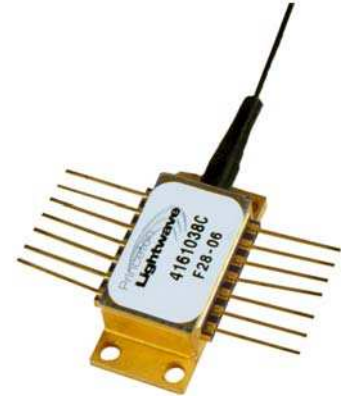


## 1550 High Power Single Mode Laser PSL-450

Princeton Lightwave's 1550 nm pump lasers feature advanced MQW chip design and packaging technologies. Designed to deliver very high power. It is an ideal light source for high performance OTDR equipment.



### Features

- High Power
- Optional FBG stabilization
- SMF-28 or optional PM fiber

### Applications

- Test & Measurements
- Sensing
- Telecommunications

### SPECIFICATIONS

Operating Conditions:  $T_{case} = 25^{\circ} C$  (unless specified otherwise)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
<b>Laser Diode</b>						
Fiber Coupled Output Power <sup>1</sup>	Pf	Fiber-coupled BOL in pulsed mode with 1% duty cycle and 30 $\mu$ s pulse duration	350	400	-	mW
Forward Drive Current	I <sub>fOP</sub>	Pulsed operation (1% Duty cycle 30 $\mu$ s pulse duration)	1100	2200	2600	mA
Pulsed Power Droop	$\Delta$ PF	1% Duty cycle 30 $\mu$ s pulse duration	-	-	20	%
EOL Forward Drive Current	I <sub>f EOL</sub>	Pulsed operation (1% Duty cycle 30 $\mu$ s pulse duration) End of life (EOL)	-	-	1.2 * BOL	mA
Forward Voltage	V <sub>f BOL</sub>	At rated power; BOL	-	-	3.8	V
Center Wavelength	$\lambda_c$	RMS at rated power (Pulsed) with 1% Duty Cycle and 10ns-30 $\mu$ s pulse duration	$\lambda_c - 20$	1550	$\lambda_c + 20$	nm
Spectral Width <sup>2</sup>	$\Delta\lambda$	RMS at rated power (Pulsed) with 1% Duty Cycle and 10ns-30 $\mu$ s pulse duration		12		nm

### Notes:

1. CW operation coupled power is 300mW typical, 250mW minimum with I<sub>fOP</sub> 1.75A Max.
2. Spectral width with optional external fiber Bragg grating is <1nm.

## SPECIFICATIONS

Operating Conditions:  $T_{case} = 25^{\circ} C$  (unless specified otherwise)

<b>Monitor Photodiode</b>						
Monitor Current	$I_m$	$V_{rPD} = 5V$ ; at 5mW CW operation	0.5	-	25	$\mu A$
Monitor Dark Current	$I_d$	$V_{rPD} = 5V$	-	-	100	nA
<b>Thermoelectric Cooler</b>						
TEC Current	$I_c$	Max. $\Delta T = 40^{\circ} C$	-	1.7	2.0	A
TEC Voltage	$V_c$	Max. $\Delta T = 40^{\circ} C$	-	1.6	2.0	V
Thermistor Resistance	$R_{th}$	Thermistor temperature $T_s = 25^{\circ} C$	9.5	10	10.5	k $\Omega$
<b>Fiber Pigtail</b>						
Type <sup>3</sup>	SM, Corning SMF 28 or Equivalent					
Mode Field Diameter			9	10	11	$\mu m$
Jacket Diameter				900		$\mu m$

### Notes:

- Optional polarization maintaining fiber is "Panda" style.

## ABSOLUTE MAXIMUM RATINGS

CW operation unless specified

Parameter	Min	Max	Units
<b>Laser Diode</b>			
Forward Current		1700	mA
Reverse Voltage		2	V
Operating Temperature	15	35	$^{\circ} C$
<b>Monitor Photodiode</b>			
Forward Current		5	mA
Reverse Voltage		20	V
<b>Thermoelectric Cooler</b>			
TEC Current		6.0	A
TEC Voltage		4.2	V
<b>Package</b>			
Storage Temperature	-40	85	$^{\circ} C$
Operating Temperature	-0	65	$^{\circ} C$
Lead Soldering Temperature (10 sec. max)		260	$^{\circ} C$
<b>Fiber Pigtail</b>			
Fiber Tensile Load (< 10 sec.)		100	kpsi
Fiber Bend Radius	30		mm

## MECHANICAL SPECIFICATIONS

The 14 pin butterfly package contains the laser chip, thermoelectric cooler and a thermistor mount at the chip. The negative temperature coefficient thermistor in the package has a nominal resistance of 10 kΩ. The Steinhart-Hart coefficients with 10 μA current are:

$$A = 1.028444 \times 10^{-3}$$

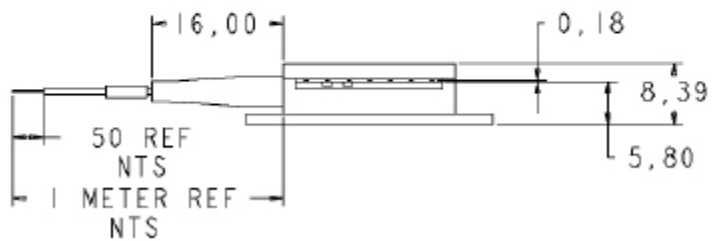
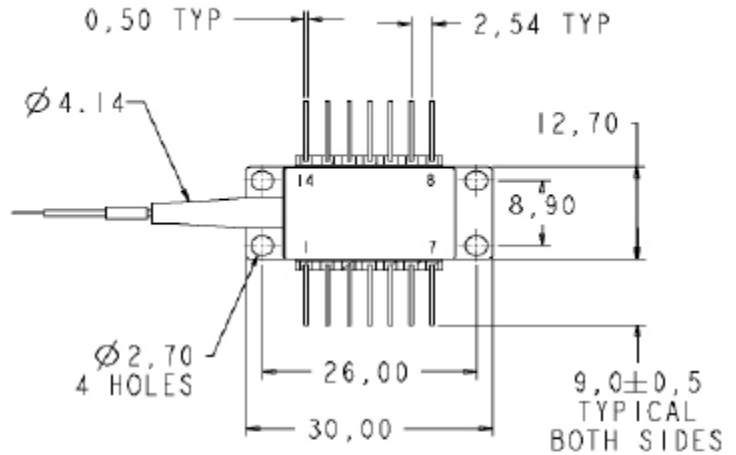
$$B = 2.392435 \times 10^{-4}$$

$$C = 1.562216 \times 10^{-7}$$

$$\text{Alpha @25}^\circ\text{C} = -4.04\% / ^\circ\text{C}$$

$$0/50^\circ\text{C Beta} = 3575$$

The internal TEC is capable of maintaining 25°C chip temperature at the specified operating power with a case temperature of 0°C to 65°C. Proper heat sinking of the butterfly package is necessary, however, to dissipate heat from the TEC.



Pin	Name	Pin	Name
1	TEC (+)	8	NC
2	Thermistor	9	NC
3	Monitor Anode	10	Laser Anode
4	Monitor Cathode	11	Laser Cathode
5	Thermistor	12	NC
6	NC	13	Case ground
7	NC	14	TEC (-)

## PRODUCT HANDLING

These lasers are sensitive to electrostatic discharge (ESD) and should be handled with appropriate caution, including the use of ESD protective equipment such as grounding straps and anti-static mats.