Fiber-Coupled LED 530 nm

M530F2

Description

Thorlabs' M530F2 Fiber-Coupled LED has a nominal wavelength of 530 nm, outputs more than 6.8 mW of power, and is mounted to the end of a heat sink. The output is compatible with SMA fiber connectors. This LED needs to be supplied with a constant current that must not exceed 1000 mA.

Specifications

Specification	Value
Color	Green
Nominal Wavelength	530 nm
Test Current for Typical LED Power	1000 mA
Maximum Current (CW)	1000 mA
Bandwidth (FWHM)	30 nm
Electrical Power	3100 mW
Typical Lifetime	>50 000 h
Operating Temperature (Non-Condensing)	0 to 40 °C
Storage Temperature	-40 to 70 °C
Emitter Size	1 mm x 1 mm
Risk Group[a]	RG0 - Exempt Risk Group

a. According to the standard IEC 62471:2006, Photobiological Safety of Lamps and Lamp Systems

M530F2				
	Symbol	**Min**	**Typical**	**Max**
Dominant Wavelength[a]	λ_p	520 nm	-	535 nm
LED Power Output (Ø400 µm Fiber)[a,b]	P_{out}	6.8 mW	9.6 mW	-
LED Power Output (Ø200 µm Fiber)[a,c]	P_{out}	-	3.2 mW	-
Forward Voltage[a]	V_F	-	3.1 V	-

a. When Driven with the Test Current

b. For multimode fiber with a Ø400 µm core and 0.39 NA (Item # FT400EMT).

c. For multimode fiber with a Ø200 µm core and 0.22 NA (Item # FG200UCC).

Operating Instructions

Be sure to provide air ventilation in order to avoid overheating, drops in optical power, and reduced lifetime. Each LED has a characteristic switch-on behavior, which depends on the LED properties and environment conditions. An important criterion is the heat dissipation. The M530F2 has a unique thermal and heat sink design that reduces the power decay to a minimum.

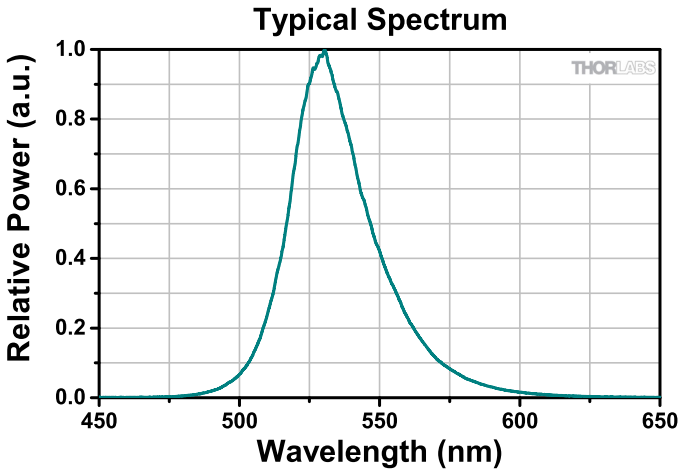
M530F2's male connector is a standard M8x1 sensor circular connector. Pins 1 and 2 connect to the LED. Pins 3 and 4 are used for the internal EEPROM. Only use these connections when using a Thorlabs LED driver.

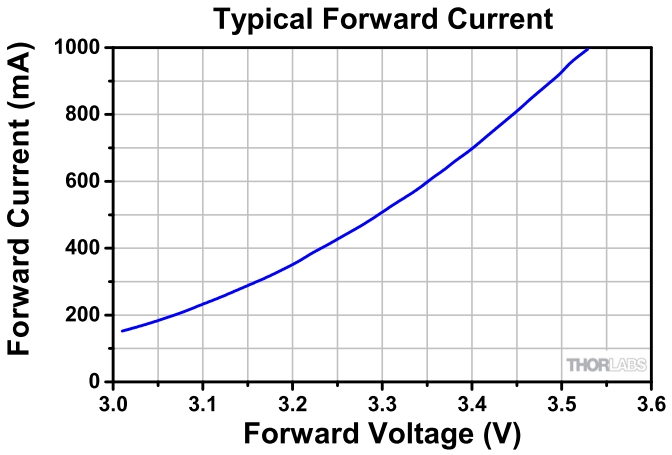
After an LED is switched on, it will warm up which can cause a decay in optical power. The heat sink of the M530F2 provides good thermal management, reducing the loss of power as the LED reaches its equilibrium temperature.

Optical Fiber

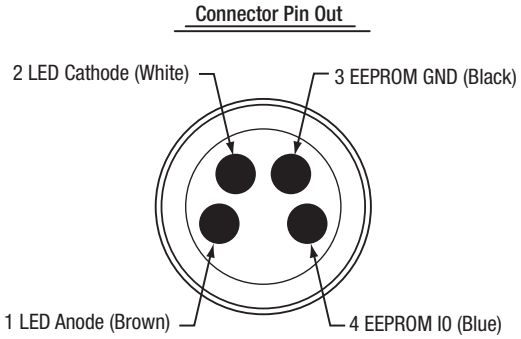
Fiber connection to the M530F2 must be made via an SMA fiber connector. We recommend using multimode (MMF) fiber with the M530F2. Optical output power is specified for a Ø400 µm MMF with an NA of 0.39 at the maximum allowed LED current. Optical power increases proportionally with the core diameter and nearly proportionally to the square of the NA.

Performance Plots





Drawings



Power Supply

We recommend using Thorlabs' DC2200 or LEDD1B LED current drivers (for control of a single LED). Alternatively, the DC4100 or DC4104 current driver can be used with the DC4100-HUB, which allows simultaneous control of up to 4 individual LEDs.

If you decide to use your own DC source, please make sure that the operating current does not exceed the maximum allowed value, sufficient forward voltage is supplied, and that the correct connection is made to Pins 1 and 2.

Maintenance and Service

Do not stick any items into the SMA connector aperture – you may damage the LED.

The M530F2 is not water resistant and must be protected from adverse weather conditions. To avoid damage, do not expose it to spray, liquids, or solvents. The M530F2 does not contain any parts serviceable by the user and does not require regular user maintenance. Do not open the enclosure. If a malfunction occurs, contact Thorlabs for return instructions.

If your fiber-coupled LED needs repair, please contact Thorlabs for return instructions.

Warnings and Safety

Inappropriate use of any Fiber-Coupled LED product may result in permanent eye damage. To prevent injury, use this product in accordance with the International Standard "Photobiological Safety of Lamps & Lamp Systems" IEC 62471. This product falls under Risk Group RG0 – Exempt Risk Group in accordance to the standard IEC 62471:2006.

If using this LED in a microscope application as a replacement for mercury vapor lamp, the same precautions should be taken.

During normal operations, the casing temperature may exceed ambient temperature by as much as 25 °C (45 °F). To prevent higher case temperatures, the products should be operated without anything hindering air movement around the convective cooling fins.

Please note that this product is not suitable for household room illumination.

This LED must not be operated in explosive environments and should only be used with shielded connection cables.

All statements regarding safety of operation and technical data only apply when the unit is operated correctly according to its specifications. The safety of any system incorporating the equipment is the responsibility of the assembler of the system.