

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

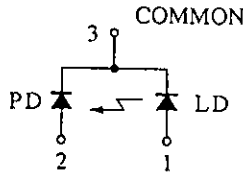
Structure

GaAlAs double hetero laser diode
PIN photodiode to monitor laser beam output

Absolute Maximum Ratings ($T_c=25^\circ\text{C}$)

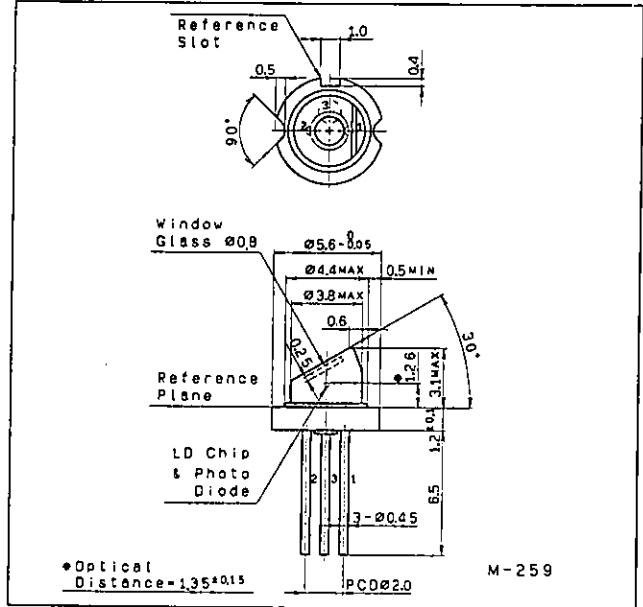
- Optical power output P_o 5 mW
- Reverse voltage V_R LD 2 V
PD 15 V
- Operating temperature T_{opr} -10 to $+60$ $^\circ\text{C}$
- Storage temperature T_{stg} -40 to $+85$ $^\circ\text{C}$

Connection Diagram

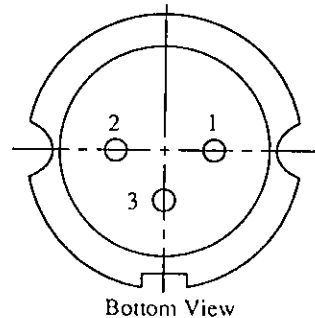


Package Outline

Unit : mm



Pin Configuration



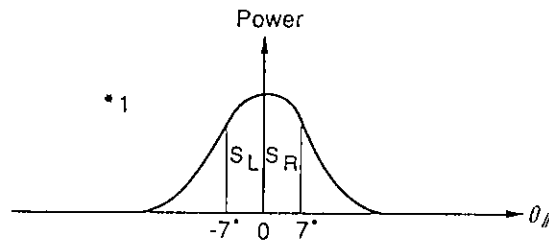
- 1. LD anode
- 2. PD anode
- 3. COMMON

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Electrical and Optical Characteristics

(Tc=25°C)

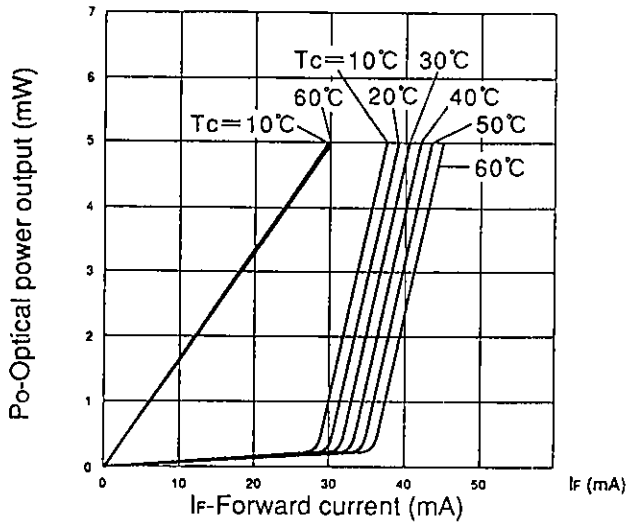
Item	Symbol	Conditions	Min.	Typ.	Max.	Unit	
Threshold current	I_{th}			30	41	mA	
Operating current	I_{op}	$P_o=3\text{ mW}$		35	45	mA	
Operating voltage	V_{op}	$P_o=3\text{ mW}$	1.7	1.9	2.5	V	
Wavelength	λ_p	$P_o=3\text{ mW}$	760	790	810	nm	
Monitor current	I_{mon}	$P_o=3\text{ mW}$ $V_R=5\text{ V}$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



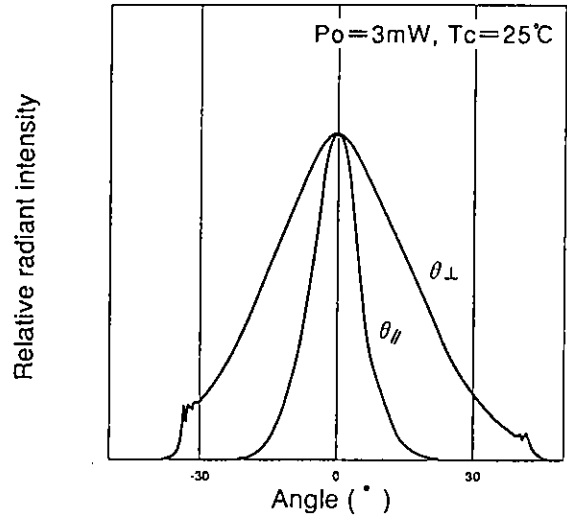
$$\Delta S_R = \frac{|S_L - S_R|}{S_L + S_R}$$

Example of Representative Characteristics

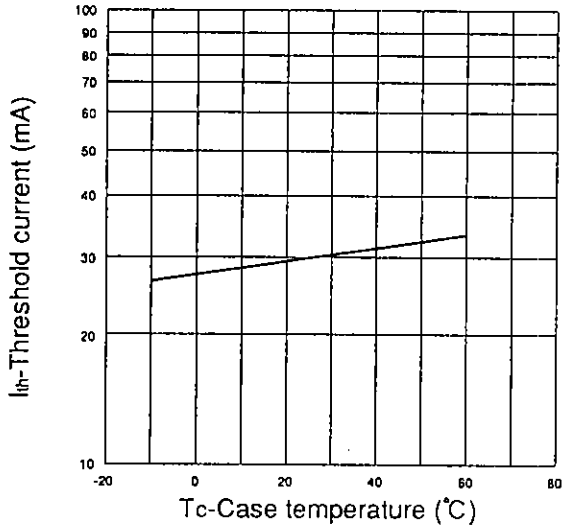
Optical power output vs. Forward current characteristics



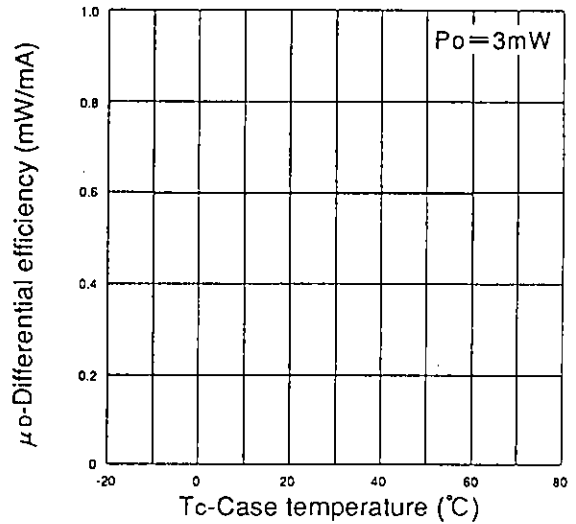
Far field pattern (FFP)



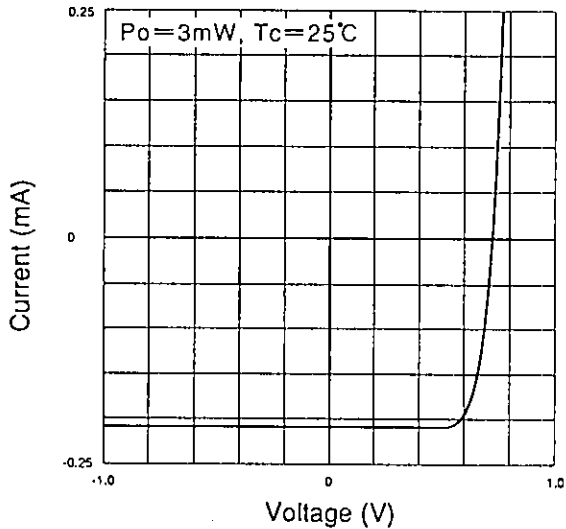
Threshold current vs. Temperature characteristics



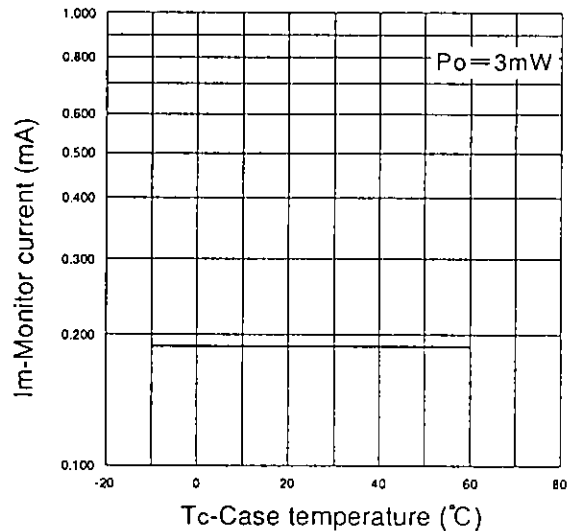
Differential efficiency vs. Temperature characteristics



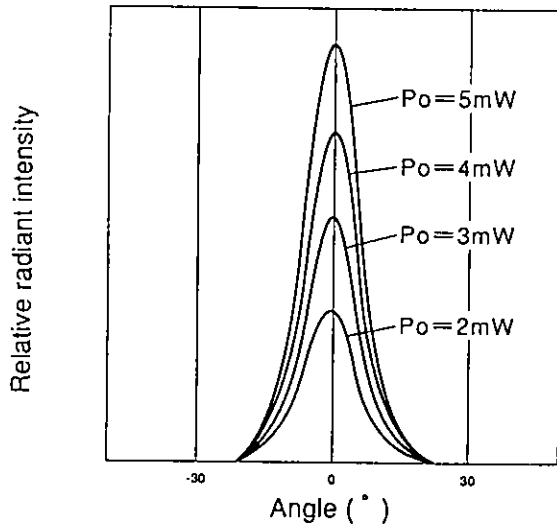
Characteristics of PIN diode voltage and current



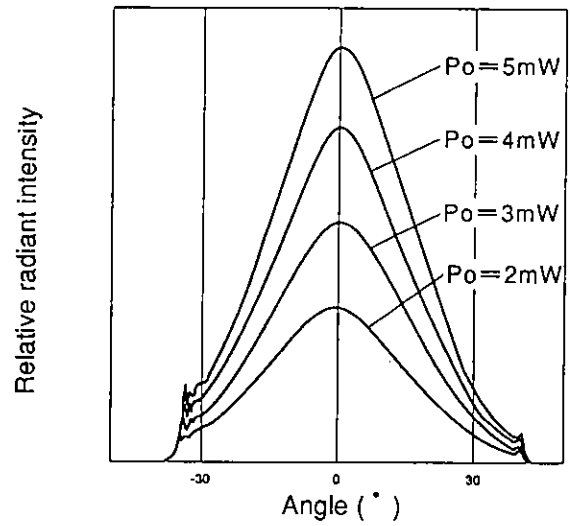
Monitor current vs. Temperature characteristics



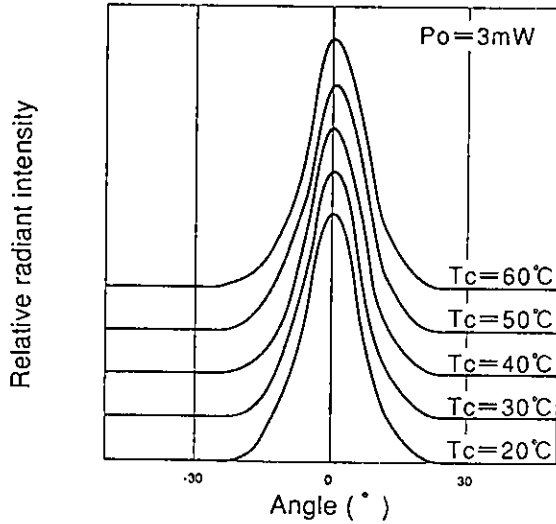
Power dependence of far field pattern
(Parallel to junction)



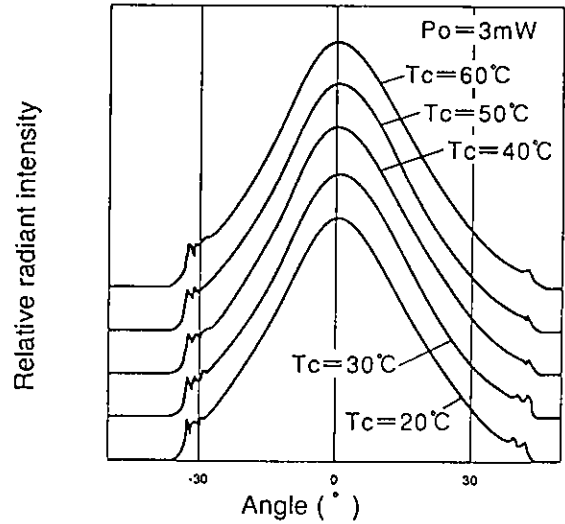
Power dependence of far field pattern
(Perpendicular to junction)



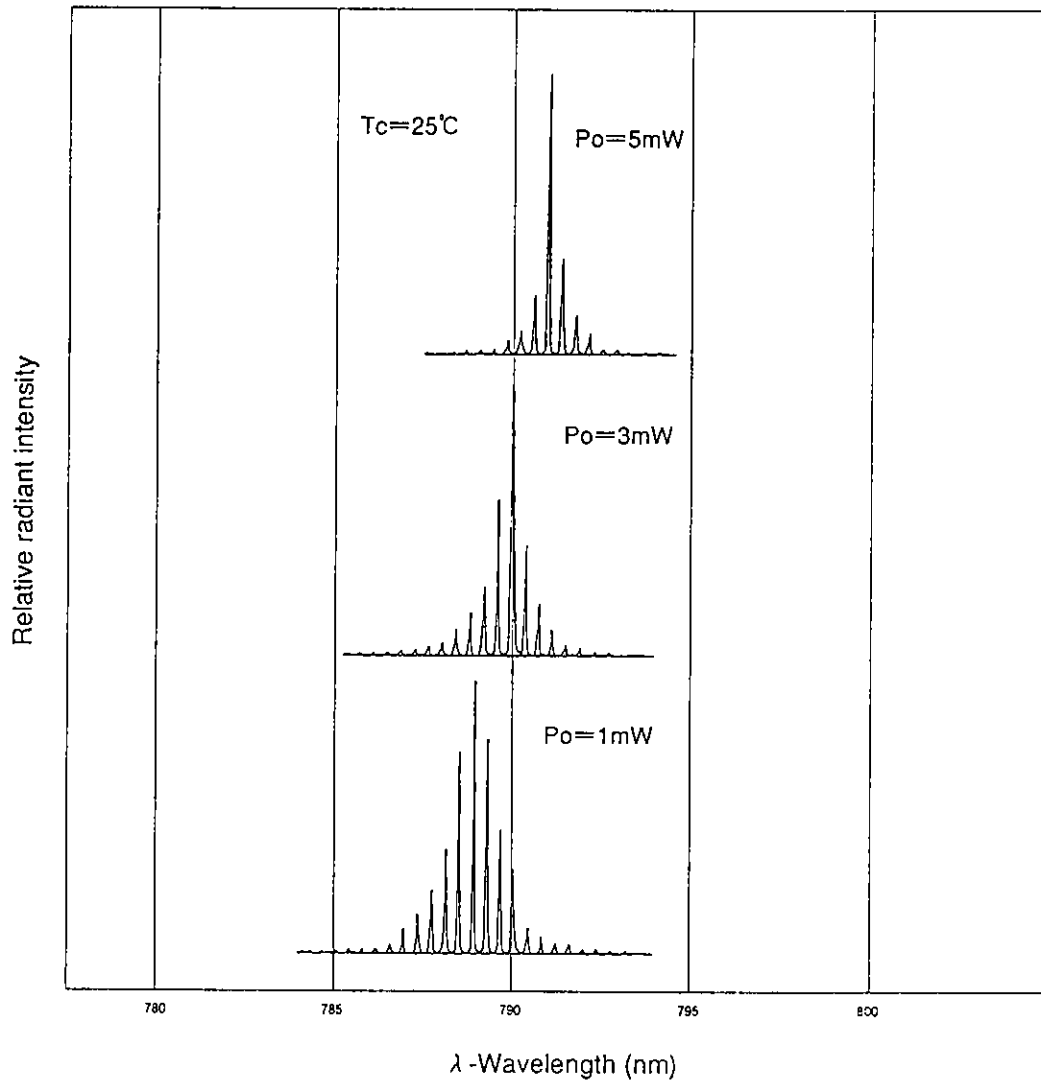
Temperature dependence of far field pattern
(Parallel to junction)



Temperature dependence of far field pattern
(Perpendicular to junction)



Power dependence of oscillating spectrum



Temperature dependence of oscillating spectrum

