

## LED275J - January 9, 2024

Item # LED275J was discontinued on January 9, 2024. For informational purposes, this is a copy of the website content at that time and is valid only for the stated product.

### HIGH-POWER UV LEDS WITH BALL LENS

- ▶ Center Wavelengths from 250 nm to 275 nm
- ▶ High Optical Output Power with No Greater Than 7.5° Viewing Half Angle



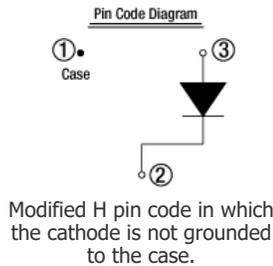
#### OVERVIEW

##### Features

- Four Center Wavelengths: 250 nm, 255 nm, 260 nm, or 275 nm
- Optical Output Power:  $\geq 1$  mW
- Integrated Ball Lens for Increased Forward Intensity

These UV LEDs are compact light sources in hermetically sealed TO-39 packages with integrated ball lenses. They provide an output power of 1 mW and have a small viewing half angle no greater than 7.5°. With these specifications, these UV LEDs are well suited for a wide range of applications including disinfection, forensic analysis, and optical sensing and imaging of biological markers.

The LEDs can be mounted in Thorlabs' SM-threaded passive mounts for LEDs, such as the SM1 (1.035"-40) threaded S1LEDM. They generate up to 1 W of heat and must be kept at a case temperature below 55 °C at a forward current of 100 mA. For temperature regulation, the HSLT2 passive heat sink lens tube is recommended for use with the S1LEDM mount. These LEDs have a TO-39



#### LED Selection Guide

LED Selection Guide		
<b>Single LEDs</b>		
Package	Wavelengths	Power <sup>a</sup>
Unmounted	245 nm - 4.5 $\mu$ m	170 mW
Unmounted, High-Power UV with Ball Lens	250 - 275 nm	1 mW (Min)
Circuit Board <sup>b</sup>	265 - 1550 nm	900 mW
Heatsink Mounted		
Fiber Coupled	280 - 1050 nm	14.5 mW <sup>c</sup>
Collimated for Microscopy	365 - 940 nm	500 mW
<b>Multiple LED Sources</b>		
4-Wavelength	365 - 660 nm	310 mW
Standard Arrays	365 - 850 nm	322 mW
<b>LED Drivers</b>		

- a. Maximum Power Unless Otherwise Specified
- b. Metal-Core Printed Circuit Board (MCPCB)
- c. Typical Power for MM Fiber with  $\varnothing 400$   $\mu$ m Core, 0.39 NA

package that follows a modified H pin code (shown to the upper left) where the cathode is not grounded to the case. In addition to the UV LEDs on this page, Thorlabs also offers a selection of other LEDs in the 245 - 4600 nm spectral range.

## LED SELECTION GUIDE

This tab includes all LEDs sold by Thorlabs. Click on *More [+]* to view all available wavelengths for each type of LED pictured below.

Light Emitting Diode (LED) Selection Guide						
Click Photo to Enlarge (Representative; Not to Scale)						
Type	Unmounted LEDs	Pigtailed LEDs	LEDs in SMT Packages	LED Arrays	LED Ring Light	Cage-Compatible Diffuse Backlight LED
Light Emitting Diode (LED) Selection Guide						
Click Photo to Enlarge (Representative; Not to Scale)						
Type	PCB-Mounted LEDs	Heatsink-Mounted LEDs	Collimated LEDs for Microscopy <sup>b</sup>	Fiber-Coupled LEDs <sup>c</sup>	High-Power LEDs for Microscopy	Multi-Wavelength LED Source Options <sup>d</sup>

a. Measured at 25 °C

b. These Collimated LEDs are compatible with the standard and epi-illumination ports on the following microscopes: Olympus BX/IX (Item # Suffix: -C1), Leica DMI (Item # Suffix: -C2), Zeiss Axioskop (Item # Suffix: -C4), and Nikon Eclipse (Bayonet Mount, Item # Suffix: -C5).

c. Typical power when used with MM Fiber with Ø400 µm core, 0.39 NA.

d. Our Multi-Wavelength LED Sources are available with select combinations of the LEDs at these wavelengths.

e. Typical power for LEDs with the Leica DMI collimation package (Item # Suffix: -C2).

f. Minimum power for the collimated output of these LEDs. The collimation lens is installed with each LED.

g. Typical power for LEDs with the Olympus BX and IX collimation package (Item # Suffix: -C1).

h. Typical power for LEDs with the Zeiss Axioskop collimation package (Item # Suffix: -C4).

i. Percentage of LED intensity that emits in the blue portion of the spectrum, from 400 nm to 525 nm.

## UV LEDs with Ball Lens (250 - 275 nm)

Item #	Info	Peak Wavelength <sup>a</sup>	Optical Power (Min) <sup>b</sup>	Spectral FWHM <sup>a</sup>	Viewing Half Angle <sup>a</sup>	Max DC Forward Current <sup>c</sup>	Package <sup>d</sup>
LED250J		250 nm	1 mW	12 nm	7.5°	100 mA	TO-39
LED255J		255 nm	1 mW	12 nm	7.5°	100 mA	TO-39
LED260J		260 nm	1 mW	12 nm	7.5°	100 mA	TO-39
LED275J		275 nm	1 mW	12 nm	7.5°	100 mA	TO-39

a. Typical values unless otherwise noted.

b. At 100 mA.

c. Temperature: 25 °C

d. We recommend mounting these LEDs in S1LEDM LED Mounts with HSLT2 Passive Heat Sink Lens Tubes.

Part Number	Description	Price	Availability
LED250J	250 nm LED with Ball Lens, 1 mW (Min), TO-39	\$438.76	Today
LED255J	255 nm LED with Ball Lens, 1 mW (Min), TO-39	\$390.64	Today
LED260J	260 nm LED with Ball Lens, 1 mW (Min), TO-39	\$402.91	Today
LED275J	275 nm LED with Ball Lens, 1 mW (Min), TO-39	\$400.37	Lead Time

## LED Mounts



The S05LEDM and S1LEDM LED Mounts are SM05 (0.535"-40) and SM1 (1.035"-40) threaded, respectively. They are designed to hold any of Thorlabs' TO-18, TO-39, TO-46, or T1-3/4 packages using the included adapter rings. The external threading on these mounts allows them to be used in a wide variety of SM05- or SM1-

compatible optomechanics.

To aid in threading the retaining ring into the mount or in threading the mount into a mating component, we recommend using our selection of spanner wrenches. The SPW801 Adjustable Spanner Wrench can be used to thread LED retaining rings into the mount and the mount into a mating component. Alternatively, the table to the right also lists the compatible fixed spanner wrench for each mount.

LED Mount Compatibility				
Item #	LED Package	External Mounting Threads	Compatible Spanner Wrenches	
			Mount	LED Retaining Ring
S05LEDM	TO-18, TO-39,	SM05 (0.535"-40)	SPW603 SPW801	SPW301 SPW801
S1LEDM	TO-46, and T1-3/4 <sup>a</sup>	SM1 (1.035"-40)	SPW909 SPW801	

- a. The LEDRGBE uses a T-1 3/4 package, but is not compatible with the S05LEDM and S1LEDM, as the four pins prevent the retaining ring from holding the LED in place.

Part Number	Description	Price	Availability
S05LEDM	Customer Inspired! SM05-Threaded Mount for TO-18, TO-39, TO-46, or T-1 3/4 LEDs	\$38.03	Today
S1LEDM	SM1-Threaded Mount for TO-18, TO-39, TO-46, or T-1 3/4 LEDs	\$38.56	Today

### Specifications

Characteristic	MIN	TYP	MAX
Power Dissipation	-	-	1 W
Operating Current (Continuous)	-	-	100 mA
Forward Voltage at 100 mA	-	8 V	10 V
Thermal Resistance, Junction to Case	-	37 °C/W	-
Optical Output Power at 100 mA	1 mW	-	2 mW
Viewing Half Angle	-	7.5°	-
Peak Wavelength	270 nm	275 nm	280 nm
Bandwidth (FWHM)	-	12°	-
Lifetime at 25 °C, 20 mA	-	8000 hours	-
Lifetime at 25 °C, 100 mA	1000 hours	3000 hours	-

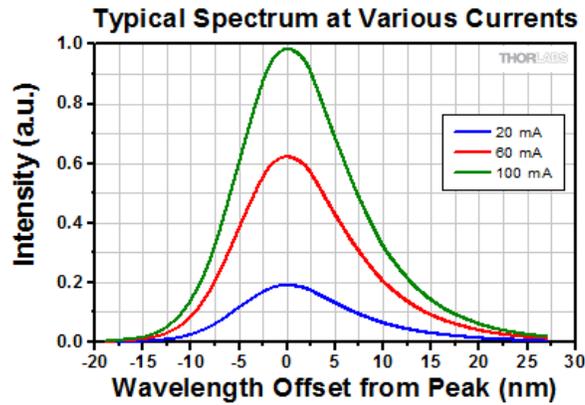
### Absolute Maximum Ratings<sup>a</sup>

Reverse Voltage	1.0 V
DC Forward Current	110 mA
Operating Case Temperature	-5 to 55 °C
Storage Temperature	-40 to 100 °C

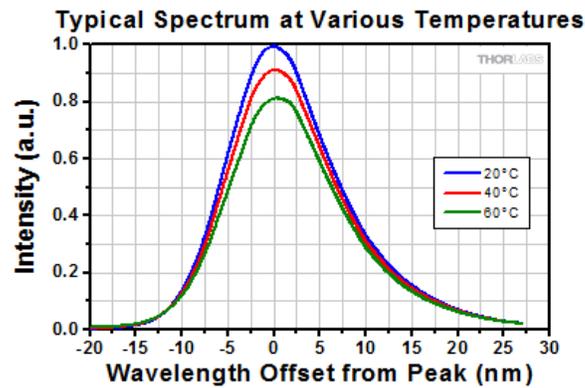
- a. Absolute Maximum Rating specifications should never be exceeded. Operating beyond these conditions can seriously damage the LED.

### Soldering Specifications

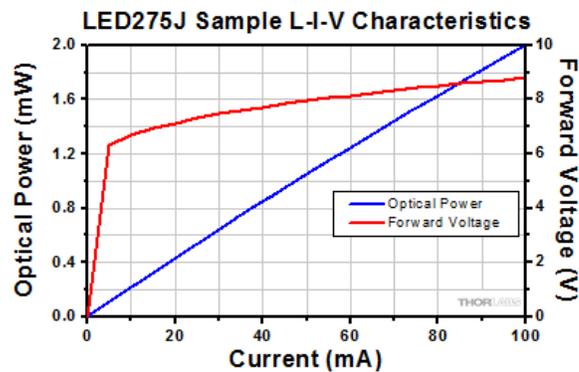
Dip Soldering	Pre-Heat Backside of PCB at 90 °C Maximum for 60 Seconds or Less; Solder Bath at 260 °C Maximum for 5 Seconds or Less
Hand Soldering	Soldering Iron Tip at 300 °C Maximum for 3 Seconds or Less



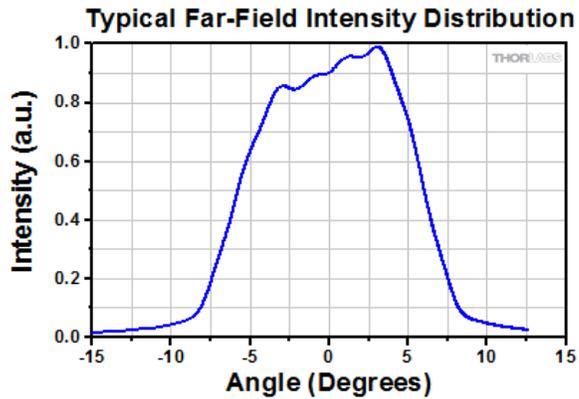
Typical spectra are shown above, all of which were obtained with the case temperature held at 25 °C.



Typical spectra are shown above for a variety of temperatures, all of which were obtained with a pulsed driving current of 100 mA. This data is for one particular diode; the performance will vary from device to device. To view an Excel file with raw data from the sample LED shown above, please click [here](#).



The typical L-I-V characteristics are shown above, which were obtained with the case temperature held at 25 °C. This data is for one particular diode; the performance will vary from device to device. To view an Excel file with raw data from the sample LED shown above, please click [here](#).



The typical far field intensity distribution is shown above, which was recorded 25 mm from the LED with the case temperature held at 25 °C. This data is for one particular diode; the performance will vary from device to device. To view an Excel file with raw data from the sample LED shown above, please click [here](#).

