25-05172

HL8338MG

GaAlAs Laser Diode

ODE-208-066A (Z)
Rev.1
May 24, 2007

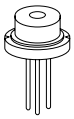
Description

The HL8338MG is 0.83 μm band GaAlAs laser diode with a multi-quantum well(MQW) structure. It is suitable as a light source for sensor applications and various other types of optical equipment.

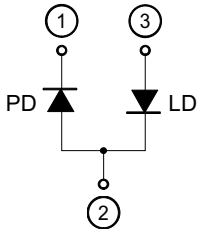
Features

- Infrared light output: λp = 830 nm Typ
- Optical output power: 50 mW (CW)
- Low operating current: 75 mA Typ
- Low operating voltage: 1.9 V Typ
- Built-in monitor photodiode
- Single longitudinal mode

Package Type
• HL8338MG: MG



Internal Circuit



Absolute Maximum Ratings

(T_C = 25°C)

Item	Symbol	Ratings	Unit
Optical output power	P_O	50	mW
LD reverse voltage	$V_{R(LD)}$	2	V
PD reverse voltage	$V_{R(PD)}$	30	V
Operating temperature	Topr	–10 to +60	°C
Storage temperature	Tstg	–40 to +85	°C

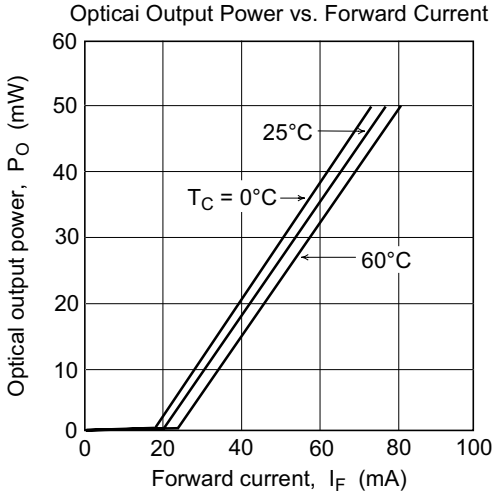
Optical and Electrical Characteristics

(T_C = 25°C)

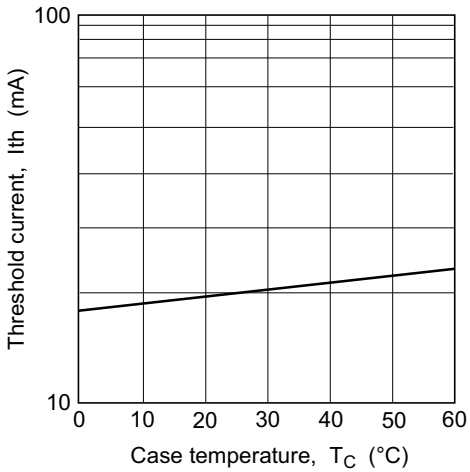
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Threshold current	Ith	—	20	40	mA	—
Slope efficiency	ηs	0.7	0.9	—	mW/mA	30 (mW)/($I_{(40mW)}$ – $I_{(10mW)}$)
Operating current	I_{OP}	—	75	100	mA	P_O = 50 mW
Operating voltage	V_{OP}	—	1.9	2.4	V	P_O = 50 mW
Beam divergence parallel to the junction	θ//	6	9	12	°	P_O = 50 mW, FWHM
Beam divergence perpendicular to the junction	θ⊥	18	22	26	°	P_O = 50 mW, FWHM
Lasing wavelength	λp	820	830	840	nm	P_O = 50 mW
Monitor current	I_S	—	0.25	—	mA	P_O = 50 mW, $V_{R(PD)}$ = 5 V

Typical Characteristic Curves

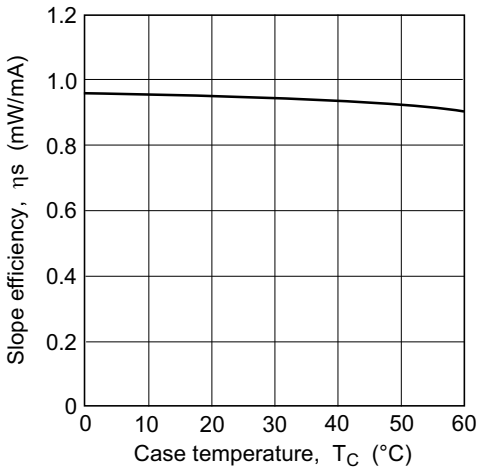
Opticai Output Power vs. Forward Current



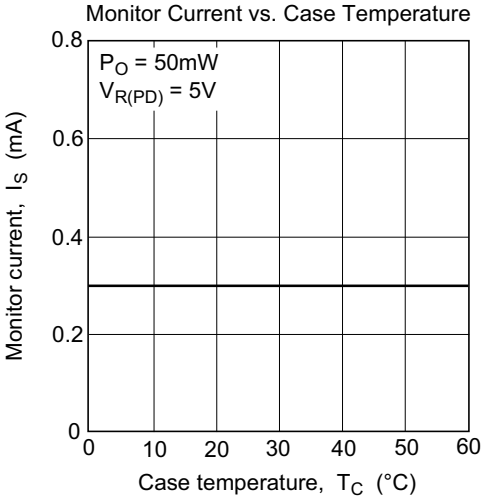
Threshold Current vs. Case Temperature



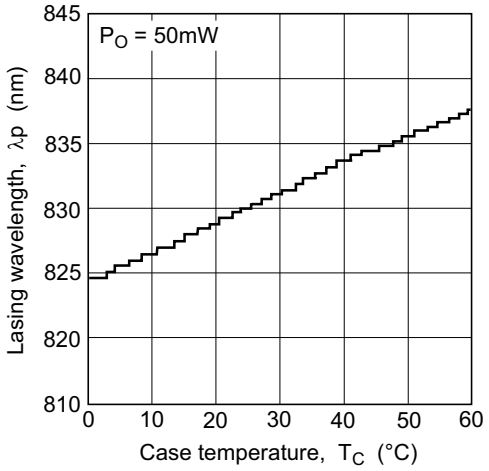
Slope Efficiency vs. Case Temperature



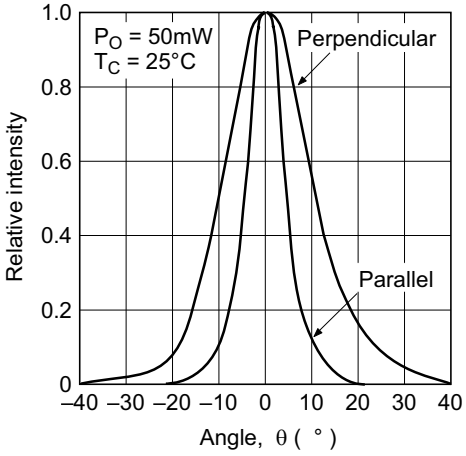
Monitor Current vs. Case Temperature



Lasing Wavelength vs. Case Temperature

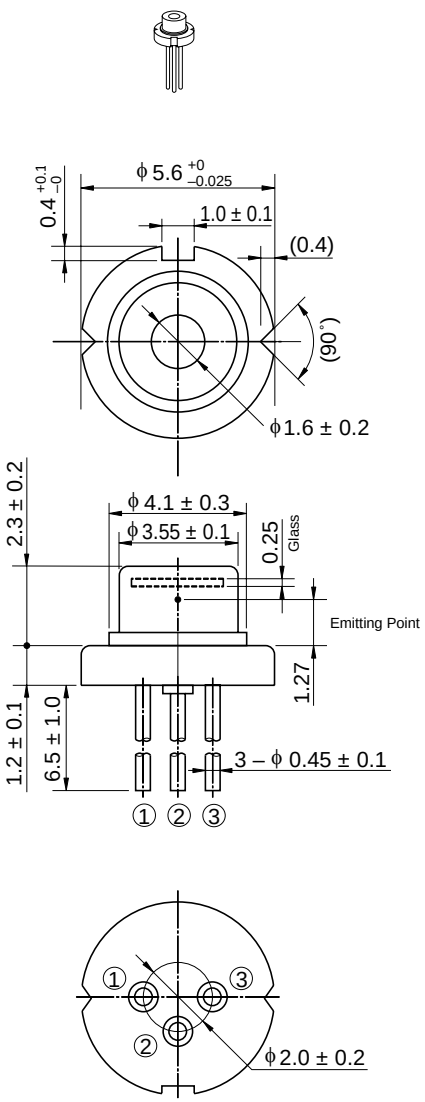


Far Feild Pattern



Package Dimensions

As of July, 2002
Unit: mm



OPJ Code	LD/MG
JEDEC	—
JEITA	—
Mass (reference value)	0.3 g

TECHNICAL DATA of HL8337MG/HL8338MG

(1) Distribution data:

Distribution data of Optical and Electrical Characteristics is shown in 2-3 pages.

(2) I-L Characteristics:

I-L characteristics data is shown in 4 page.

(3) Far Filed Pattern(FFP) Characteristics :

FFP characteristics data is shown in 5page.

(4) Output power dependency of characteristics:

Output power dependency data of characteristics is shown in 6 page.

(5) Temperature dependency of characteristics:

Temperature dependency data of characteristics is shown 7-8 pages.

(6) Pulse response characteristics:

Pulse response characteristics data is shown in 9 page.

(7) Frequency response characteristics:

Frequency response characteristics data is shown in 10 page.

(8) Smith chart and Equivalent circuit:

Smith chart and Equivalent circuit is shown in 11 page.

(9) Polarization and Astigmatism:

Polarization and Astigmatism characteristics data is shown in 12 page.

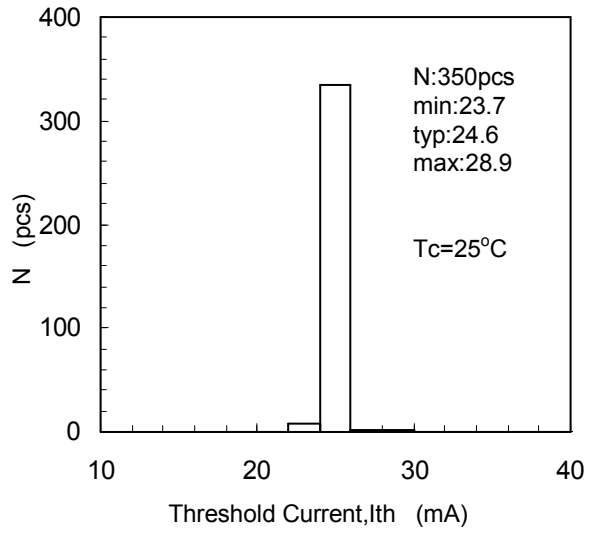
(10) Electrostatic Discharge Level:

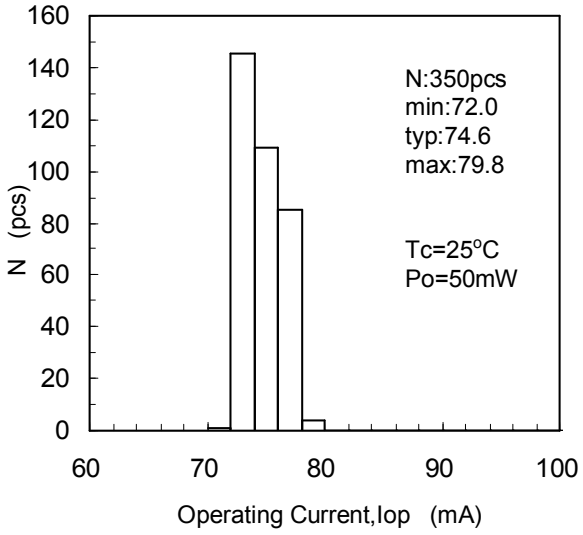
Electrostatic Discharge (ESD) data is shown in 13 page.

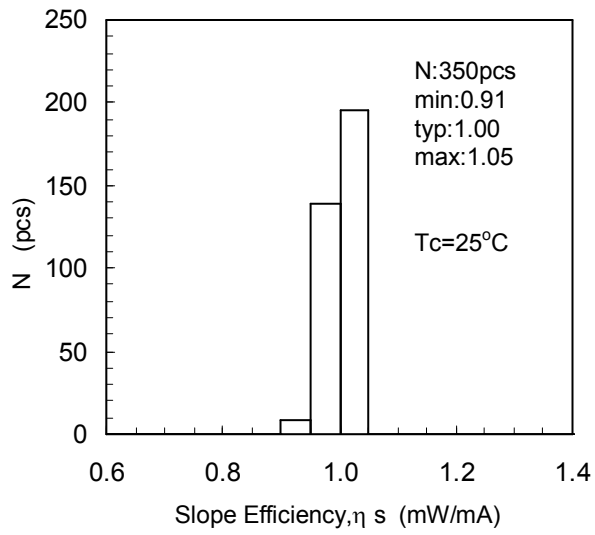
These data must be used as a reference.
The data are correct and reliable.
However, the same level cannot be assured.

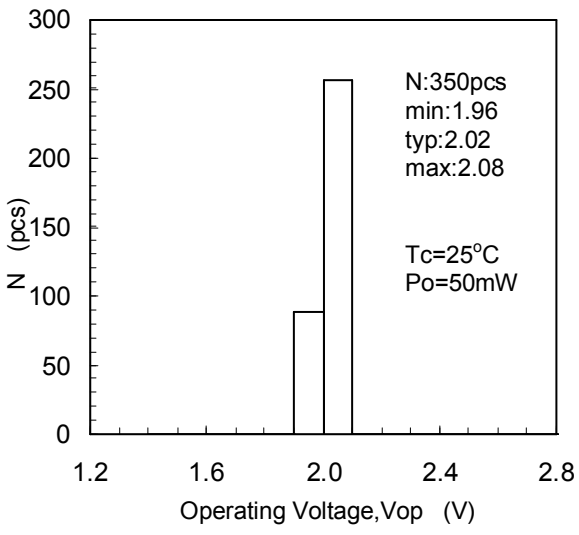
Opnext Japan,Inc.
Device Business Unit

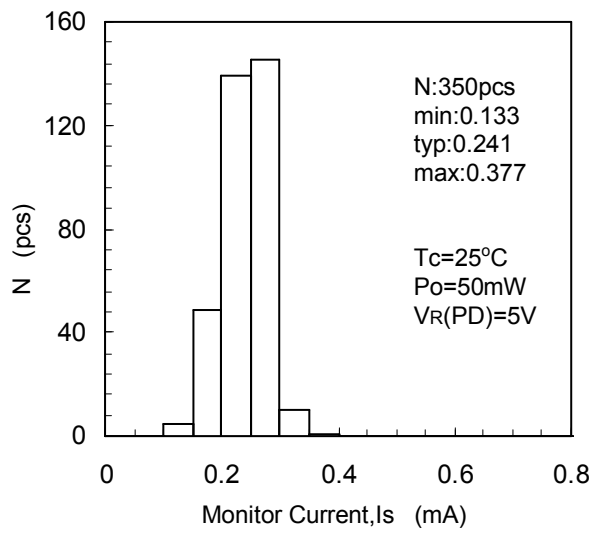
Distribution data of optical and electrical characteristics (1)

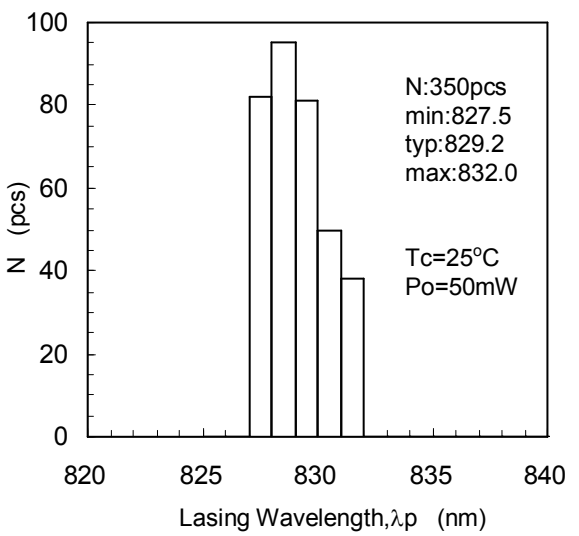




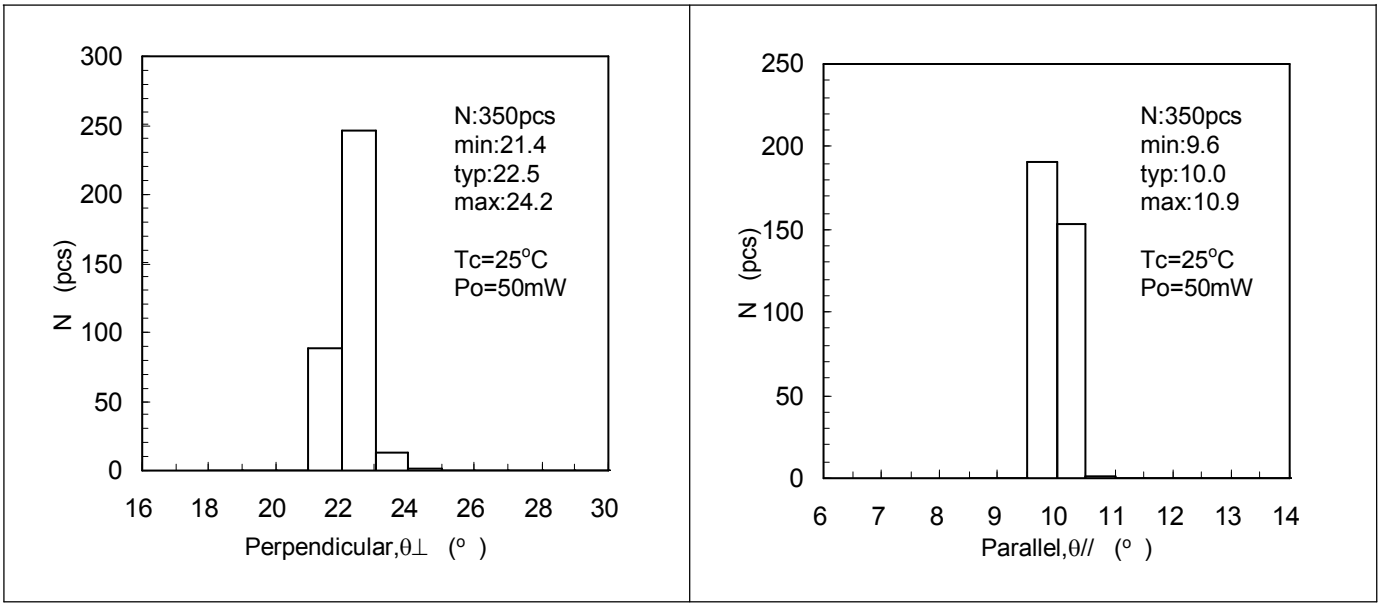






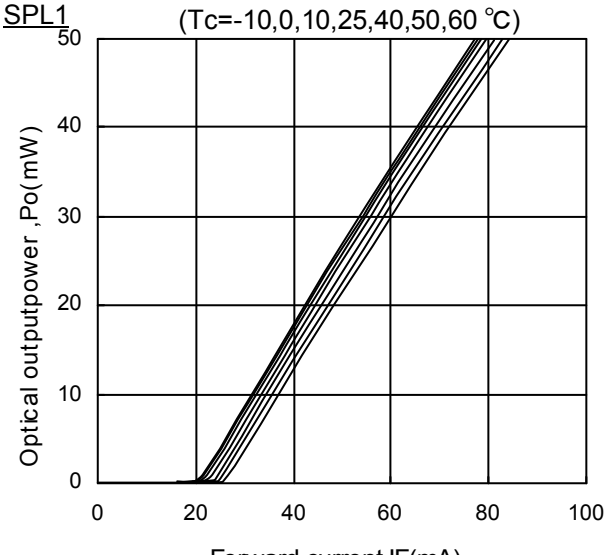


Distribution data of optical and electrical characteristics (2)

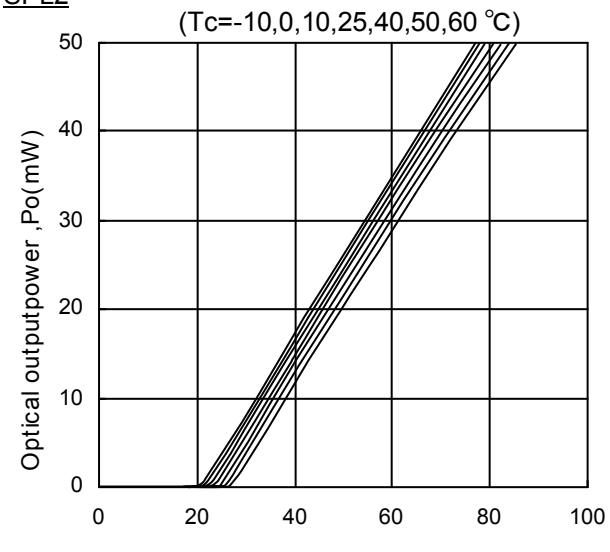


Optical output power vs. Forward current characteristics

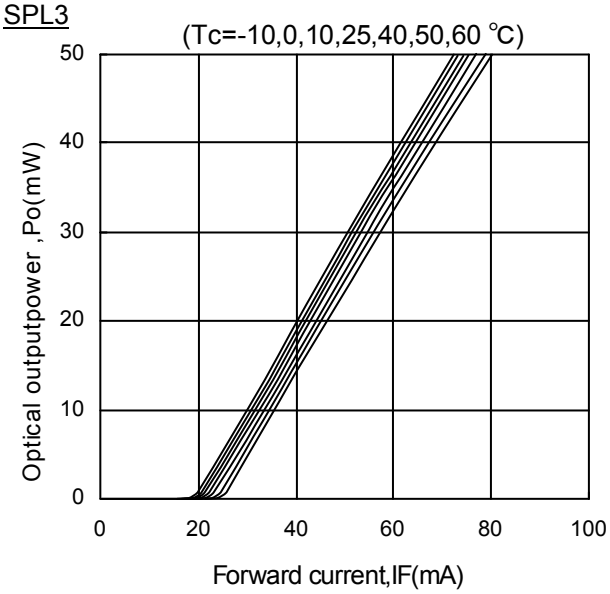
SPL1



SPL2

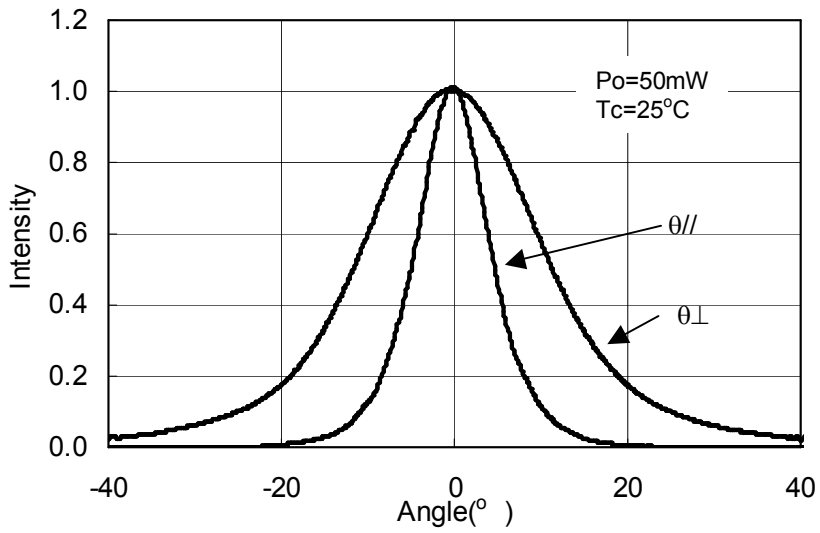


SPL3

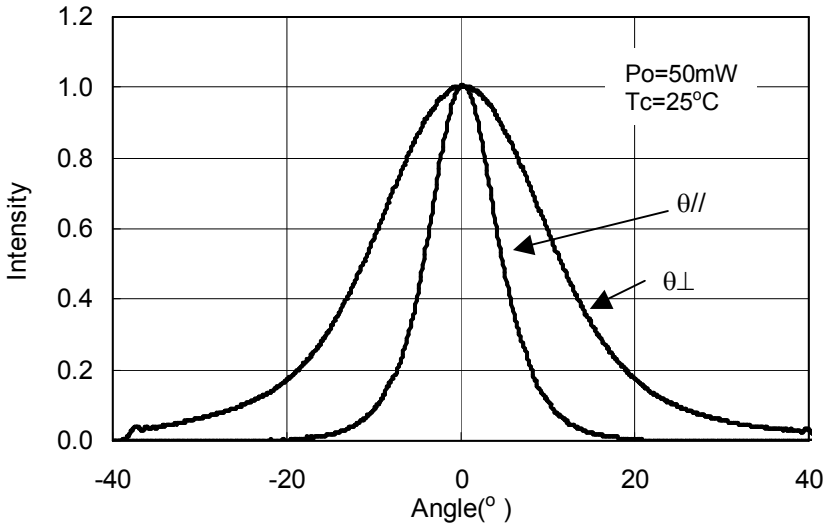


Far Filed Pattern (FFP) Characteristics

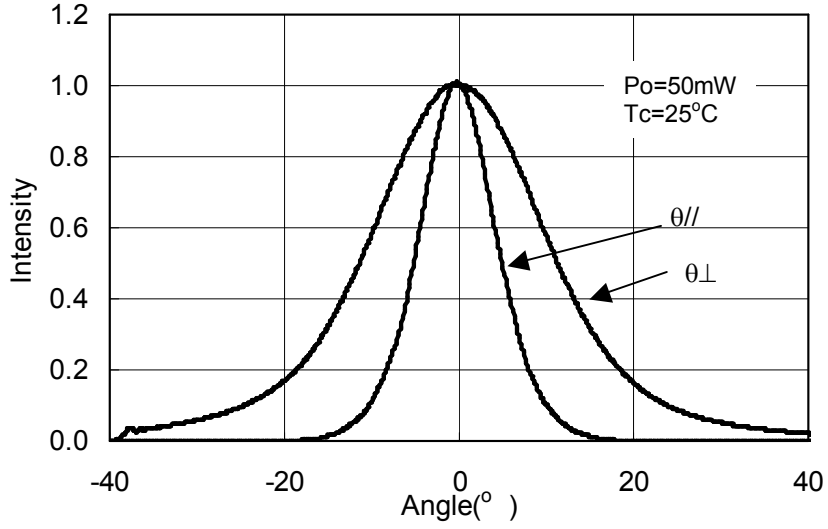
SPL1



SPL2

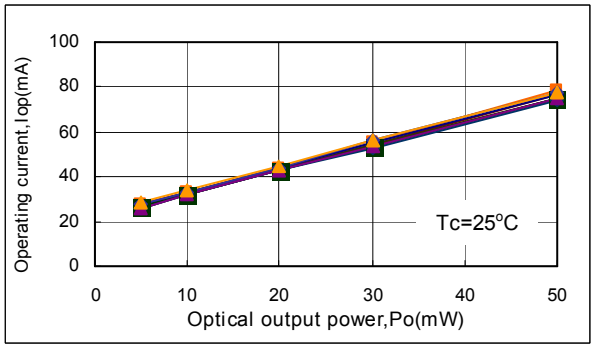


SPL3

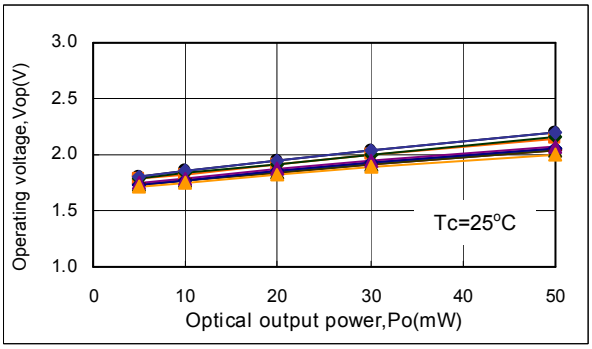


Output power dependency of characteristics

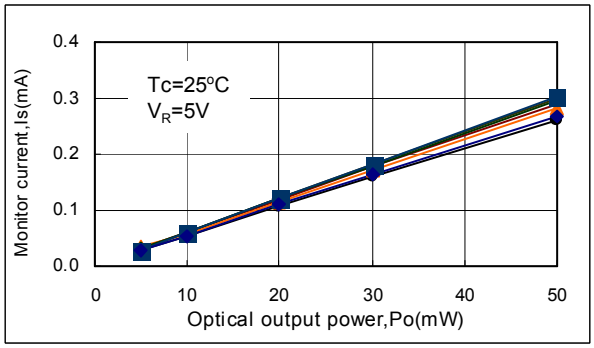
Operating current vs. Optical output power



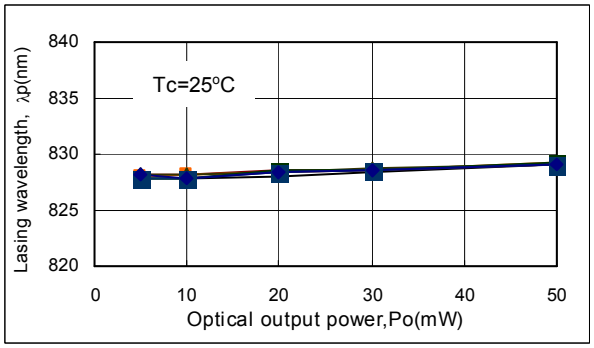
Operating voltage vs. Optical output power



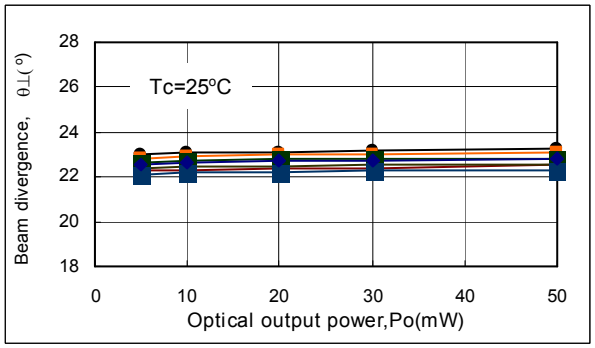
Monitor current vs. Optical output power



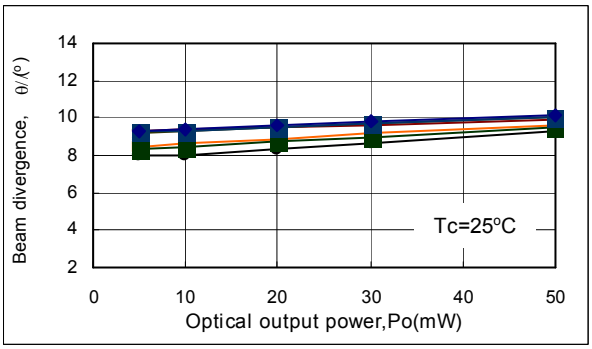
Lasing wavelength vs. Optical output power



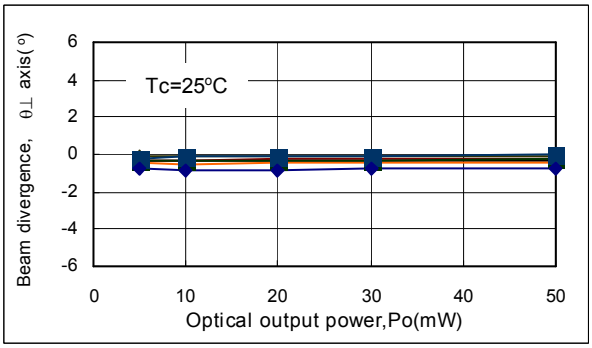
Beam divergence perpendicular vs. Optical output power



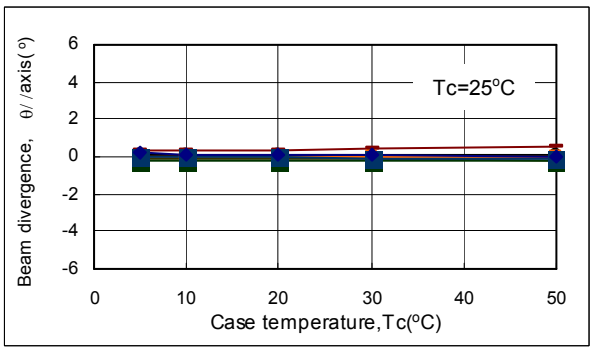
Beam divergence parallel vs. Optical output power



Beam axis perpendicular vs. Optical output power

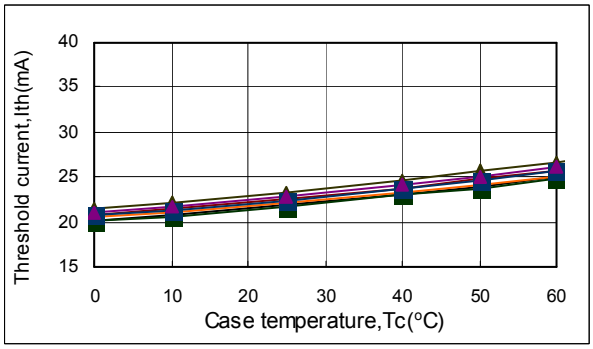


Beam axis parallel vs. Optical output power

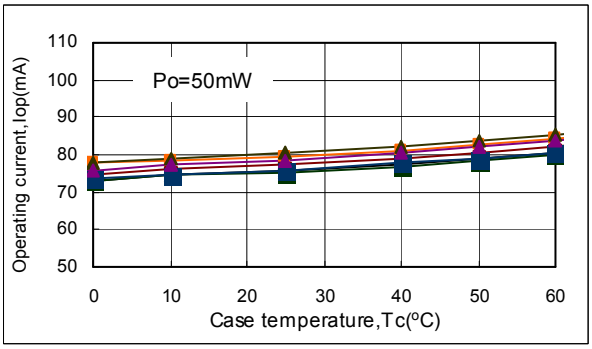


Temperature dependency of characteristics (1)

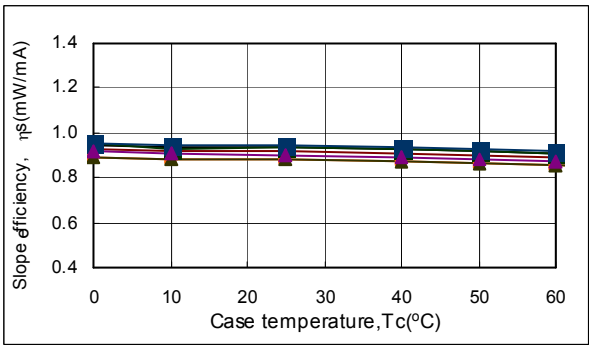
Threshold current vs. Case temperature



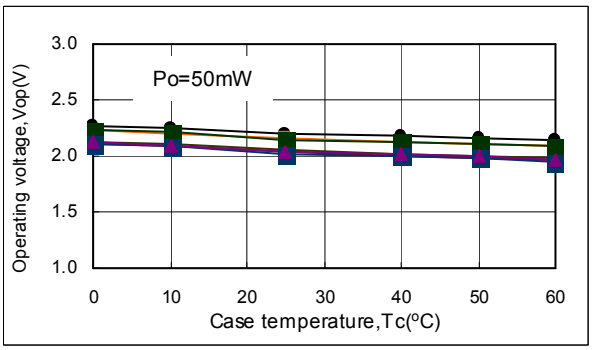
Operating current vs. Case temperature



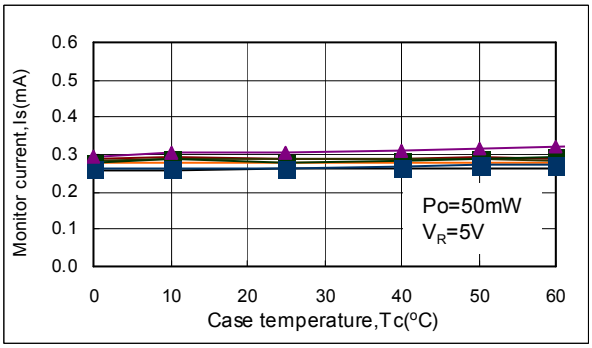
Slope efficiency vs. Case temperature



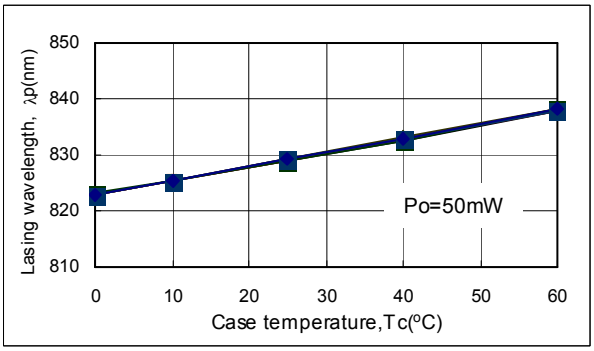
Operating voltage vs. Case temperature



Monitor current vs. Case temperature

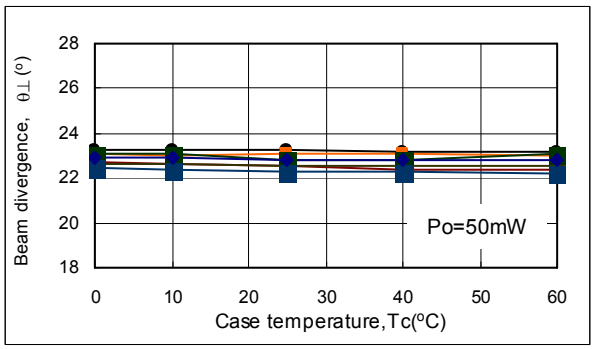


Lasing wavelength vs. Case temperature

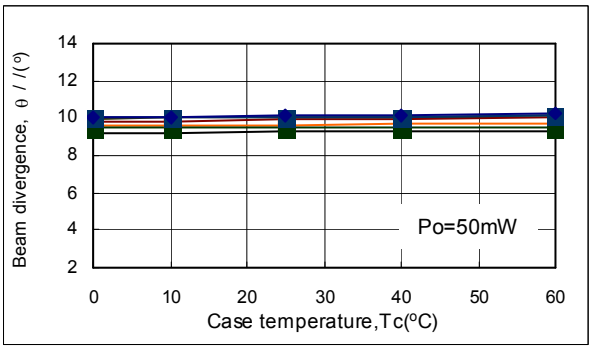


Temperature dependency of characteristics (2)

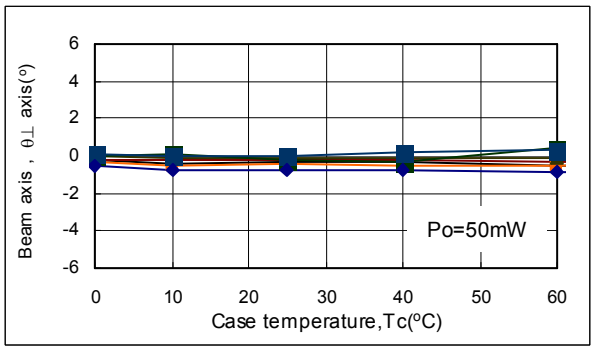
Beam divergence perpendicular vs. Case temperature



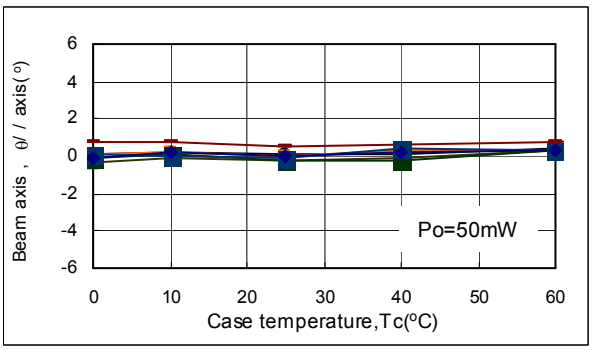
Beam divergence parallel vs. Case temperature



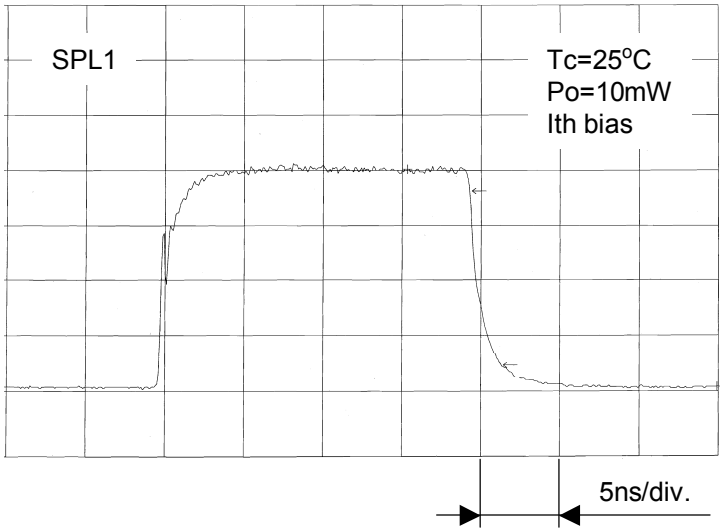
Beam axis perpendicular vs. Case temperature

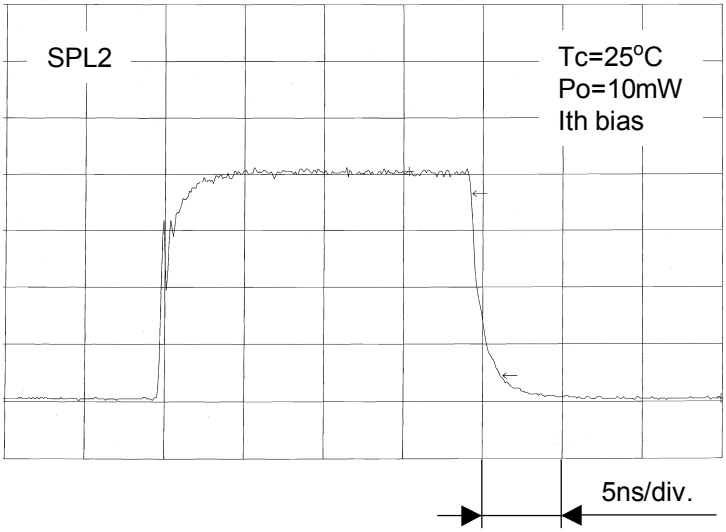


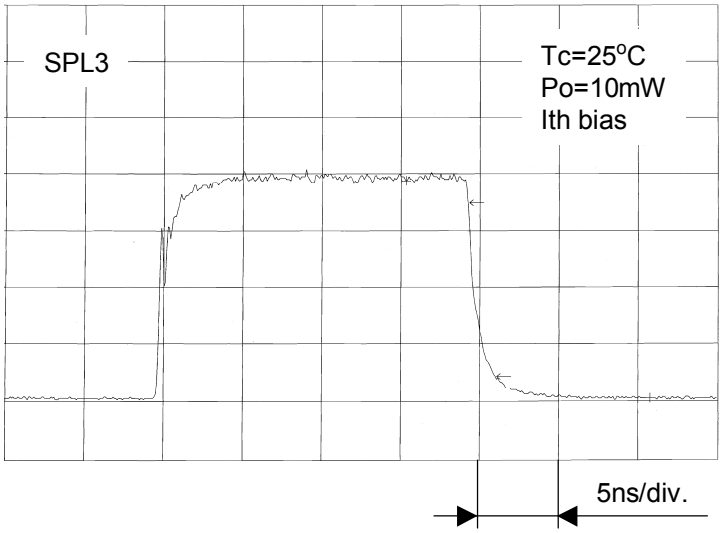
Beam axis parallel vs. Case temperature



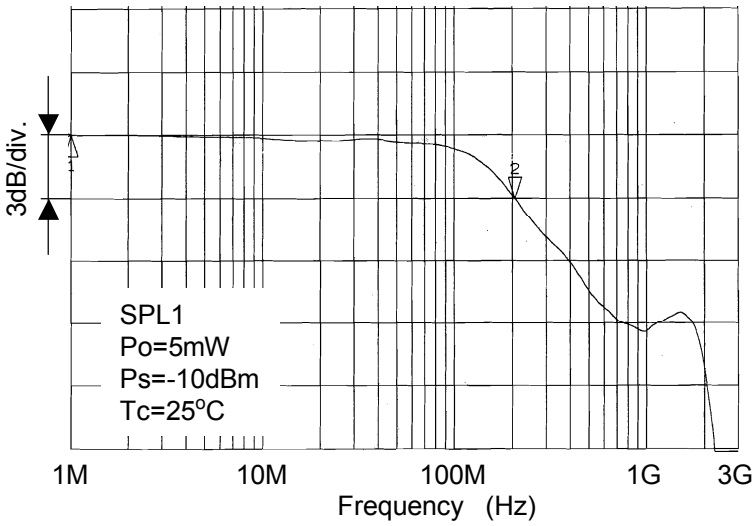
Pulse response characteristics

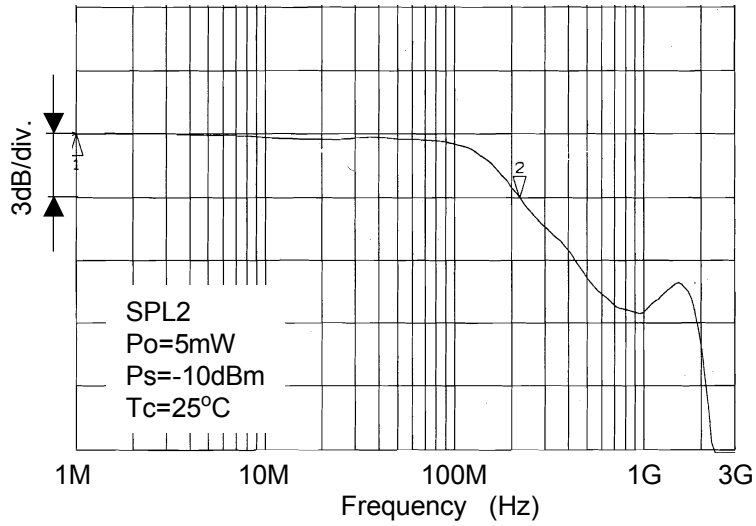


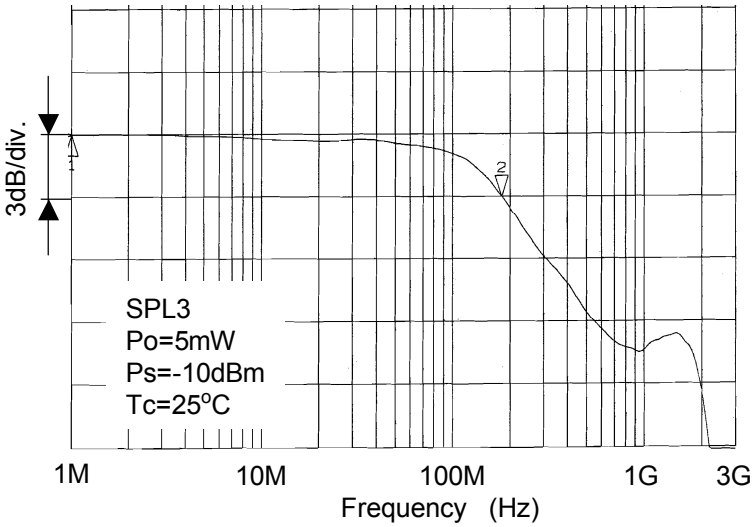




Frequency characteristics

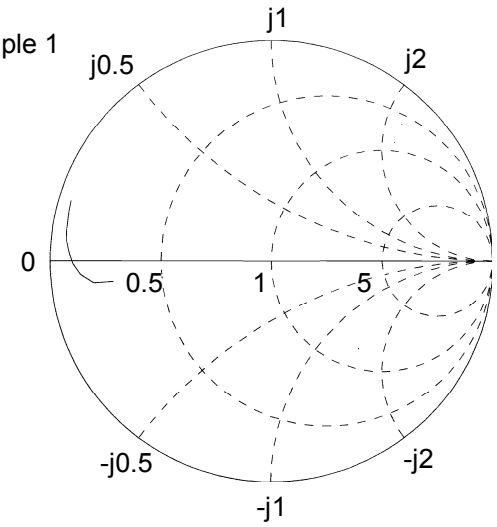


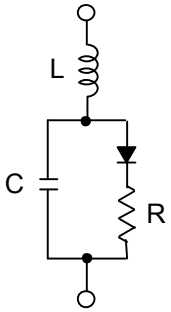




Smith chart and Equivalent circuit

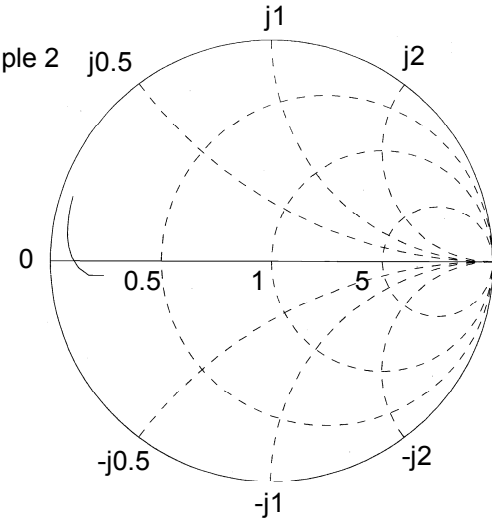
Example 1

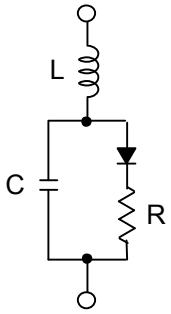




L:1.8nH
R:7.5Ω
C:46.6pF

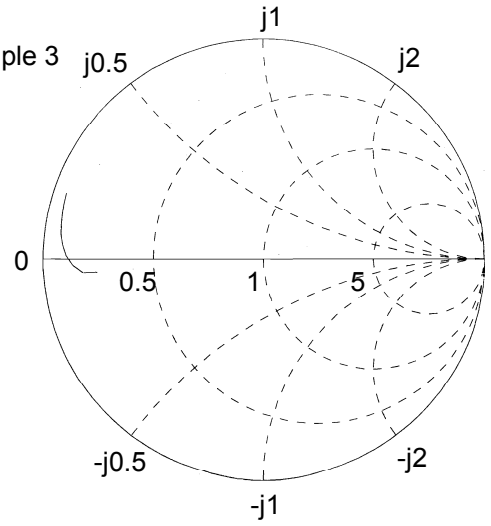
Example 2

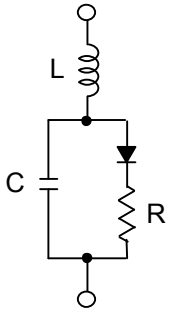




L:1.7nH
R:7.0Ω
C:45.2pF

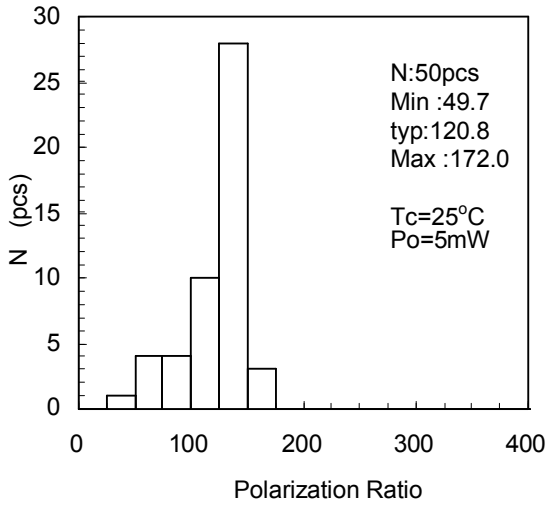
Example 3

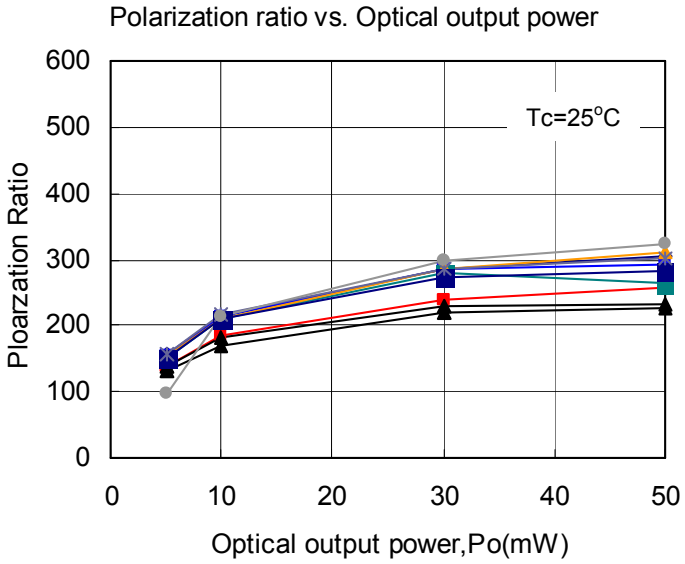




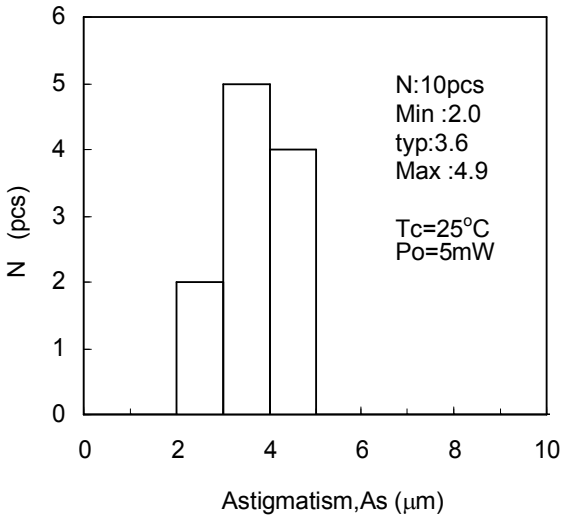
L:1.8nH
R:7.1Ω
C:43.4pF

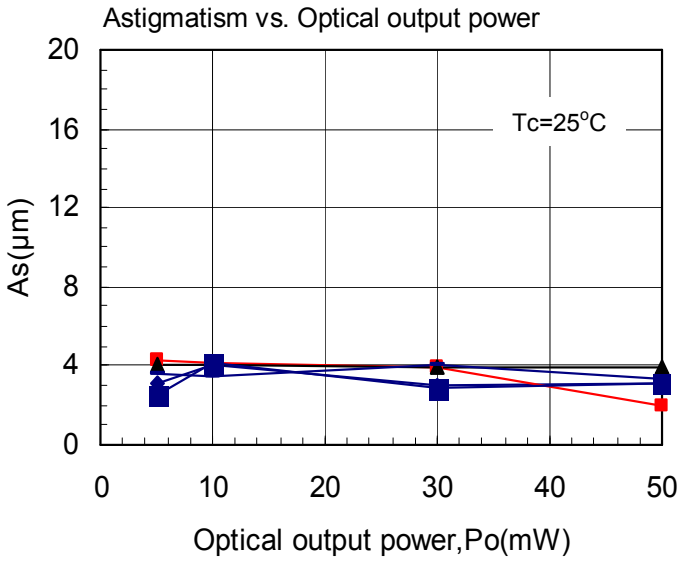
Polarization Characteristics





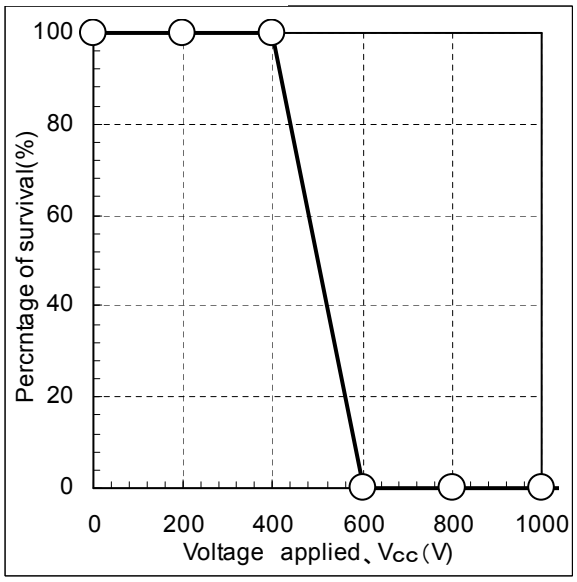
Astigmatism Characteristics



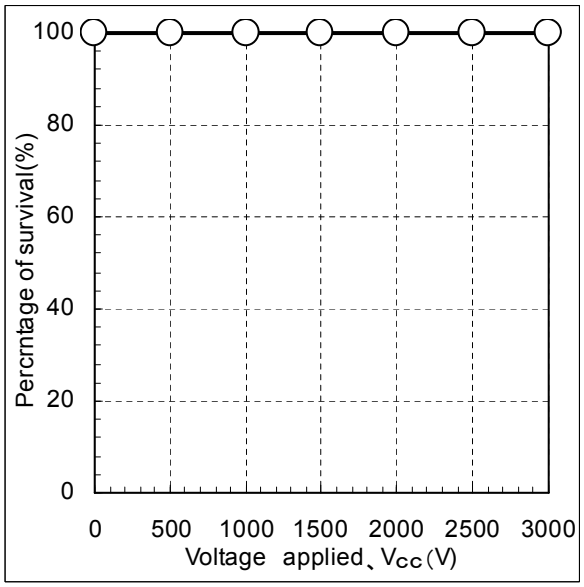


Electrostatic Discharge Level

Forward surge (n:5pcs)



Reverse surge (n:5pcs)



(Note) 5 surges applied / voltage condition
Failure criterion is Io increases 10% or more from initial value.

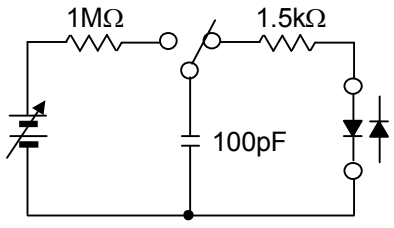


fig. ESD testing circuit

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