SONY

SLD105UL

GaAlAs Laser Diode

Description

The SLD105UL is a low-noise laser diode developed for the positive power supply. In comparison with the SLD104AU, even lower power consumption is achieved.

Features

- Low current consumption I_{op}: 35 mA (P_O=3 mW)
- Supports single power supply
- Low noise

Applications

Portable CDs

Structure

GaAlAs double hetero laser diode

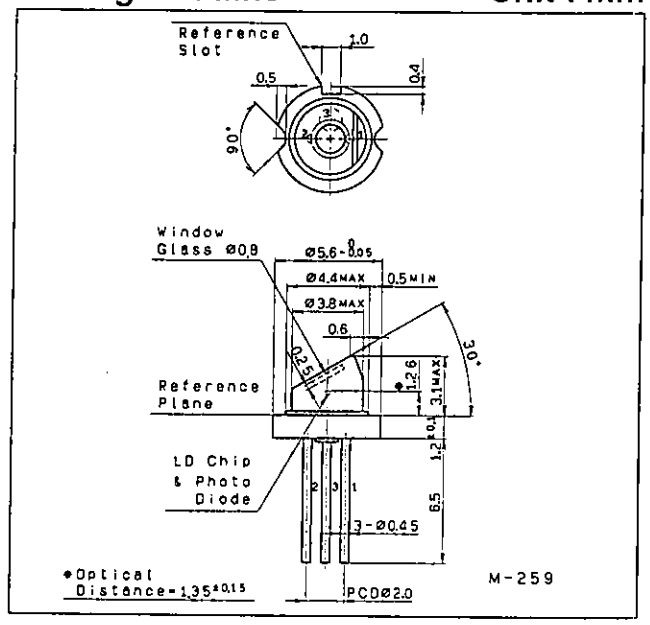
PIN photodiode to monitor laser beam output

Absolute Maximum Ratings (T_C=25°C)

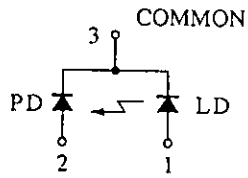
• Optical power output	P_O		5	mW
• Reverse voltage	V_R	LD	2	V
		PD	15	V
• Operating temperature	T_{opr}		−10 to +60	°C
• Storage temperature	T_{stg}		−40 to +85	°C

Package Outline

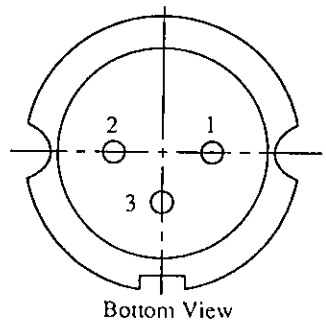
Unit : mm



Connection Diagram



Pin Configuration



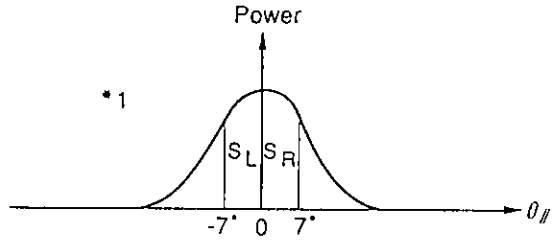
1. LD anode
2. PD anode
3. COMMON

E93311-HP

Electrical and Optical Characteristics

(Tc=25°C)

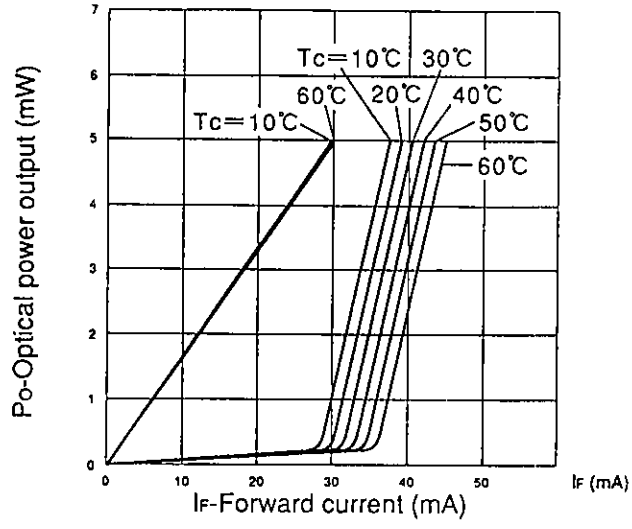
Item		Symbol	Conditions	Min.	Typ.	Max.	Unit
Threshold current		I_{th}			30	41	mA
Operating current		I_{op}	P_O=3 mW		35	45	mA
Operating voltage		V_{op}	P_O=3 mW	1.7	1.9	2.5	V
Wavelength		λ_p	P_O=3 mW	760	790	810	nm
Monitor current		I_{mon}	P_O=3 mW V_R=5 V	0.08	0.18	0.4	mA
Radiation angle (F. W. H. M)	Perpendicular	$\theta\perp$	P_O=3 mW	20	39	45	degree
	Parallel	$\theta_{/\!/}$		8	12	25	degree
	Asymmetry	ΔS_R*				30	%
Positional accuracy	Position	$\Delta X, \Delta Y, \Delta Z$	P_O=3 mW			±150	μm
	Angle	$\Delta\phi\perp$				±3	degree
Differential efficiency		η_D	P_O=3 mW	0.2	0.6	0.7	mW/mA
Astigmatism		As	$\lvert Z_{/\!/}-Z\perp \rvert$			20	μm
Signal to noise ratio		S/N	fc=720 kHz Δf=30 kHz P_O=3 mW		85		dB
Dark current of PD		I_D	V_R=5 V			150	nA
Pin capacitance of PD		C_T	V_R=5 V f=1 kHz			30	pF



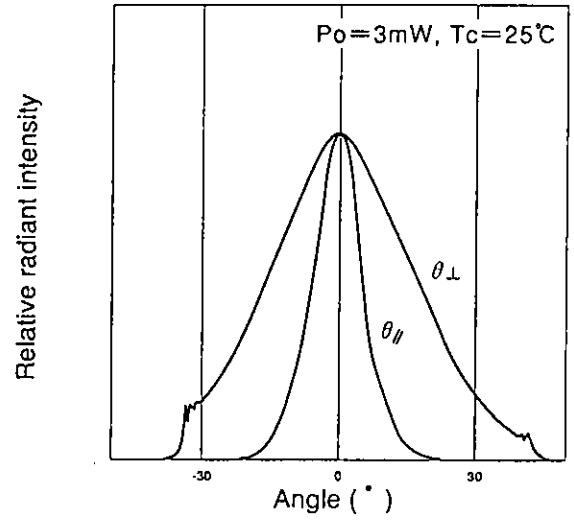
$$\Delta S_R = \frac{|S_L - S_R|}{S_L + S_R}$$

Example of Representative Characteristics

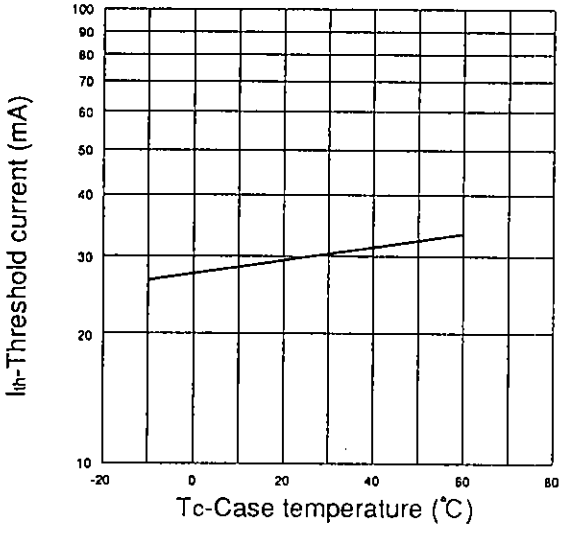
Optical power output vs. Forward current characteristics



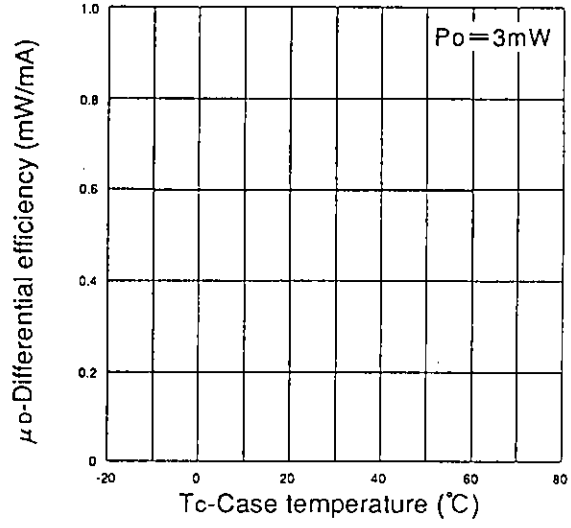
Far field pattern (FFP)



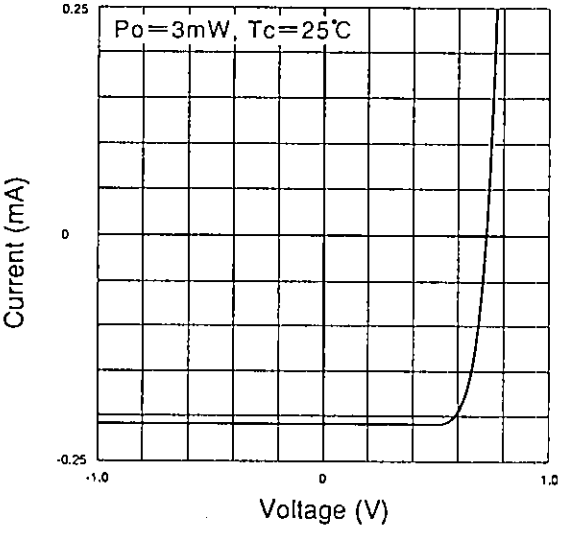
Threshold current vs. Temperature characteristics



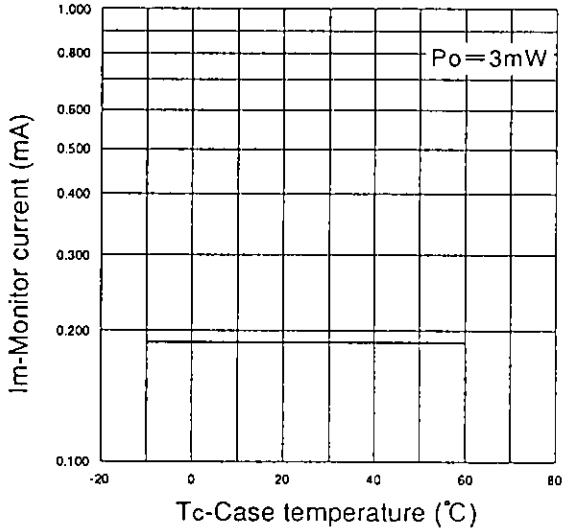
Differential efficiency vs. Temperature characteristics



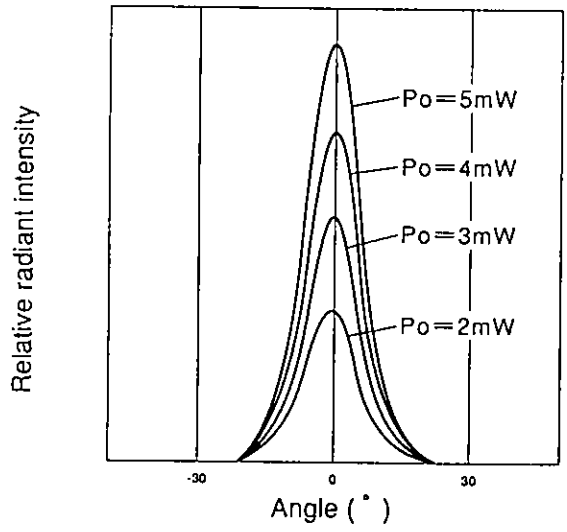
Characteristics of PIN diode voltage and current



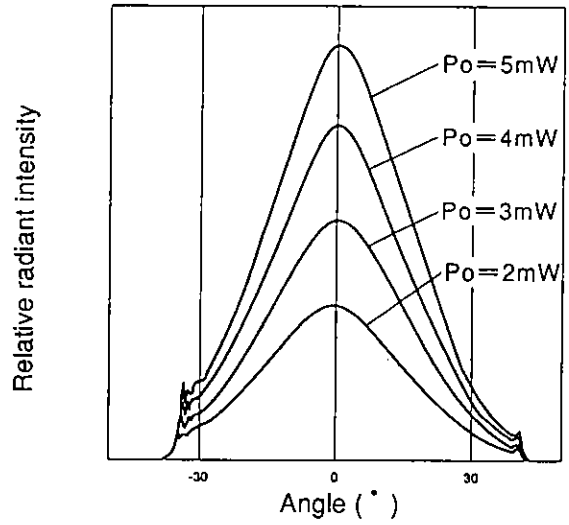
Monitor current vs. Temperature characteristics



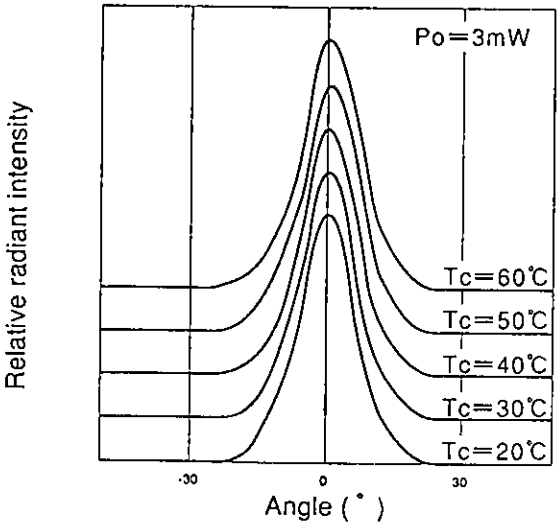
Power dependence of far field pattern (Parallel to junction)



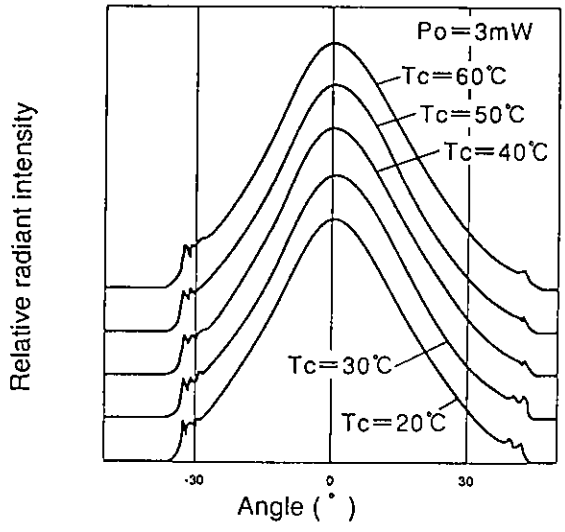
Power dependence of far field pattern (Perpendicular to junction)



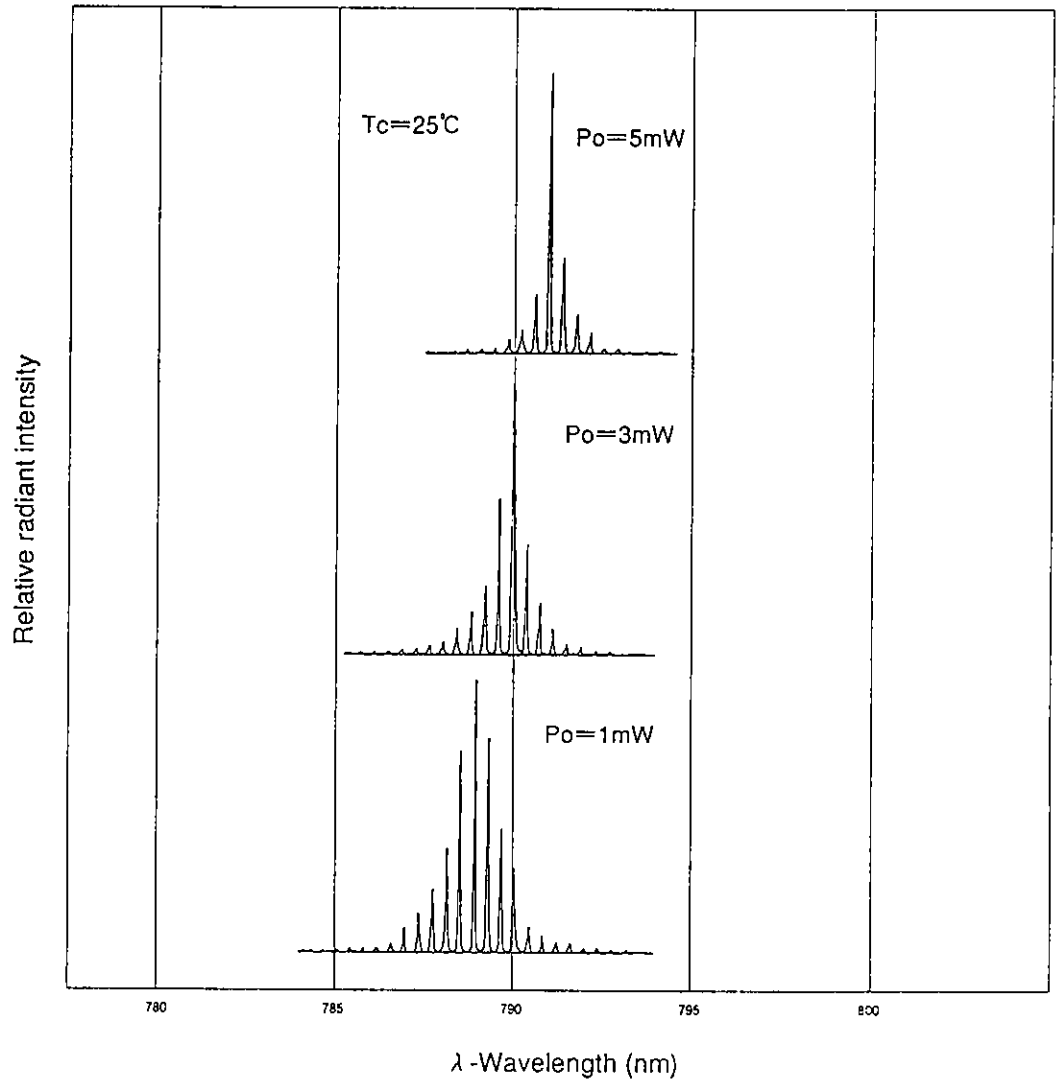
Temperature dependence of far field pattern (Parallel to junction)



Temperature dependence of far field pattern (Perpendicular to junction)



Power dependence of oscillating spectrum



Temperature dependence of oscillating spectrum