SONY

SLD322XT

High Power Density 0.5 W Laser Diode

Description

The SLD322XT is a high power, gain-guided laser diode produced by MOCVD method*1. Compared to the SLD300 Series, this laser diode has a high brightness output with a doubled optical density which can be achieved by QW-SCH structure*2.

Temperature of laser diode is controlled by using built-in T.E. Cooler and wavelength can be tuned exactly by this temperature control.

*1 MOCVD : Metal Organic Chemical Vapor Deposition

*2 QW-SCH : Quantum Well Separate Confinement Heterostructure

Features

- High power
  Recommended optical power output: Po=0.5 W
- Low operating current: Iop=0.75 A (Po=0.5 W)
- Flat package with built-in photodiode, TE cooler, and thermistor

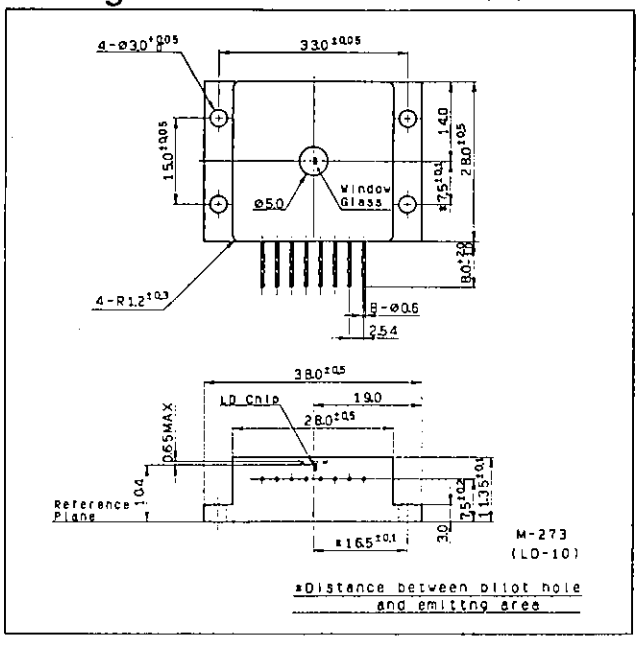
Applications

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

Structure

GaAlAs quantum well structure laser diode

Package Outline Unit : mm

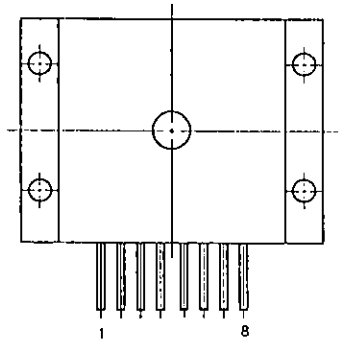


Absolute Maximum Ratings (Tth=25°C)

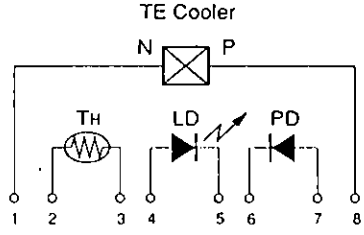
• Optical power output	Po	0.55	W
• Reverse voltage	VR LD	2	V
	PD	15	V
• Operating temperature (Tth)	Topr	−10 to +30	°C
• Storage temperature	Tstg	−40 to +85	°C
• Operating current of TE cooler	IT	2.5	A

Pin Configuration (Top View)

No.	Function
1	TE cooler, negative
2	Thermistor lead 1
3	Thermistor lead 2
4	Laser diode anode
5	Laser diode cathode
6	Photo diode cathode
7	Photo diode anode
8	TE cooler, positive



Equivalent Circuit



E93206-HP

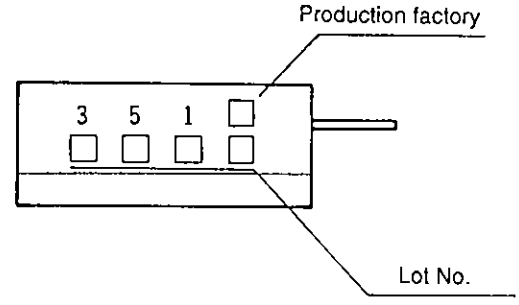
Optical and Electrical Characteristics (Tth=thermistor temperature Tth=25 °C)

Item		Symbol	Conditions	Min.	Typ.	Max.	Unit.
Threshold current		I_{th}			0.18	0.3	A
Operating current		I_{op}	P_O=0.5 W		0.75	1.2	A
Operating voltage		V_{op}	P_O=0.5 W		2.1	3.0	V
Wavelength ☆		λp	P_O=0.5 W	790		840	nm
Monitor current		I_{mon}	P_O=0.5 W, V_R=10 V	0.15	0.8	3.0	mA
Radiation angle (F. W. H. M)	Perpendicular	$\theta \perp$	P_O=0.5 W	20	30	40	degree
	Parallel	$\theta //$		4	9	17	degree
Positional accuracy	Position	ΔX, ΔY	P_O=0.5 W			±100	μm
	Angle	$\Delta \phi \perp$				±3	degree
Differential efficiency		ηD	P_O=0.5 W	0.5	0.9		W/A
Thermistor resistance		R_{th}	T_{th}=25°C		10		kΩ

☆Wavelength Classification

Type	Wavelength (nm)
SLD322XT-1	795±5
SLD322XT-2	810±10
SLD322XT-3	830±10
SLD322XT-21	798±3
SLD322XT-24	807±3
SLD322XT-25	810±3

Marking

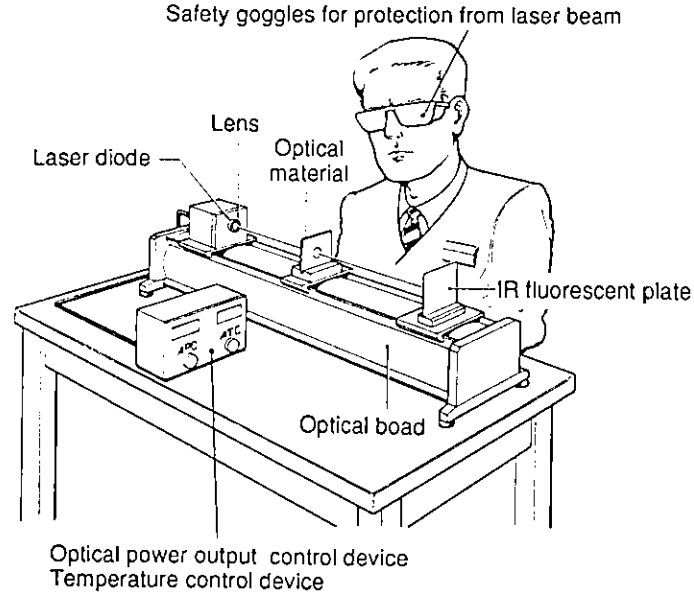


※ Categories are not specified by marking

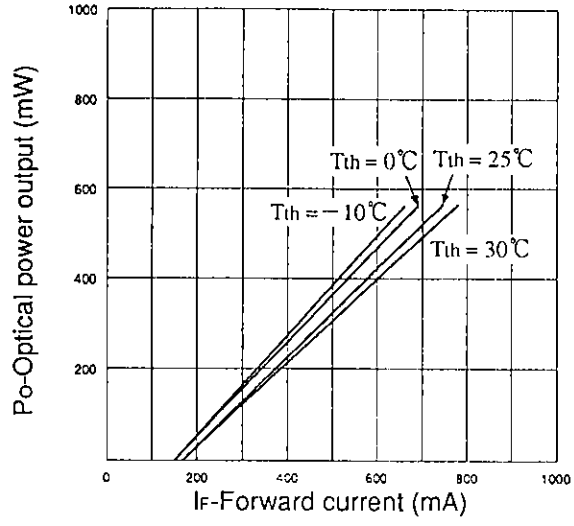
Handling Precautions

Eye protection against laser beams

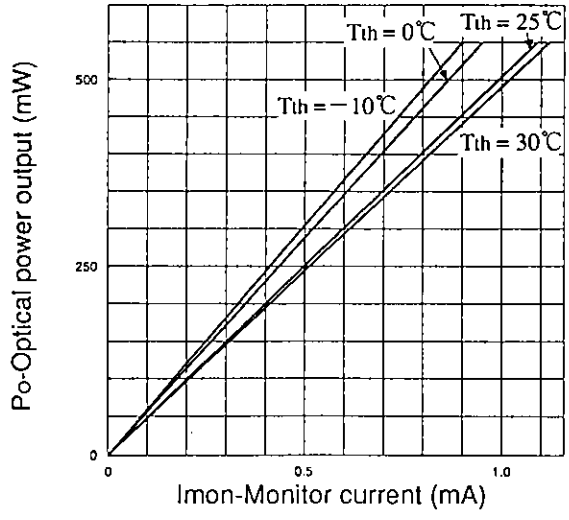
The optical output of laser diodes ranges from several mW to 3 W. However the optical power density of the laser beam at the diode chip reaches 1 MW/cm². Unlike gas lasers, since laser diode beams are divergent, uncollimated laser diode beams are fairly safe at a laser diode. For observing laser beams, 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.



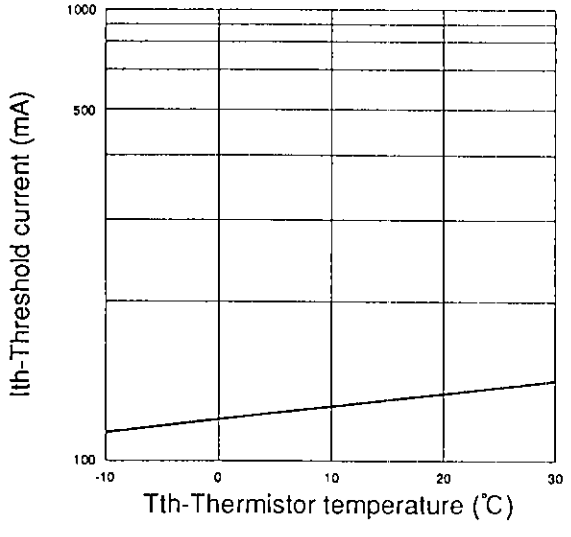
Optical power output vs. Forward current characteristics



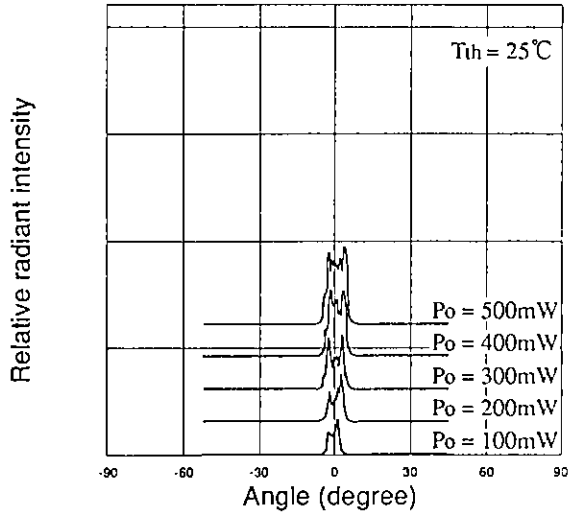
Optical power output vs. Monitor current characteristics



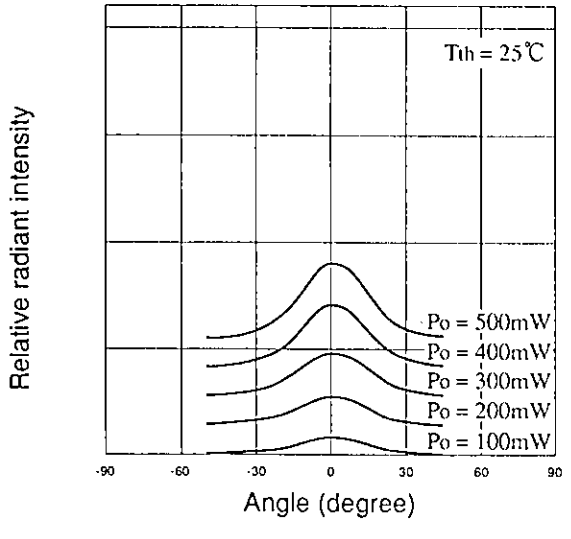
Threshold current vs. Temperature characteristics



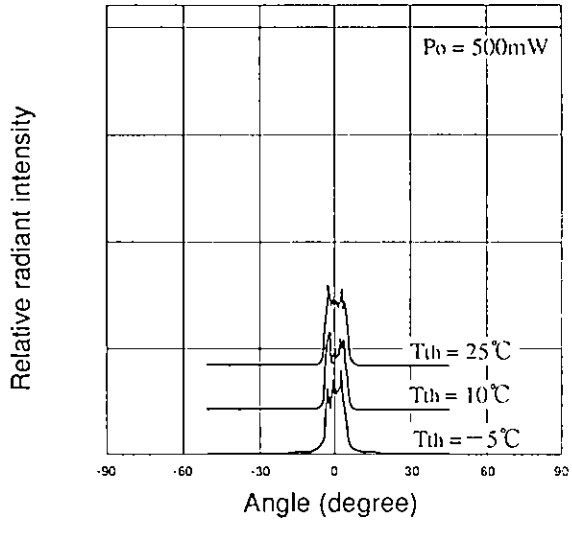
Power dependence of far field pattern (Parallel to junction)



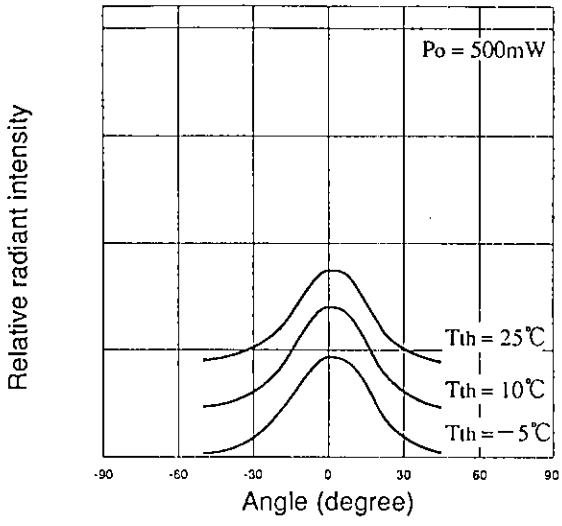
Power dependence of far field pattern (Perpendicular to junction)



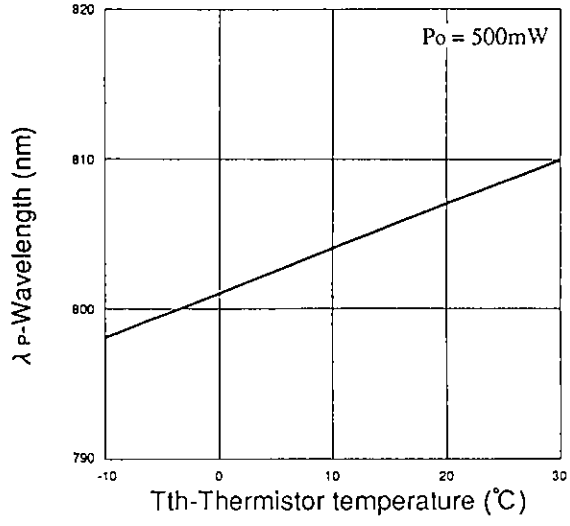
Temperature dependence of far field pattern (Parallel to junction)



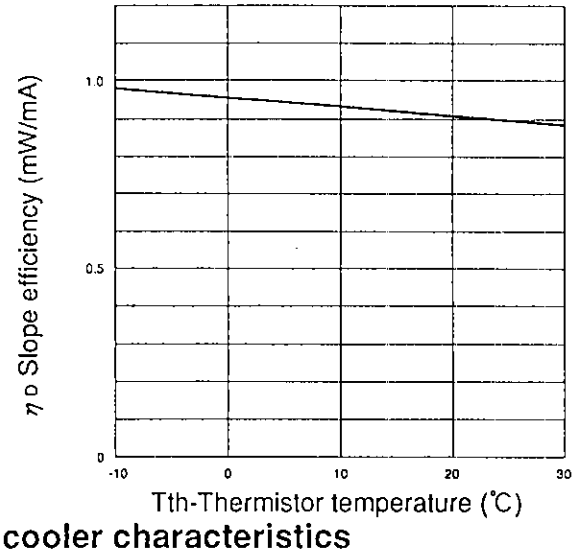
Temperature dependence of far field pattern (Perpendicular to junction)



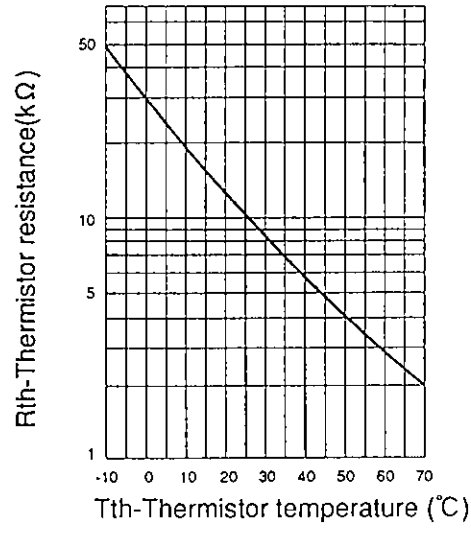
Dependence of wavelength



Slope efficiency vs. Temperature characteristics

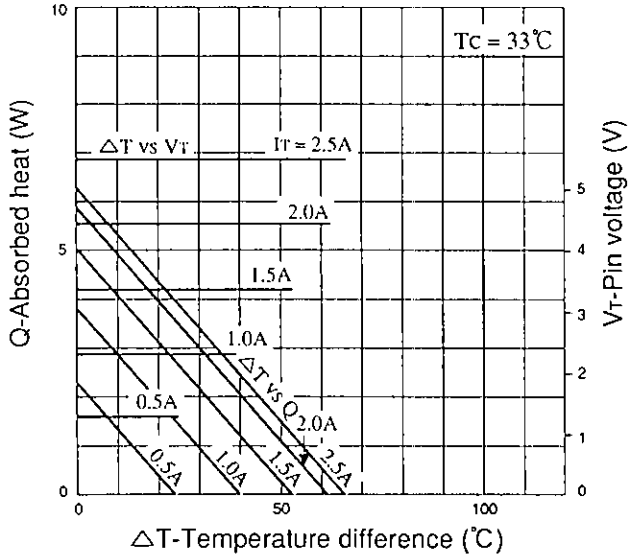


Thermistor characteristics

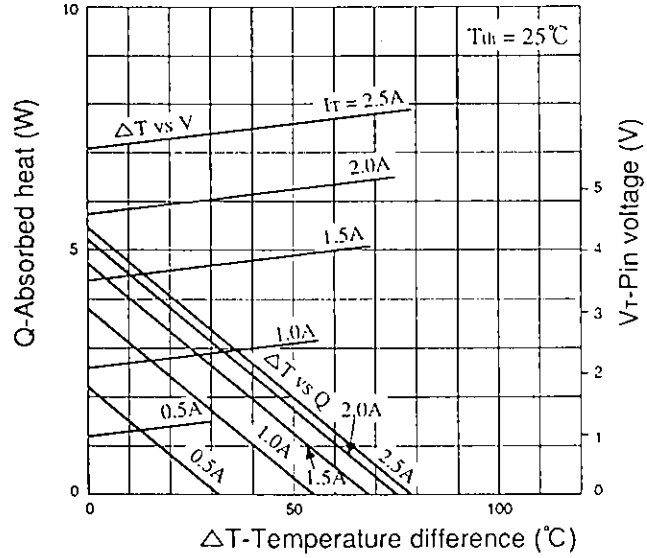


TE cooler characteristics

1

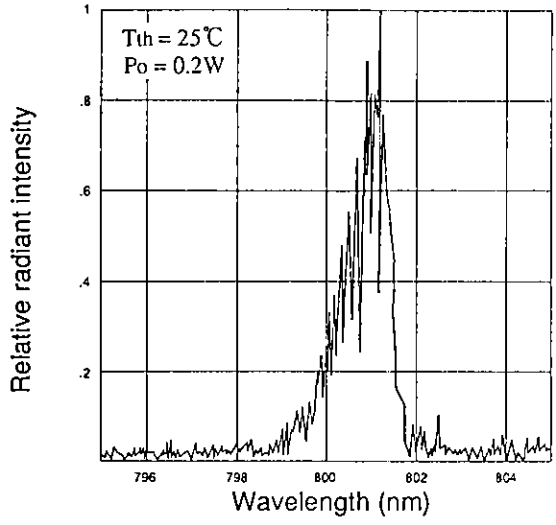


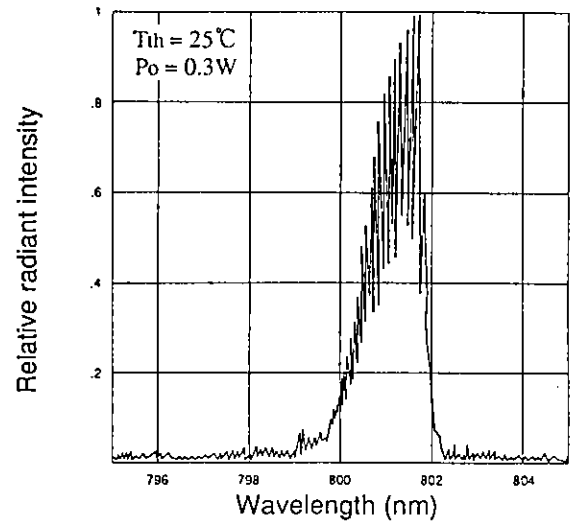
2

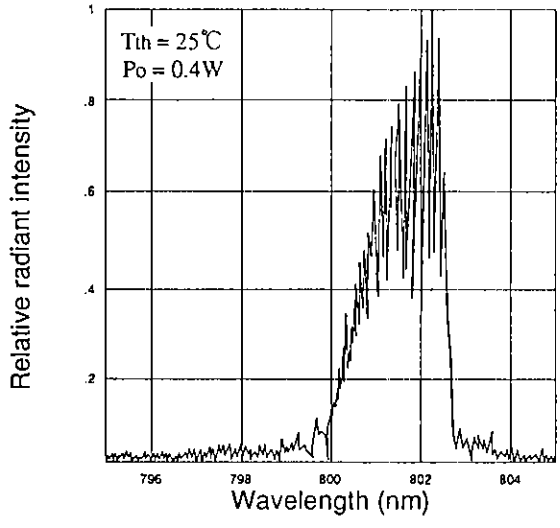


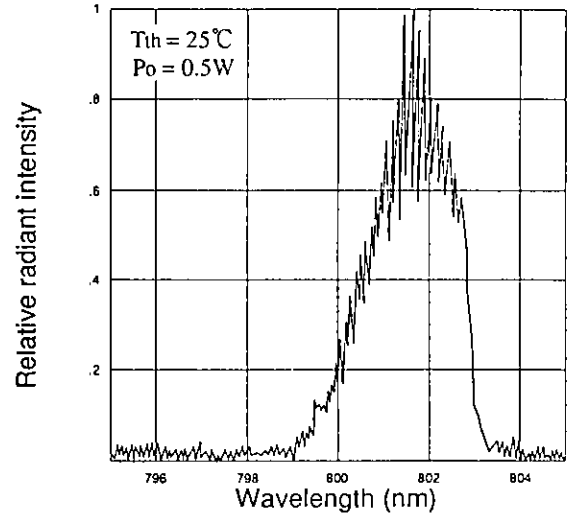
ΔT : Tc-Tth
Tth : thermistor temperature
Tc : case temperature

Power dependence of spectrum









Temperature dependence of spectrum (Po=0.5 W)