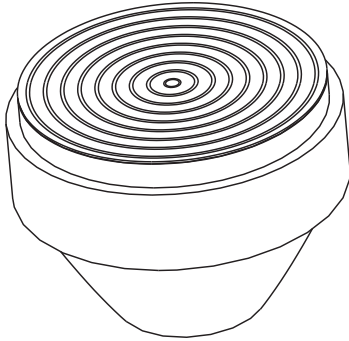
**Lens 144B – White Source**



Illuminance chart white LED with 144B

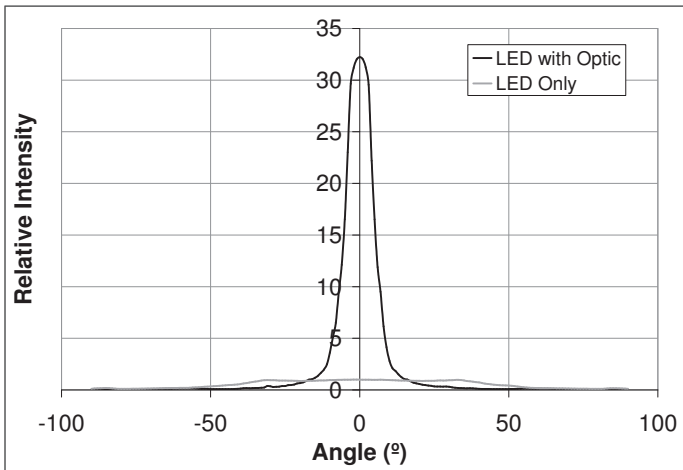
X is the illuminance of a white LED without secondary optics at a distance of one meter.

**Ring Secondary Optic: 144C**

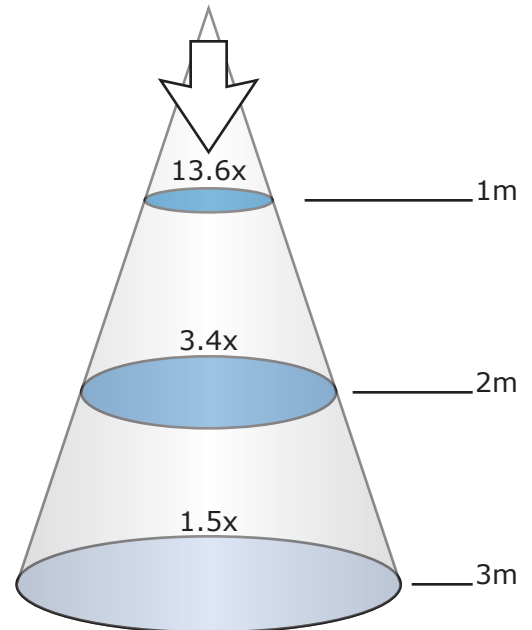
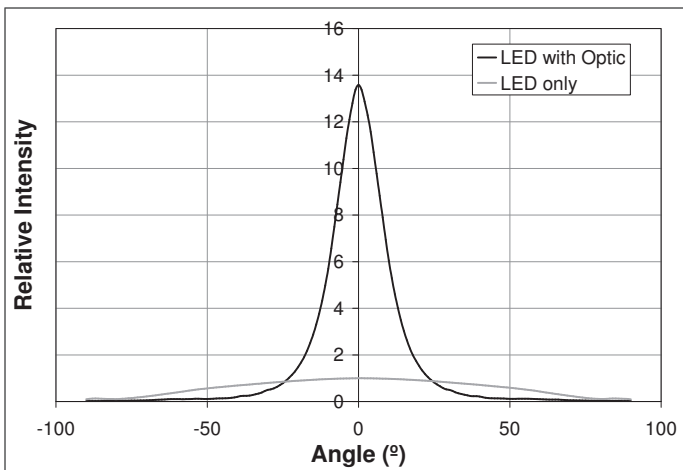


Beam Pattern

**Lens 144C – Monochromatic Source**



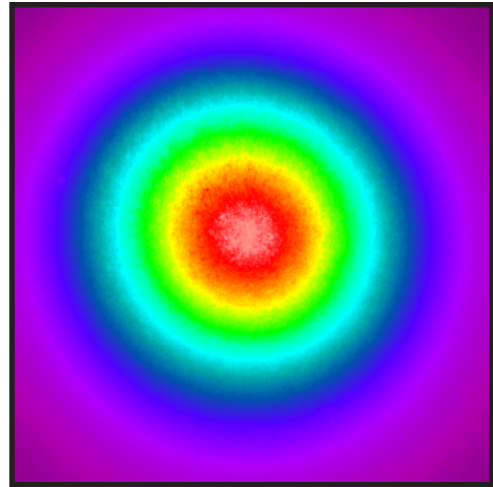
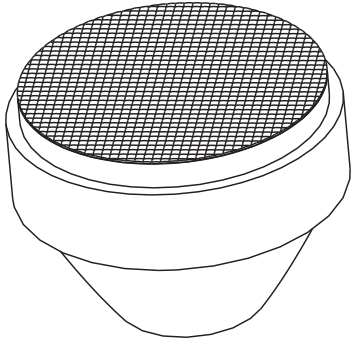
**Lens 144C – White Source**



Illuminance chart white LED with 144C

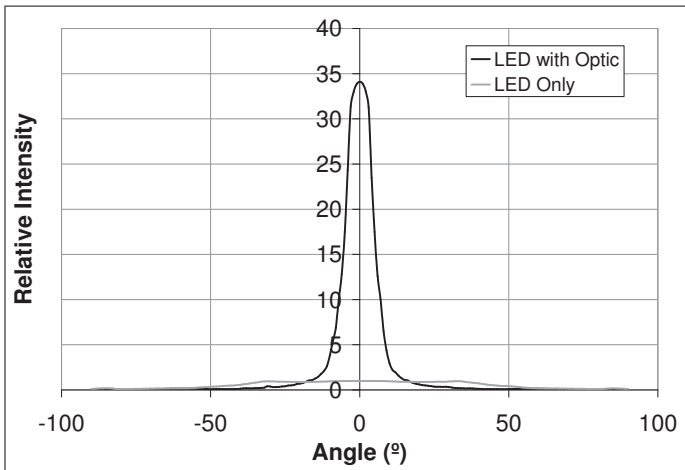
X is the illuminance of a white LED without secondary optics at a distance of one meter.

**Small Pillow Secondary Optic: 144E**

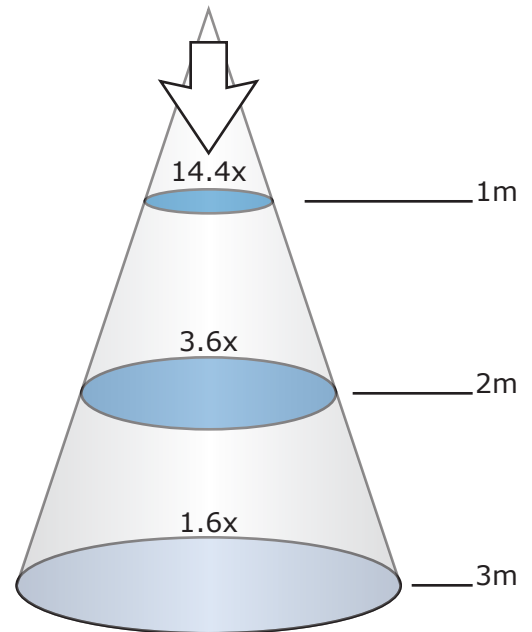
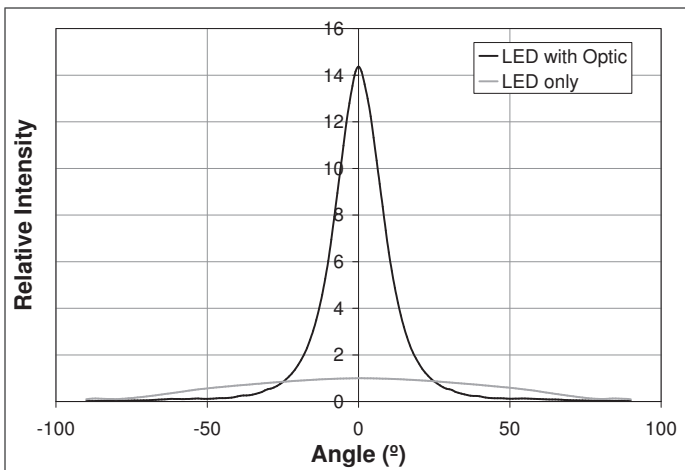


Beam Pattern

**Lens 144E – Monochromatic Source**



**Lens 144E – White Source**



Illuminance chart white LED with 144E

X is the illuminance of a white LED without secondary optics at a distance of one meter.