

## 3W High Power Laser Diode

**Description**

The SLD327YT has a compatible package, and allows independent thermal and electric design.

It is a high power laser diode that affords easy optical design.

**Features**

- High-optical power output  
Recommended optical power output:  $P_o = 3.0W$
- High-optical power density:  $3W/200\mu m$   
(Emitting line width)

**Applications**

- Solid state laser excitation
- Medical use
- Material processing
- Measurement

**Structure**

AlGaAs quantum well structure laser diode

**Operating Lifetime**

MTTF 10,000H (effective value) at  $P_o = 3.0W$ ,  $T_{th} = 25^\circ C$

**Absolute Maximum Ratings** ( $T_{th} = 25^\circ C$ )

- Optical power output  $P_o$  3.3 W
- Reverse voltage  $V_{RLD}$  2 V
- $P_D$  15 V
- Operating temperature ( $T_{th}$ )  $T_{opr}$   $-10$  to  $+30$   $^\circ C$
- Storage temperature  $T_{stg}$   $-40$  to  $+85$   $^\circ C$

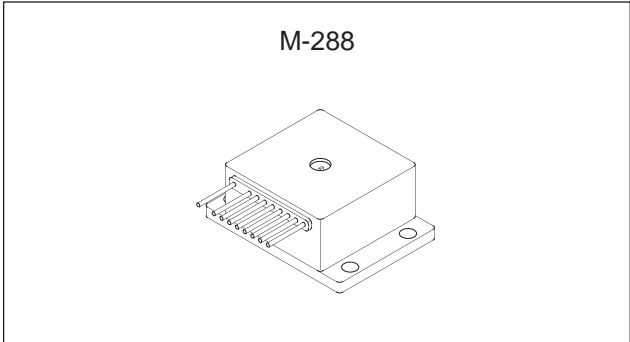
**Warranty**

This warranty period shall be 90 days after receipt of the product or 1,000 hours operation time whichever is shorter.

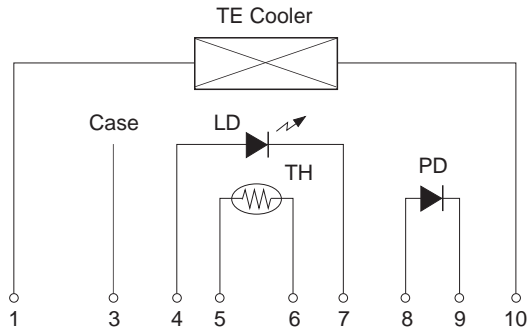
Sony Quality Assurance Department shall analyze any product that fails during said warranty period, and if the analysis results show that the product failed due to material or manufacturing defects on the part of Sony, the product shall be replaced free of charge.

Laser diodes naturally have differing lifetimes which follow a Weibull distribution.

Special warranties are also available.



**Equivalent Circuit**



**Pin Configuration** (Top View)

No.	Function
1	TE cooler (negative)
2	—
3	Case
4	Laser diode (anode)
5	Thermistor
6	Thermistor
7	Laser diode (cathode)
8	Photo diode (anode)
9	Photo diode (cathode)
10	TE cooler (positive)

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**Optical and Electrical Characteristics**

(Tth = Thermistor temperature, Tth = 25°C)

Item	Symbol	Conditions	Min.	Typ.	Max.	Unit				
Threshold current	Ith			0.6	2.0	A				
Operating current	Iop	Po = 3.0W		4.0	6.0	A				
Operating voltage	Vop	Po = 3.0W		2.4	3.0	V				
Wavelength*	$\lambda_P$	Po = 3.0W	790		840	nm				
Radiation angle	Perpendicular	Po = 3.0W				20	30	40	degree	
	Parallel					$\theta_{//}$	5	10	20	degree
Positional accuracy	Position	Po = 3.0W						$\Delta X, \Delta Y$	$\pm 100$	$\mu m$
	Angle							$\Delta\phi_{\perp}$	$\pm 3$	degree
								$\Delta\phi_{//}$	$\pm 4$	degree
Differential efficiency	$\eta_D$	Po = 3.0W	0.5	0.85	1.5	W/A				
Monitor current	I <sub>mon</sub>	Po = 3.0W VR = 10V	0.2	1.1	4.0	mA				
Thermistor resistance	Rth	Tth = 25°C		10		k $\Omega$				

**\*Wavelength Selection**

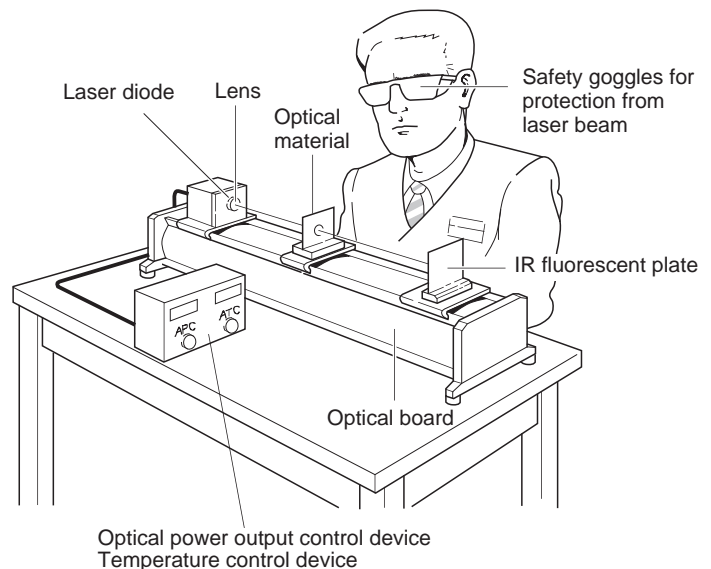
Type	Wavelength (nm)
SLD327YT-1	795 ± 5
SLD327YT-2	810 ± 10
SLD327YT-3	830 ± 10

Type	Wavelength (nm)
SLD327YT-21	798 ± 3
SLD327YT-24	807 ± 3
SLD327YT-25	810 ± 3

**Handling Precautions**

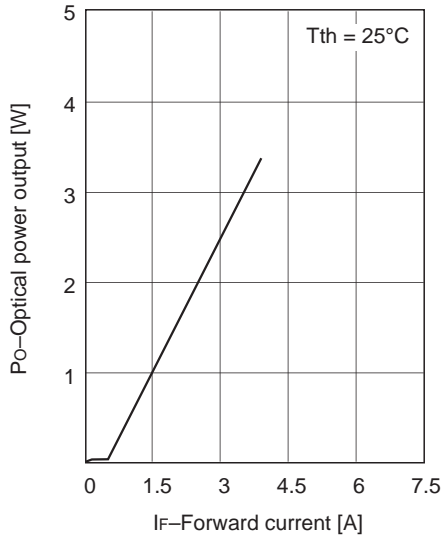
**Eye protection against laser beams**

The optical output of laser diodes ranges from several mW to 10W. However the optical power density of the laser beam at the diode chip reaches 1.5MW/cm<sup>2</sup>. Unlike gas lasers, since laser diode beams are divergent, uncollimated laser diode beams are fairly safe at a laser diode. For observing laser beams, ALWAYS use safety goggles that block infrared rays. Usage of IR scopes, IR cameras and fluorescent plates is also recommended for monitoring laser beams safely.

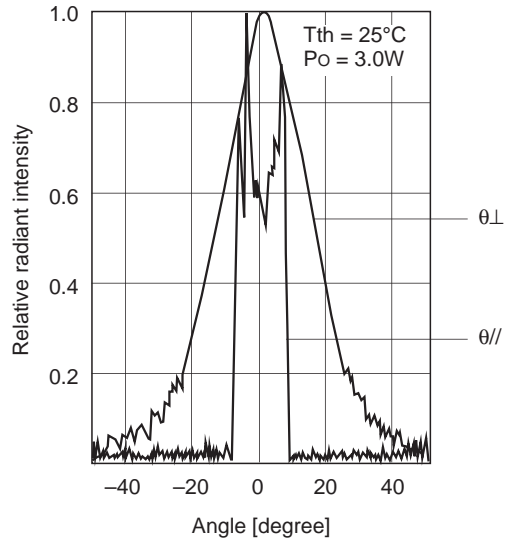


Example of Representative Characteristics

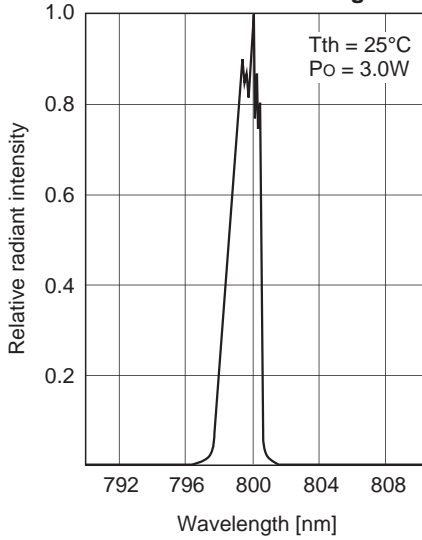
Optical power output vs. Forward current characteristics



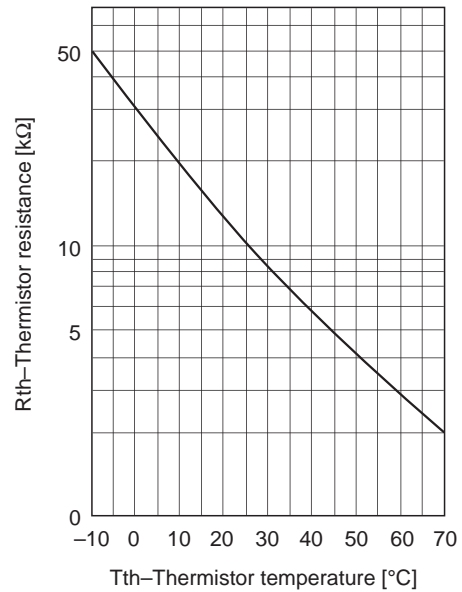
Far field pattern



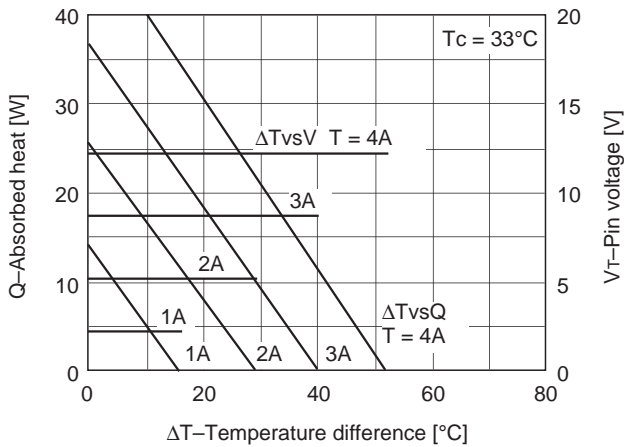
Oscillation wavelength



Thermistor characteristics

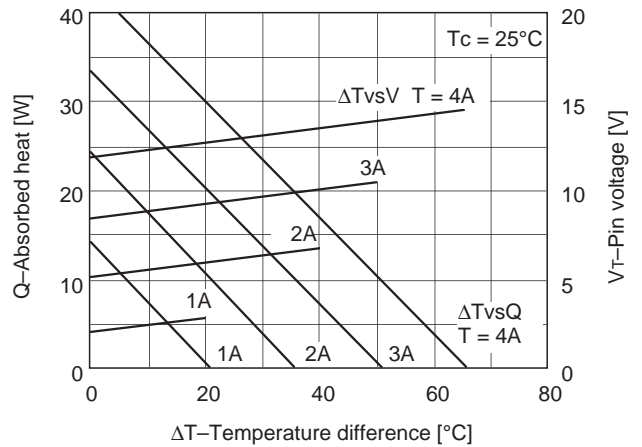


TE cooler characteristics



$\Delta T$  :  $T_c - T_{th}$   
 $T_{th}$  : Thermistor temperature  
 $T_c$  : Case temperature

TE cooler characteristics

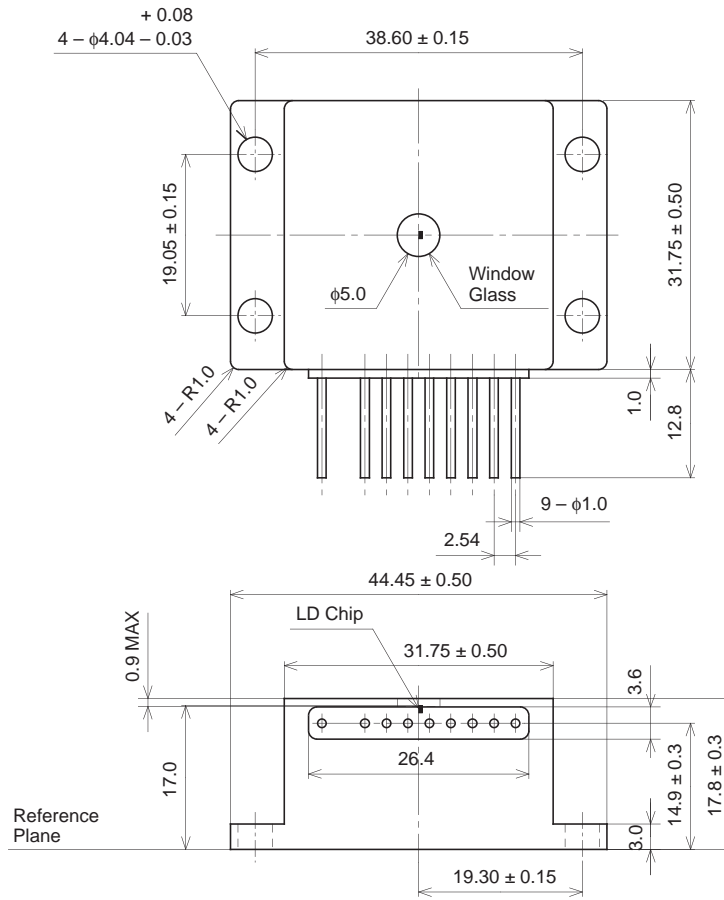


$\Delta T$  :  $T_c - T_{th}$   
 $T_{th}$  : Thermistor temperature  
 $T_c$  : Case temperature

Package Outline

Unit: mm

M-288



SONY CODE	M-288
EIAJ CODE	_____
JEDEC CODE	_____

PACKAGE WEIGHT	150g
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