Unmounted Single-Color LED, 4400 nm

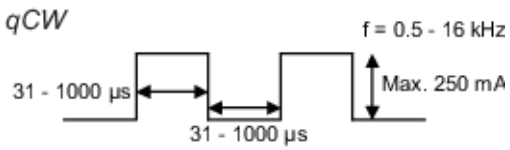
LED4400P

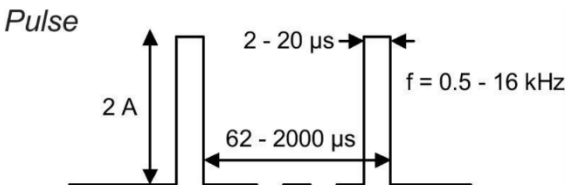
Description

The LED4400P emits light with a spectral output centered at 4400 nm. This LED is encased in a TO-18R package with a Parabolic Reflector.

Specifications

It is recommended that this diode be used in a Quasi Continuous Wave (qCW) or pulsed regime (see diagrams below). We recommend using qCW mode with a duty cycle 50% or 25% to obtain the maximum average optical power and short Pulse modes to obtain the maximum peak power. Hard Continuous Wave mode is NOT recommended.





Specification	Value
Color	IR
Nominal Wavelength	-
LED Type	TO-18R Parabolic Reflector
Maximum Current[a]	250 mA
Test Current[a,c]	200 mA
Pulsed Current[a,c]	2000 mA
Reverse Voltage[a,c]	-
Full Viewing Angle[a,b]	10°
Typical Bandwidth (FWHM)[a,b]	-
Operating Temperature (Non-Condensing)	-60 to 90 °C
Storage Temperature	-60 to 90 °C
Typical Lifetime	>5000 h
Emitter Size	1 mm x 1 mm
Anode is marked	Red
Risk Group[d]	RG0 - Exempt Group

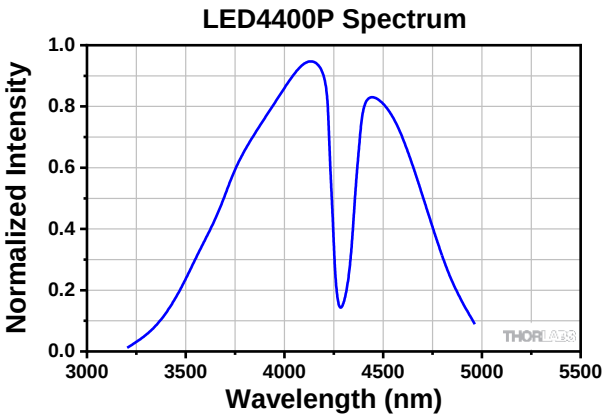
	Symbol	Min	Typical	Max
Peak Wavelength[a]	λ_p	4150 nm	-	4400 nm
FWHM[a]	$\Delta\lambda$	800 nm		1200 nm
LED Power Output[a,b]	P_{out}		12 µW	-
Forward Voltage	V_F	0.13 V	-	0.5 V

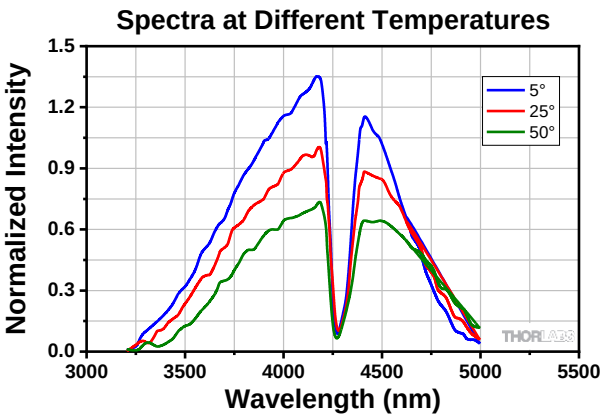
a. Measured at 25°C
b. When Driven with the Test Current
c. Pulsed Current Condition: Frequency 0.5 - 16 kHz
d. According to the standard IEC 62471:2006, Photobiological Safety of Lamps and Lamp Systems

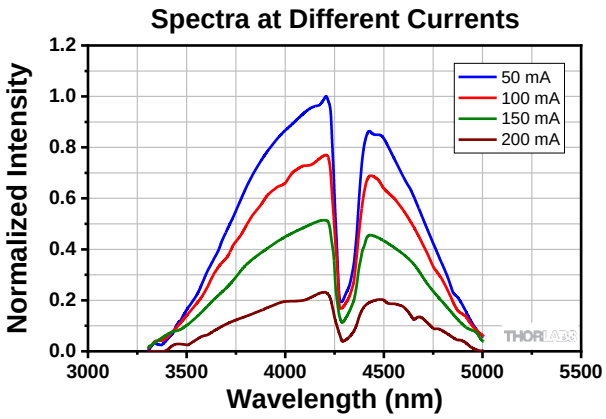
Soldering Specifications		
Manual Soldering Temperature	T_{SOL}	350 °C (within 3 sec)
Flow Soldering Temperature	T_{SOL}	250 °C (within 5 sec)

Typical Performance Plots

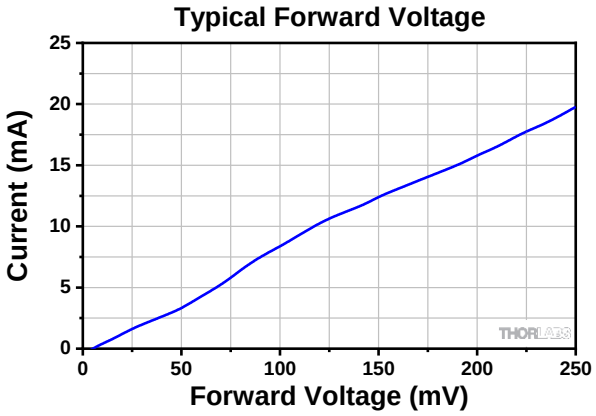
All the data shown below was taken at qCW mode @ 200 mA, 0.5 kHz repetition rate, 1 ms pulse duration, 50% duty cycle.

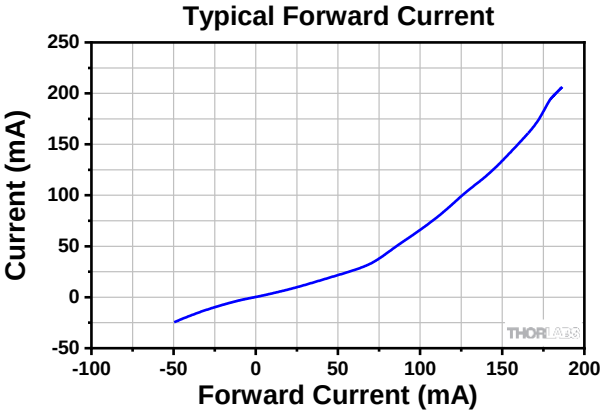


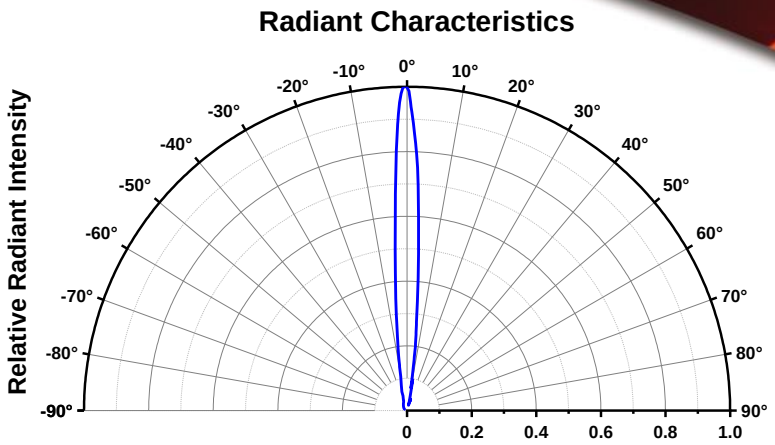




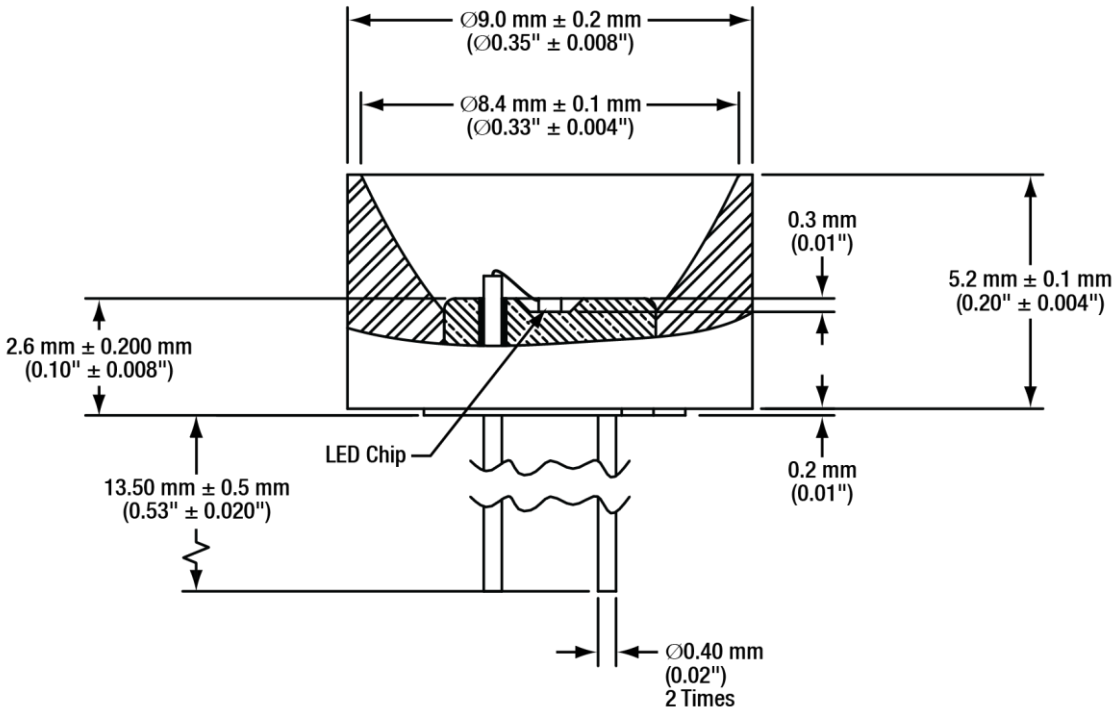
The above graphs show the LED4400P spectrum in atmosphere.
The CO_2 4300 nm absorption line is clearly visible.

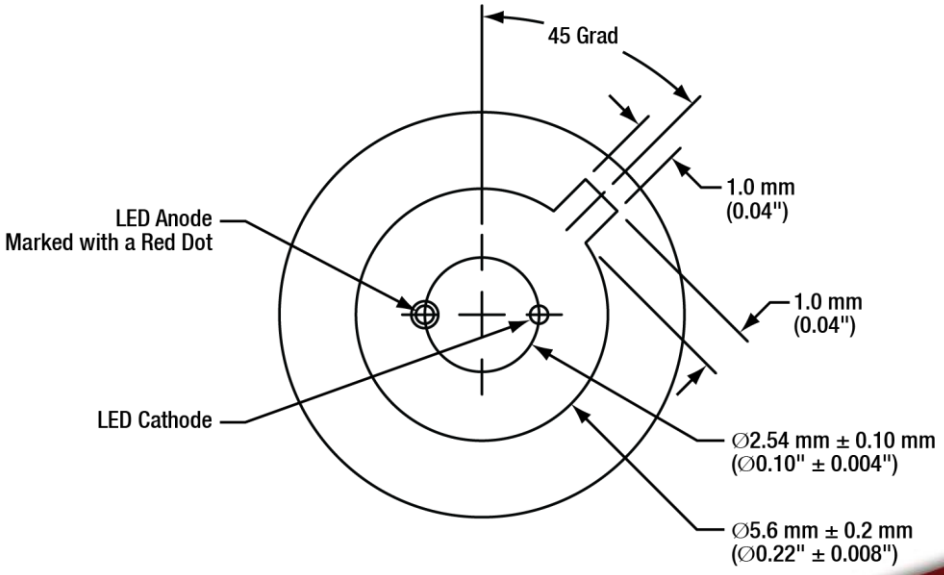





Radiant Characteristics
Relative Radiant Intensity
0°
-10°
10°
-20°
20°
-30°
30°
-40°
40°
-50°
50°
-60°
60°
-70°
70°
-80°
80°
-90°
90°
0
0.2
0.4
0.6
0.8
1.0

Drawings


Ø9.0 mm ± 0.2 mm
(Ø0.35" ± 0.008")
Ø8.4 mm ± 0.1 mm
(Ø0.33" ± 0.004")
0.3 mm
(0.01")
5.2 mm ± 0.1 mm
(0.20" ± 0.004")
2.6 mm ± 0.200 mm
(0.10" ± 0.008")
LED Chip
0.2 mm
(0.01")
13.50 mm ± 0.5 mm
(0.53" ± 0.020")
Ø0.40 mm
(0.02")
2 Times


45 Grad
1.0 mm
(0.04")
LED Anode
Marked with a Red Dot
1.0 mm
(0.04")
LED Cathode
Ø2.54 mm ± 0.10 mm
(Ø0.10" ± 0.004")
Ø5.6 mm ± 0.2 mm
(Ø0.22" ± 0.008")

Precautions and Warranty Information

These products are ESD (electro static discharge) sensitive and as a result warranty is only valid for one year for unopened products in accordance with and subject to the terms and conditions set forth in Thorlabs' General Terms and Conditions of Sale which can be found at https://www.thorlabs.com/Images/PDF/LG-PO-001_Thorlabs_terms_and_%20agreements.pdf. Warranty is void after product packaging is opened. In order to ensure the proper functioning of an LED care must be given to maintain the highest standards of compliance to the maximum electrical specifications when handling such devices. The LEDs are particularly sensitive to any voltage that exceeds the absolute maximum ratings of the product. Any applied voltage in excess of the maximum specification will cause damage and possible complete failure to the product. The user must use handling procedures that prevent any electro static discharges or other voltage surges when handling or using these devices.

During operation, the LED emits high intensity ultraviolet (UV) light, which is harmful to skin and eyes. UV light is hazardous to skin and may cause cancer. Avoid exposure to UV light when LED is operational. Precautions must be taken to avoid looking directly at the UV light without the use of UV light protective glasses. Do not look directly at the front of the LED or at the LED's lens when LED is operational. Safety of the assembled end product is the sole responsibility of the assembler of the system. Keep out of reach of children.

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2. A critical component is any component in a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system or to affect its safety or effectiveness.

3. The Thorlabs products described in this document are not intended nor warranted for usage in Military Applications.