SONY

SLD1133VL

650nm Index-Guided Red Laser Diode

Description

The SLD1133VL is an index-guided red laser diode designed for DVD systems. For bar code scanners, its wavelength (650nm Typ.) is 20nm shorter than that of the current device.

Features

- Small astigmatism (7µm typ.)
- Low operating current (60mA typ.)
- Small package (ϕ5.6mm)
- Single longitudinal mode

Applications

- DVD
- Bar code scanner
- Laser pointer

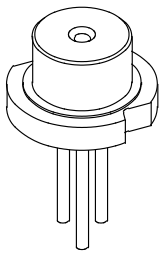
Structure

- AlGaInP quantum well structure laser diode
- PIN photo diode for optical power output monitor

Recommended Optical Power Output

5mW

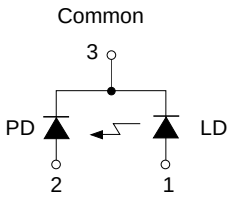
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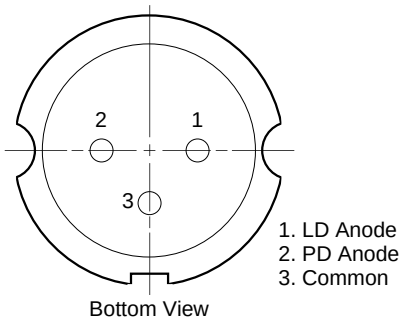
Absolute Maximum Ratings (Tc = 25°C)

• Optical power output	Po		7	mW
• Reverse voltage	V_R	LD	2	V
		PD	15	V
• Operating temperature	Topr		–10 to +60	°C
• Storage temperature	Tstg		–40 to +85	°C

Connection Diagram



Pin Configuration



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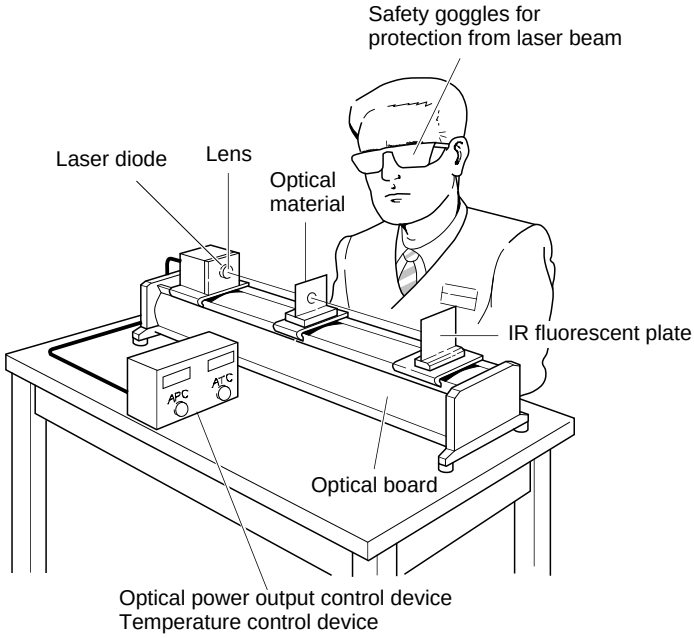
Electrical and Optical Characteristics (Tc = 25°C) Tc: Case temperature

Item		Symbol	Conditions	Min.	Typ.	Max.	Unit
Threshold current		Ith			50	65	mA
Operating current		Iop	Po = 5mW		60	70	mA
Operating voltage		Vop	Po = 5mW		2.3	2.8	V
Wavelength		λ	Po = 5mW	640	650	660	nm
Radiation angle	Perpendicular	θ⊥	Po = 5mW	24	30	40	degree
	Parallel	θ//		6	8	12	degree
Positional accuracy	Position	ΔX, ΔY, ΔZ	Po = 5mW			±80	µm
	Angle	Δϕ//				±2	degree
		Δϕ⊥				±3	degree
Differential efficiency		ηD	Po = 5mW	0.15	0.4	0.7	mW/mA
Astigmatism		As	Po = 5mW		7	15	µm
Monitor current		Imon	Po = 5mW, V_R = 5V	0.05	0.1	0.3	mA

Handling Precautions

(1) Eye protection against laser beams

The optical output of laser diodes ranges from several mW to 4W. However the optical power density of the laser beam at the diode chip reaches 1MW/cm^2. 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.

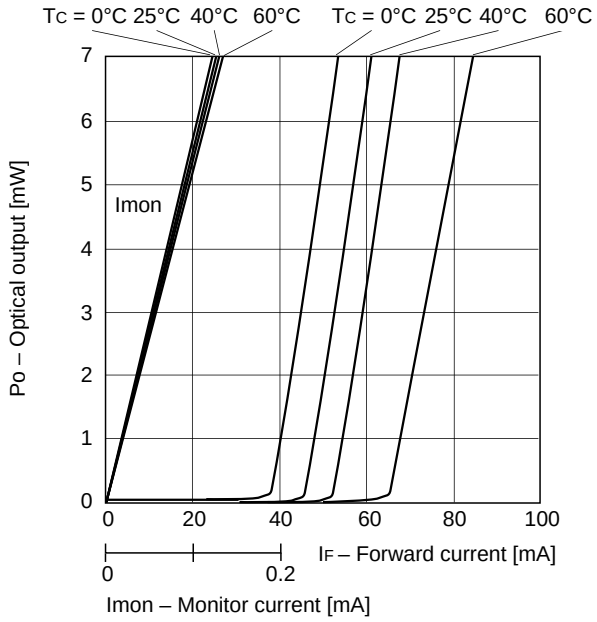


(2) Prevention of surge current and electrostatic discharge

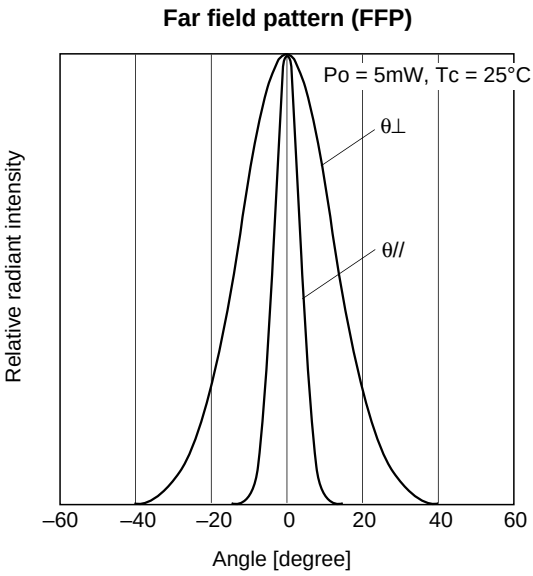
Laser diode is most sensitive to electrostatic discharge among semiconductors. When a large current is passed through the laser diode even for an extremely short time (in the order of nanosecond), the strong light emitted from the laser diode promotes deterioration and then laser diodes are destroyed. 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

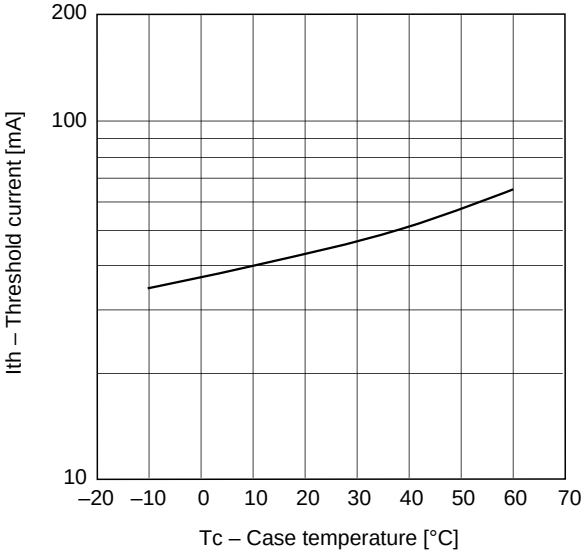
Optical power output vs. Forward current characteristics
Optical power output vs. Monitor current characteristics



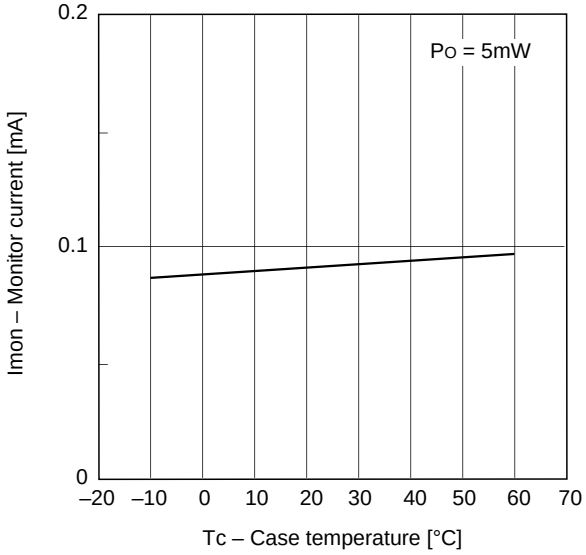
Far field pattern (FFP)



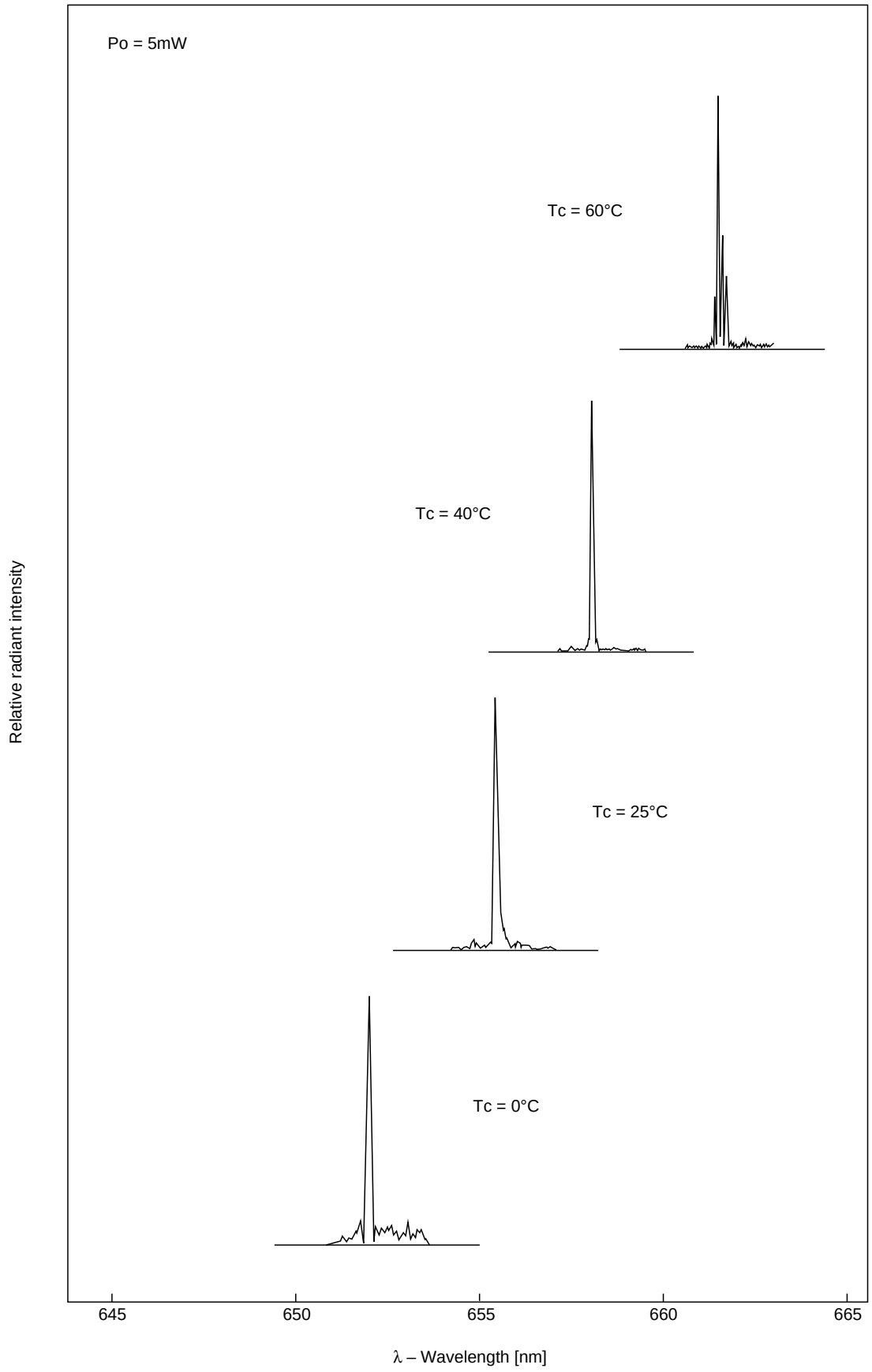
Threshold current vs. Temperature characteristics



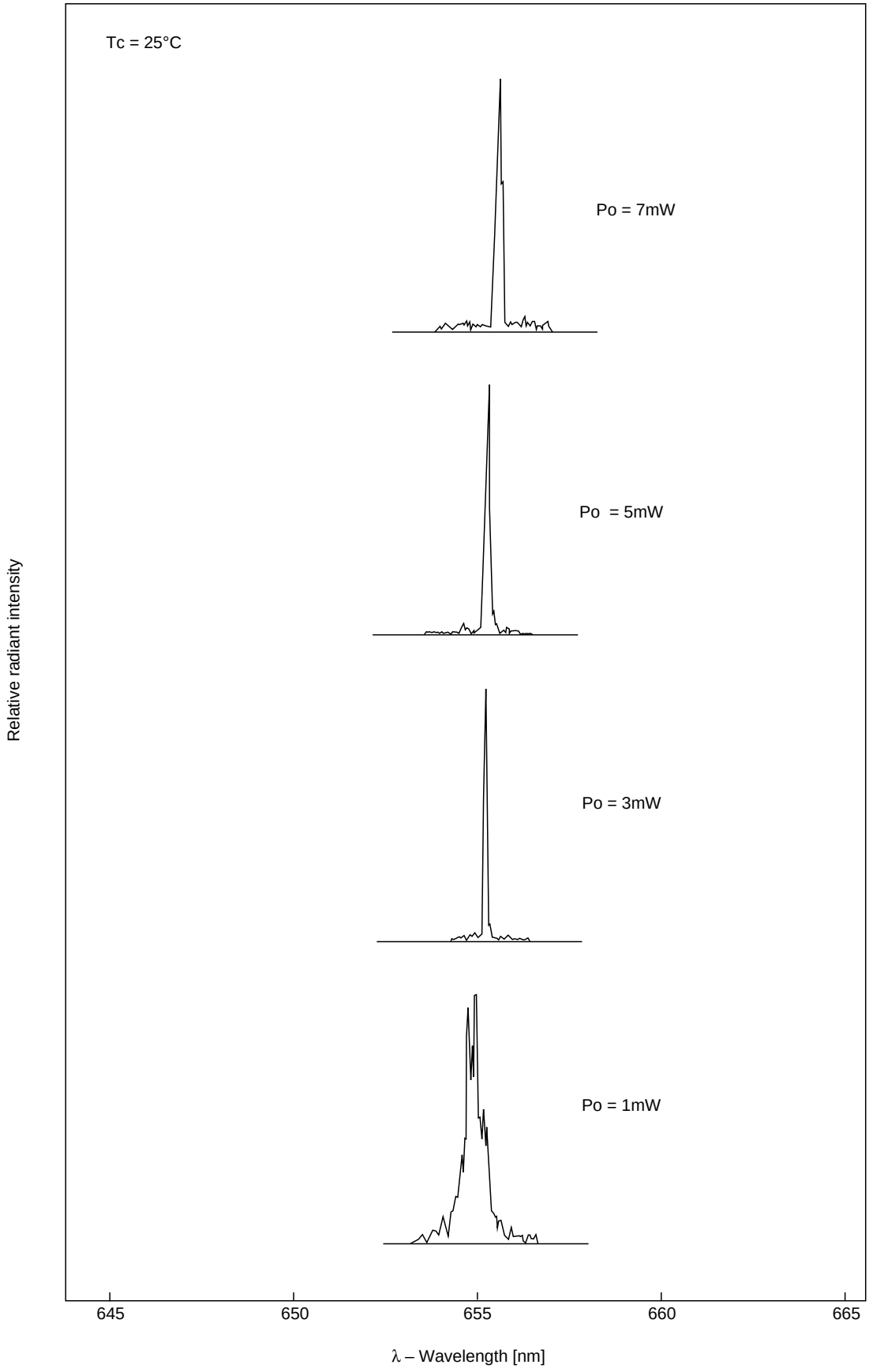
Monitor current vs. Temperature characteristics



Temperature dependence of spectrum

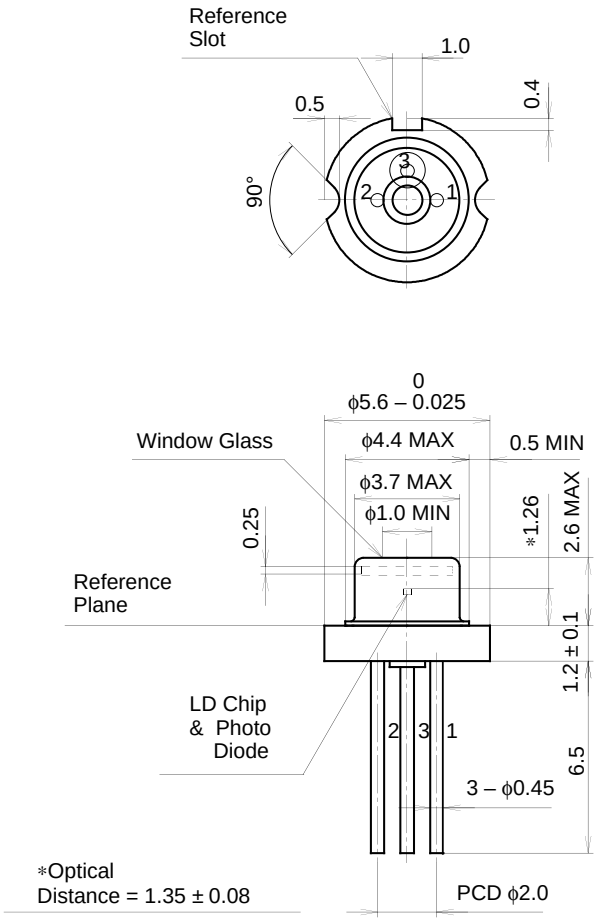


Power output dependence of spectrum



Package Outline Unit: mm

M-274



SONY CODE	M-274
EIAJ CODE	————
JEDEC CODE	————

PACKAGE WEIGHT	0.3g