

High Power Red Laser Diode

Preliminary

Description

The SLD1231VL is a short wavelength high power laser diode, created as a light source for the next-generation high density magneto-optical discs.

Features

- Red visible light (685nm)
- Longitudinal single mode
- High power
(Recommended optical power output: 30mW)

Applications

Magneto-optical discs

Structure

- AlGaInP quantum well structure laser diode

Recommended Optical Power Output

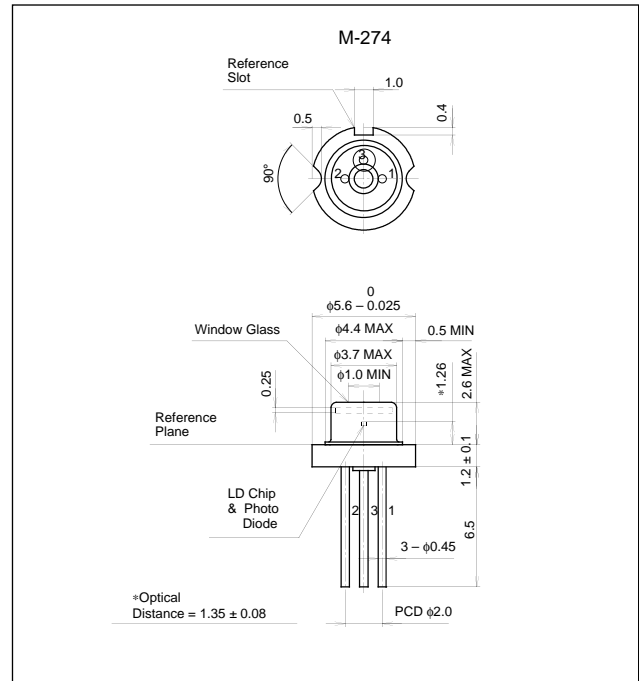
30mW

Absolute Maximum Ratings

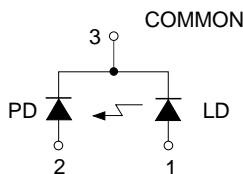
- Optical power output Po 35 mW
- Reverse voltage VR LD 2 V
PD 15 V
- Operating temperature Topr -10 to +50 °C
- Storage temperature Tstg -40 to +85 °C

Package Outline

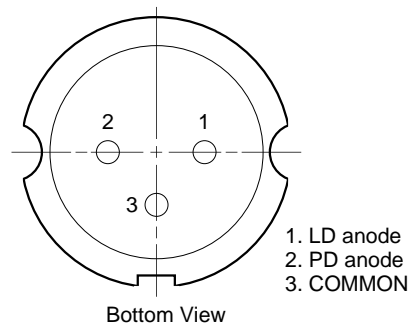
Unit : mm



Connection Diagram



Pin Configuration



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Electrical and Optical Characteristics (Tc = 25°C)

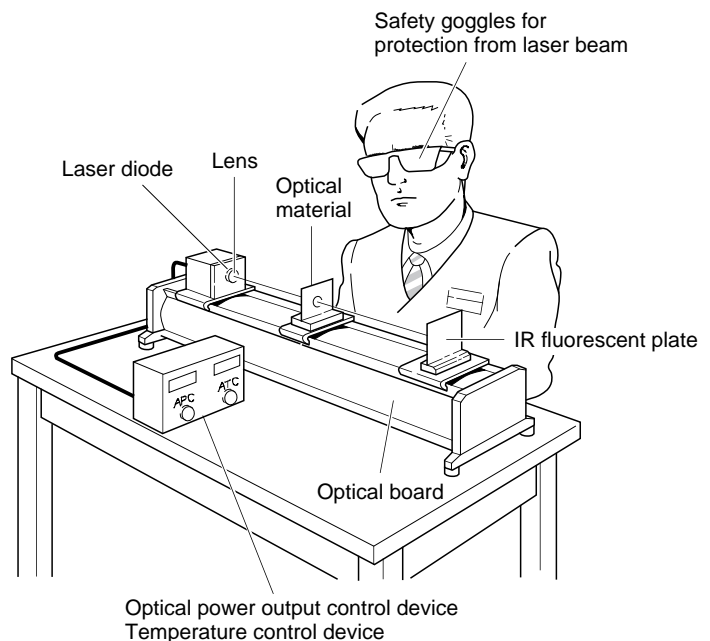
Tc: Case temperature

Item	Symbol	Conditions	Min.	Typ.	Max.	Unit	
Threshold current	I _{th}			55	70	mA	
Operating current	I _{op}	P _o = 30mW		95	120	mA	
Operating voltage	V _{op}	P _o = 30mW		2.4	3.0	V	
Wavelength	λ _p	P _o = 30mW	670	685	699	nm	
Radiation angle	Perpendicular	θ _⊥	P _o = 30mW	19	23	27	degree
	Parallel	θ _{//}	P _o = 30mW	6	9	12	degree
Positional accuracy	Position	ΔX, ΔY, ΔZ			±80	μm	
	Angle	Δφ _⊥	P _o = 30mW			±3	degree
		Δφ _{//}	P _o = 30mW			±3	degree
Differential efficiency	SE	P _o = 30mW	0.15	0.60	1.0	mW/mA	
Astigmatism	As	P _o = 30mW		5	10	μm	

Handling Precautions

(1) Eye protection against laser beams

The optical output of laser diodes ranges from several mW to 3W. However the optical power density of the laser beam at the diode chip reaches 1MW/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.

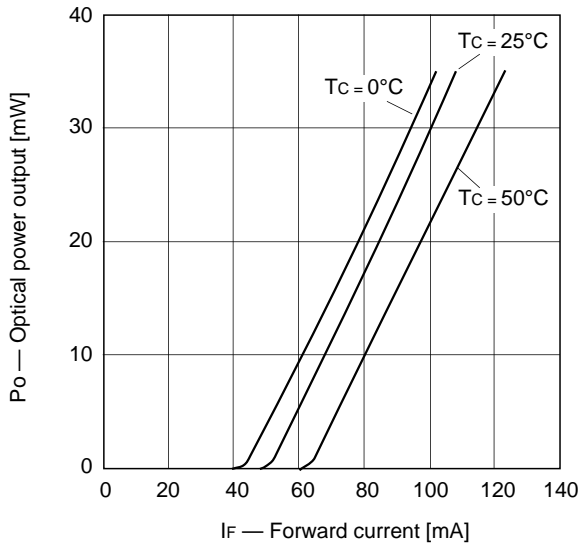


(2) Prevention of surge current and electrostatic discharge

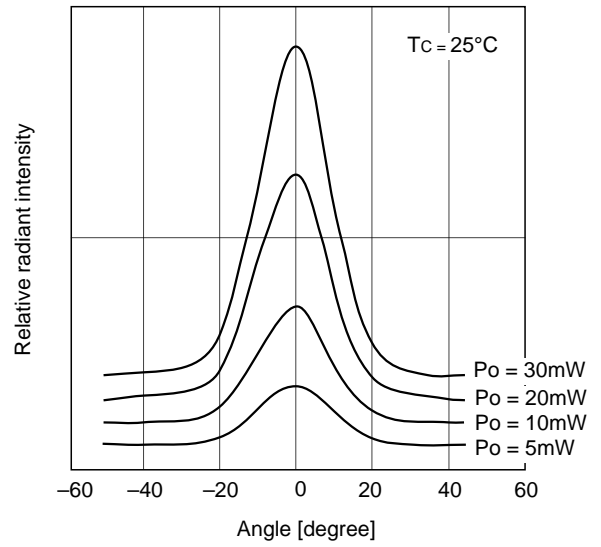
Laser diode is most sensitive to electrostatic discharge among semiconductors. When a large current is passed through the laser diode even for an extremely short time (in the order of nanosecond), the strong light emitted from the laser diode promotes deterioration and then laser diodes are destroyed. Therefore, note that the surge current should not flow the laser diode driving circuit from switches and others. Also, if the laser diode is handled carelessly, it may be destructed instantly because electrostatic discharge is easily applied by a human body. Be great careful about excess current and electrostatic discharge.

Example of Representative Characteristics

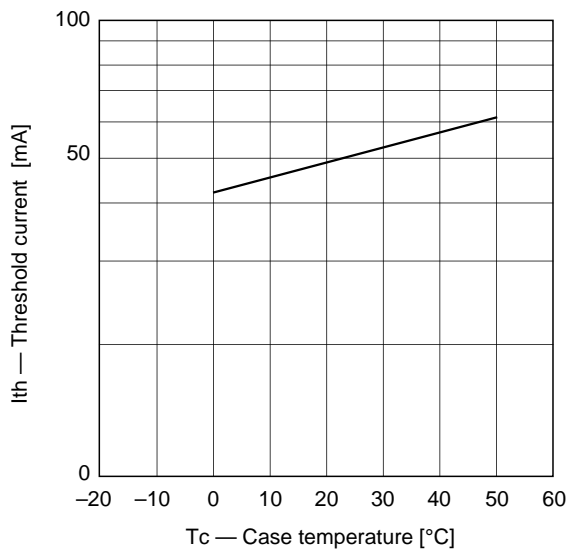
Optical power output vs. Forward current characteristics



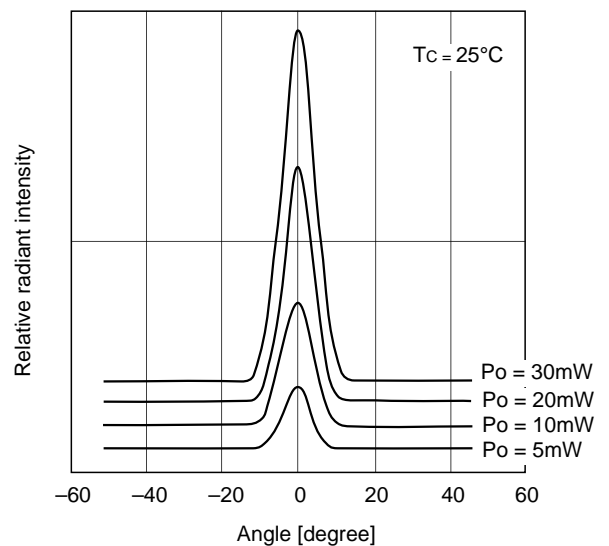
Power dependence of far field pattern (Perpendicular to junction)



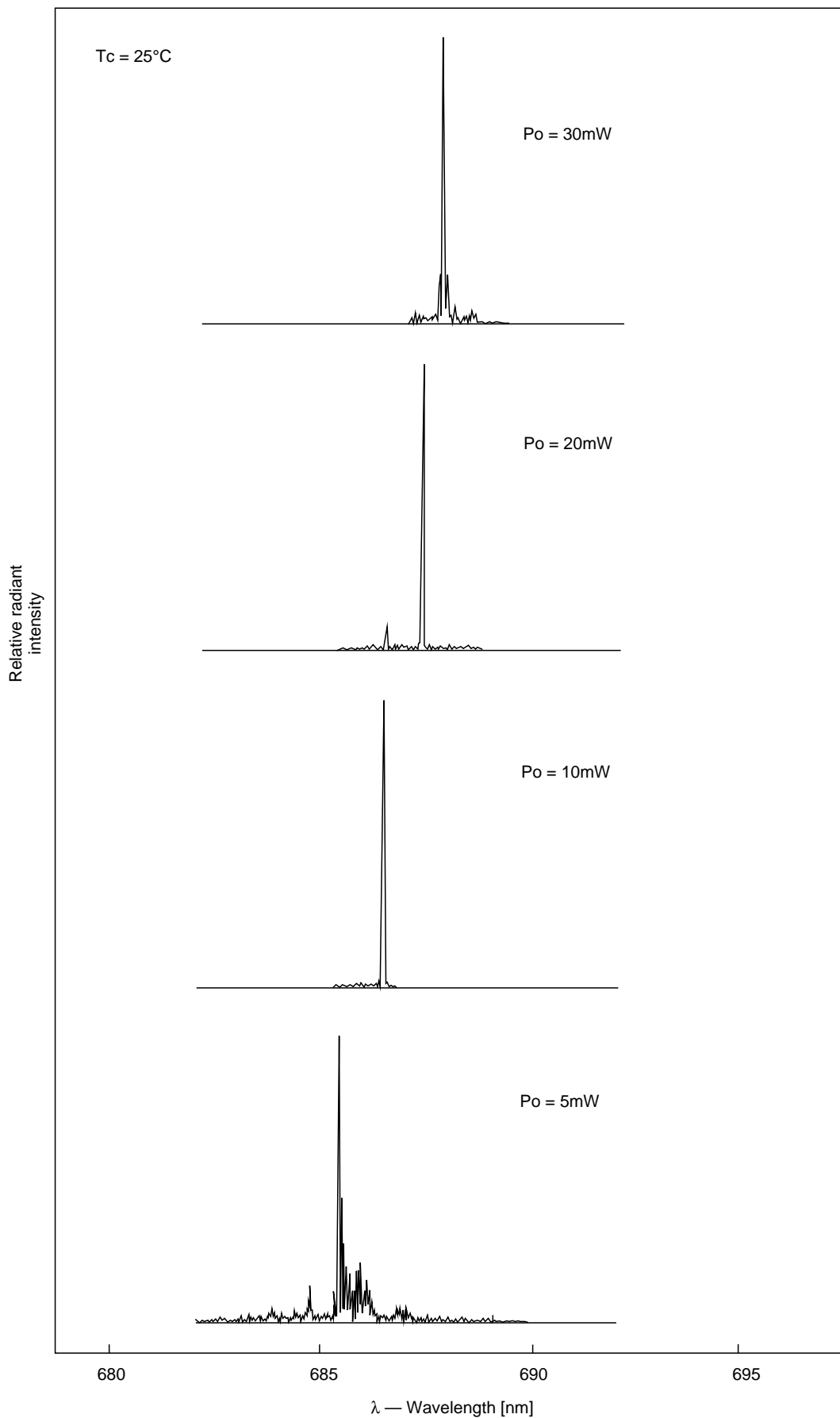
Threshold current vs. Temperature characteristics



Power dependence of far field pattern (Parallel to junction)



Power dependence of spectrum



Temperature dependence of spectrum

