

1000mW High Power Laser Diode

Description

SLD304V are gain-guided, high-power laser diodes fabricated by MOCVD.

MOCVD : Metal Organic Chemical Vapor Deposition

Features

- High power
Recommended power output $P_o=900\text{mW}$
- Small operating current

Applications

- Solid state laser excitation
- Medical use

Structure

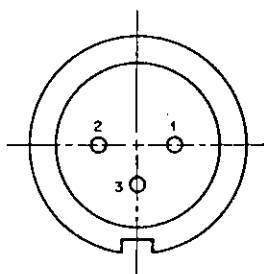
GaAlAs double-hetero laser diode

Absolute Maximum Ratings (Tc=15°C)

- | | | | |
|-------------------------|-----------|---------------|----|
| • Radiant power output | P_o | 1000 | mW |
| • Reverse voltage | V_R | LD 2
PD 15 | V |
| • Operating temperature | T_{opr} | -10 to +30 | °C |
| • Storage temperature | T_{stg} | -40 to +85 | °C |

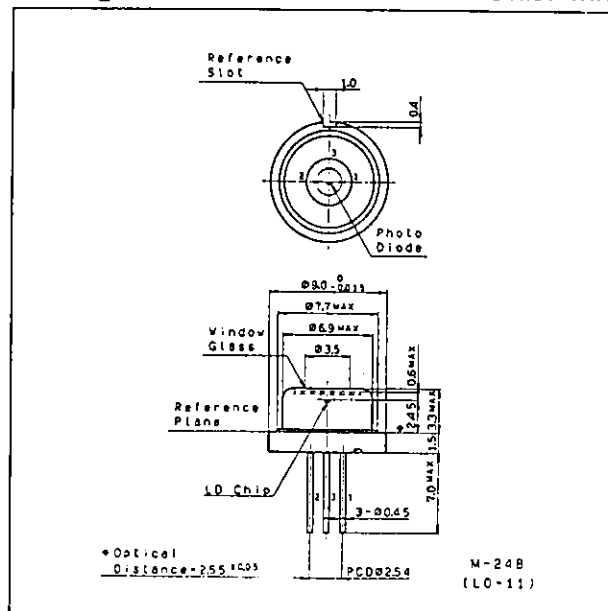
Pin Configuration (Bottom View)

No.	Function
1	Laser diode cathode
2	Photodiode anode
3	Common



Package Outline

Unit: mm



Optical and Electrical Characteristics

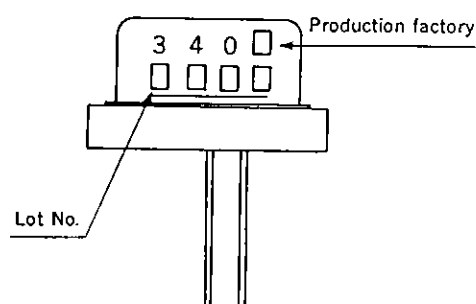
 $T_c = 15^\circ\text{C}$

Item		Symbol	Condition	Min.	Typ.	Max.	Unit
Threshold current		I_{th}			500	700	mA
Operating current		I_{OP}	$P_o = 900\text{mW}$		1550	2000	mA
Operating voltage		V_{OP}	$P_o = 900\text{mW}$		2.1	3.0	V
Wavelength*		λ_p	$P_o = 900\text{mW}$	770		840	nm
Monitor current		I_{mon}	$P_o = 900\text{mW}$ $V_R = 10\text{V}$		1.5		mA
Radiation angle (F. W. H. M)	Perpendicular	θ_{\perp}	$P_o = 900\text{mW}$		28	40	degree
	Parallel	θ_{\parallel}			13	17	degree
Positional accuracy	Position	$\Delta X, \Delta Y$	$P_o = 900\text{mW}$			± 50	μm
	Angle	$\Delta \phi_{\perp}$				± 3	degree
Slope efficiency		η_D	$P_o = 900\text{mW}$	0.65	0.85		mW/mA

*Wavelength Selection Classification

Type	Wavelength (nm)
SLD304V-1	785 ± 15
SLD304V-2	810 ± 10
SLD304V-3	830 ± 10
SLD304V-21	798 ± 3
-24	807 ± 3
-25	810 ± 3

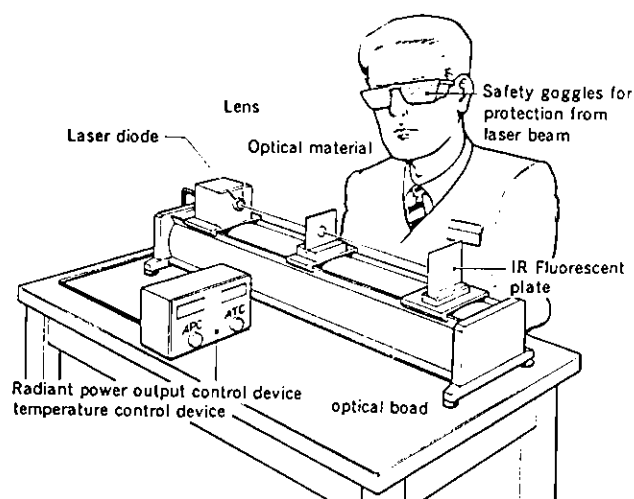
Marking



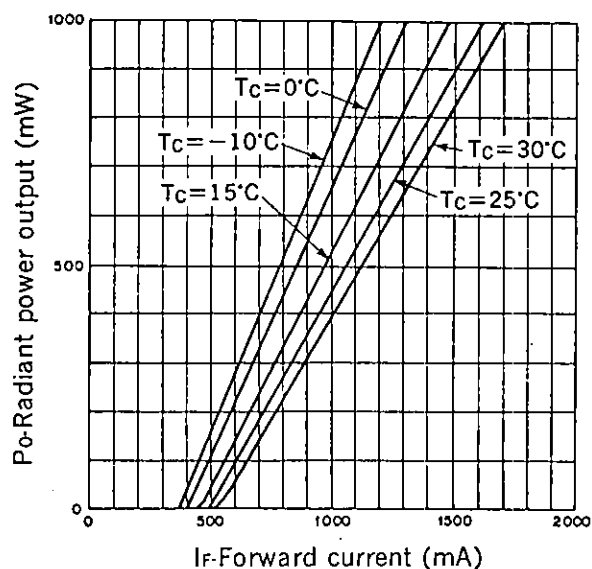
Precautions

Eye protection against laser beams

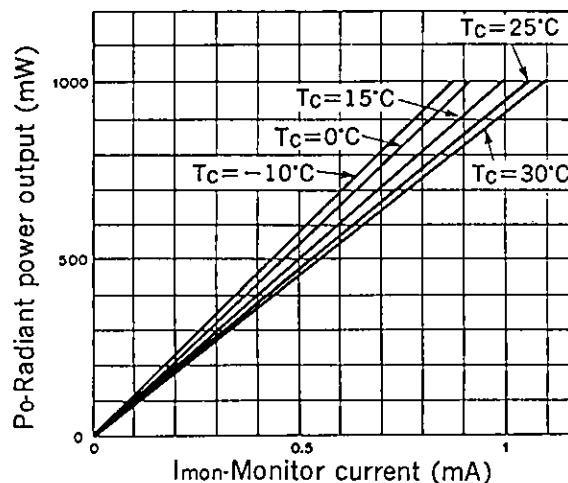
The optical output of laser diodes ranges from several milliwatts to one watt. However the optical density of the laser beam at the diode chip reaches 1 megawatt per square centimeter. Unlike gas lasers, since laser diode beams are divergent, uncollimated laser diode beams are fairly safe at a laser 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.



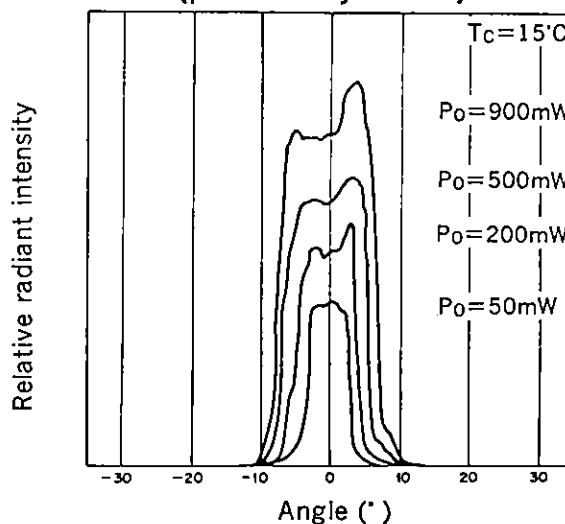
Radiant power output vs.
Forward current characteristics



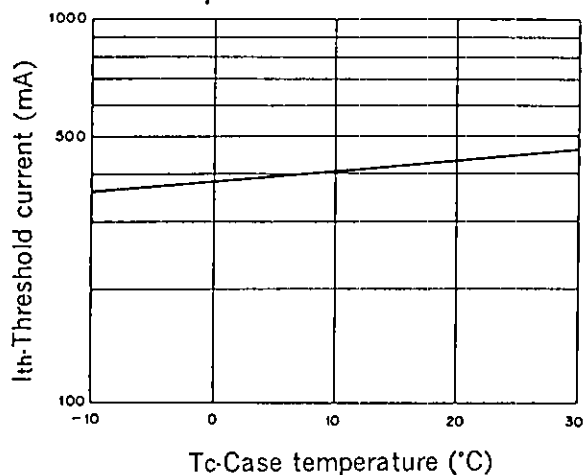
Radiant power output vs.
Monitor current characteristics



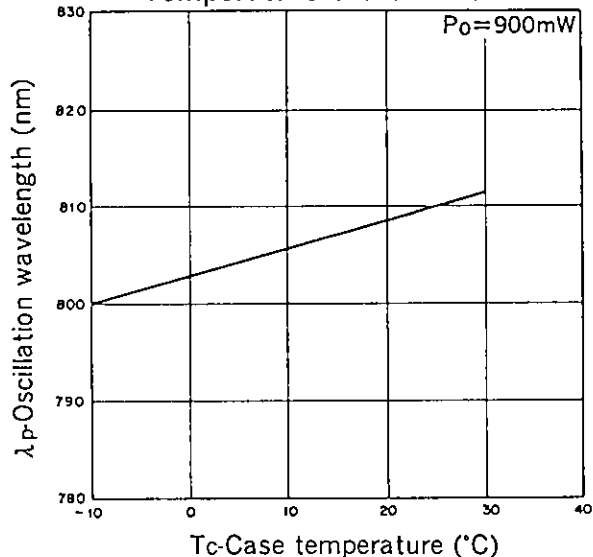
Power dependence of far field pattern
(parallel to junction)



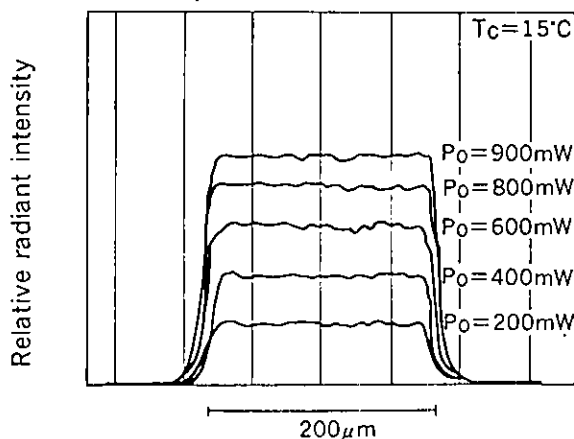
Threshold current vs.
Temperature characteristics



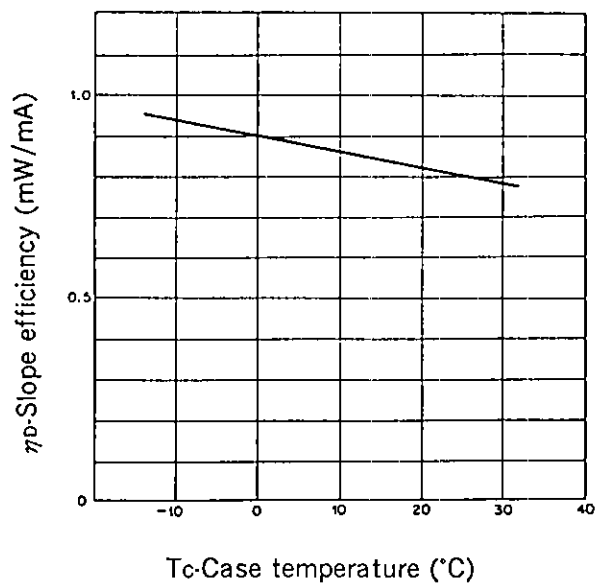
Oscillation wavelength vs.
Temperature characteristics



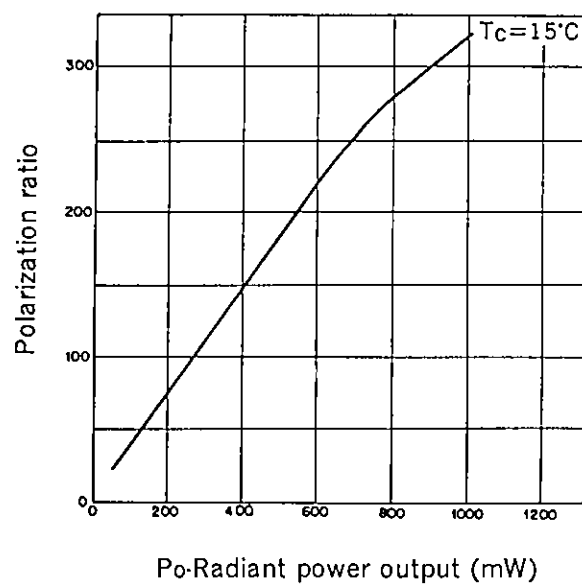
Power dependence of near field pattern



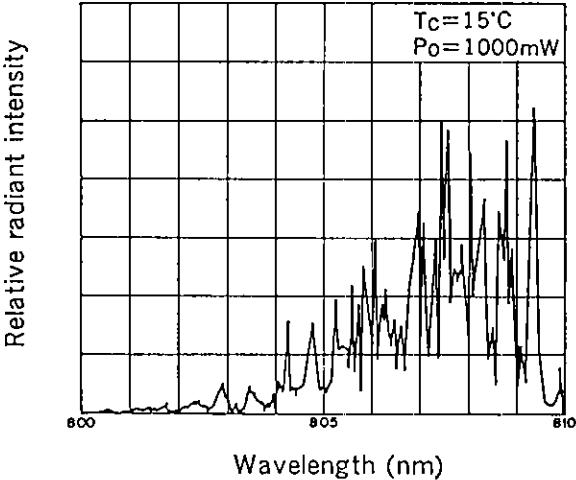
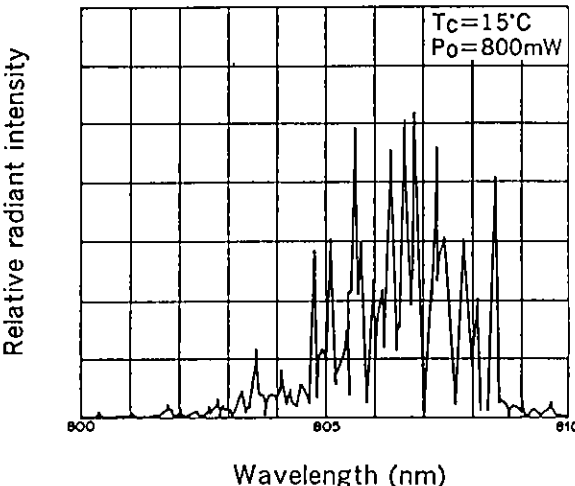
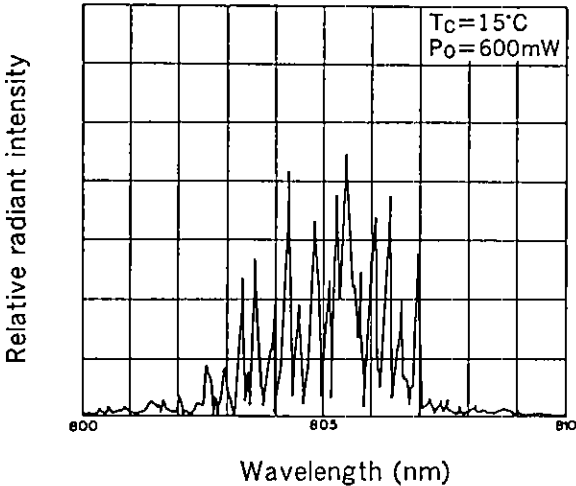
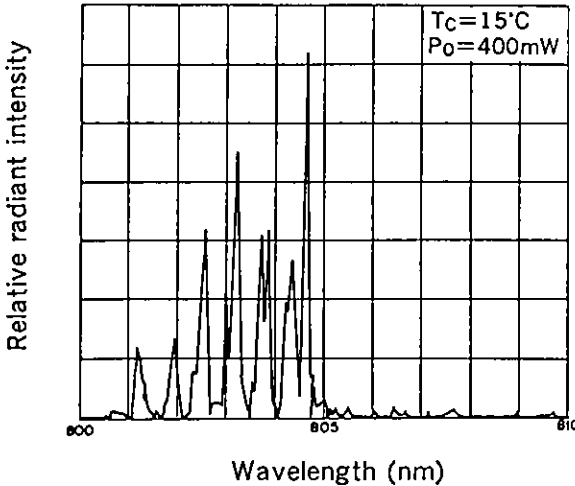
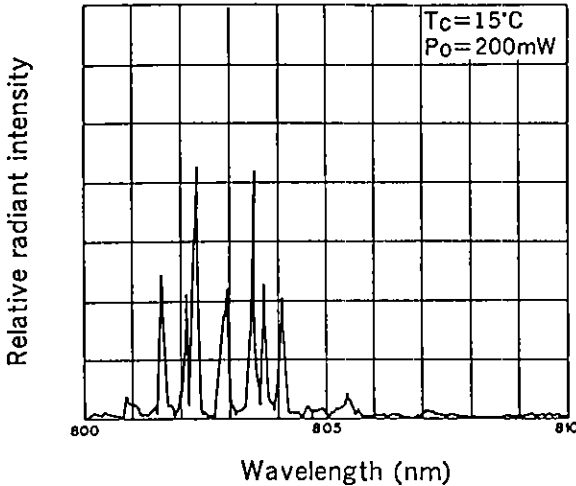
Slope efficiency vs.
Temperature characteristics



Power dependence of polarization ratio



Power dependence of wavelength



Temperature dependence of wavelength ($P_o=900\text{mW}$)