
HL7859MG

Visible High Power Laser Diode

HITACHI

ADE-208-229D (Z)

5th Edition
Dec. 2000

Description

The HL7859MG is a 0.78 μm band GaAlAs laser diode with a multi-quantum well (MQW) structure. It is suitable as a light source for optical disc memories and various other types of optical equipment. Hermetic sealing of the small package (ϕ 5.6 mm) assures high reliability.

Application

- Optical disc memories

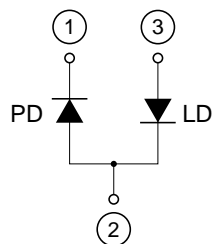
Features

- High output power : 35 mW (CW)
- Visible light output : $\lambda_p = 775$ to 795 nm
- Small package : ϕ 5.6 mm dia.
- Low astigmatism : 5 μm Typ ($P_o = 5$ mW)

Package Type
• HL7859MG: MG



Internal Circuit



HL7859MG

Absolute Maximum Ratings

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

Item	Symbol	Value	Unit
Optical output power	P_o	35	mW
Pulse optical output power	$P_{O(\text{pulse})}$	42 *	mW
Laser diode reverse voltage	$V_{R(\text{LD})}$	2	V
Photo diode reverse voltage	$V_{R(\text{PD})}$	30	V
Operating temperature	Topr	-10 to +60	$^\circ\text{C}$
Storage temperature	Tstg	-40 to +85	$^\circ\text{C}$

Note: Pulse condition : Pulse width = 1 μs , duty = 50%

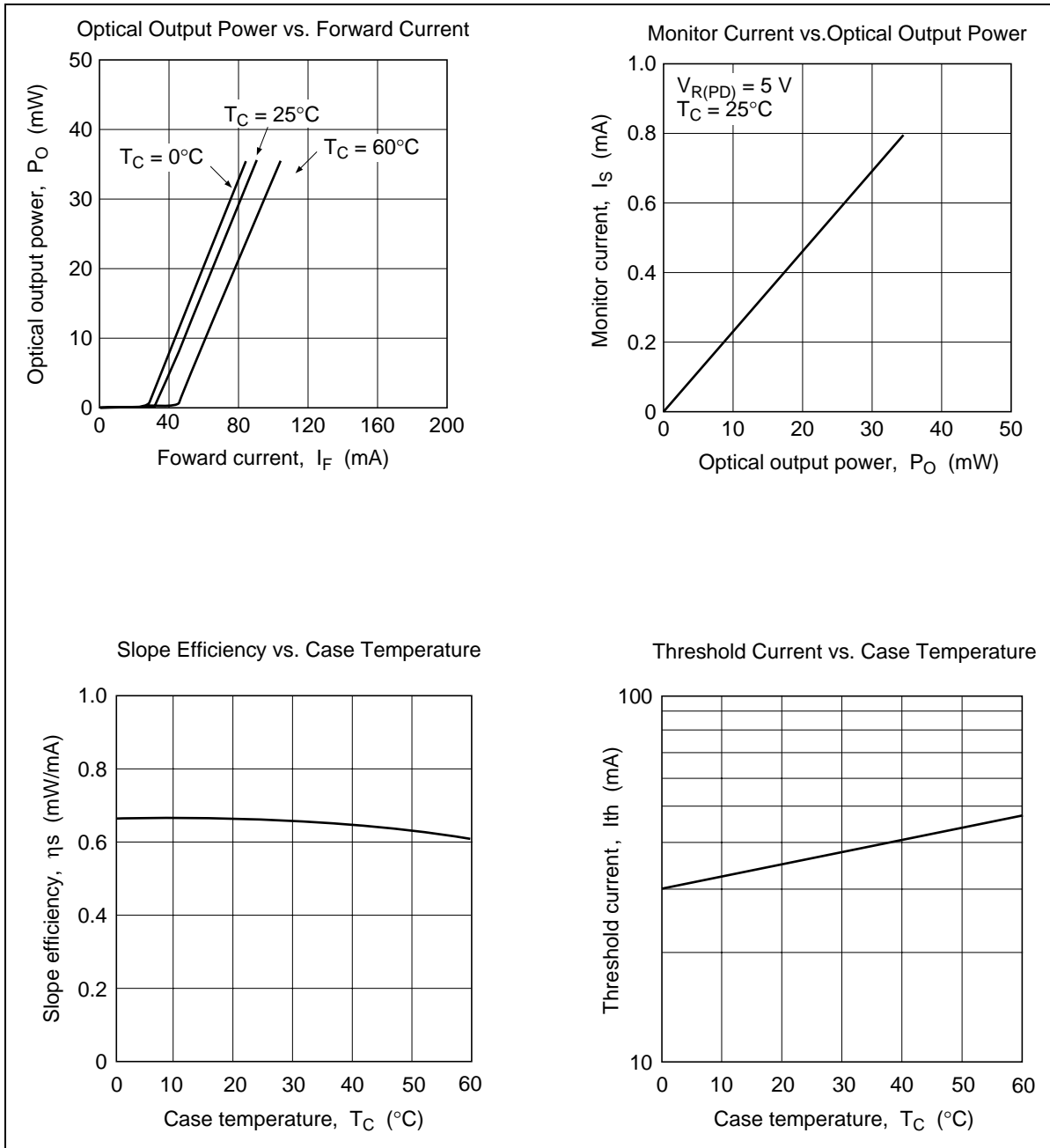
Optical and Electrical Characteristics

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

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Optical output power	P_o	35	—	—	mW	Kink free *
Threshold current	I_{th}	—	35	60	mA	—
Operating voltage	V_{OP}	—	2.1	2.5	V	$P_o = 35 \text{ mW}$
Slope efficiency	η_s	0.35	0.65	0.80	mW/mA	$21 \text{ (mW)} / (I_{(28\text{mW})} - I_{(7\text{mW})})$
Beam divergence parallel to the junction	$\theta_{//}$	8	9.5	12	deg.	$P_o = 35 \text{ mW}$
Beam divergence perpendicular to the junction	θ_{\perp}	18	23	28	deg.	$P_o = 35 \text{ mW}$
Asigmatism	A_s	—	5	—	μm	$P_o = 5 \text{ mW}$, NA = 0.4
Lasing wavelength	λ_p	775	785	795	nm	$P_o = 35 \text{ mW}$
Monitor current	I_s	0.2	—	2	mA	$P_o = 35 \text{ mW}$, $V_{R(\text{PD})} = 5 \text{ V}$

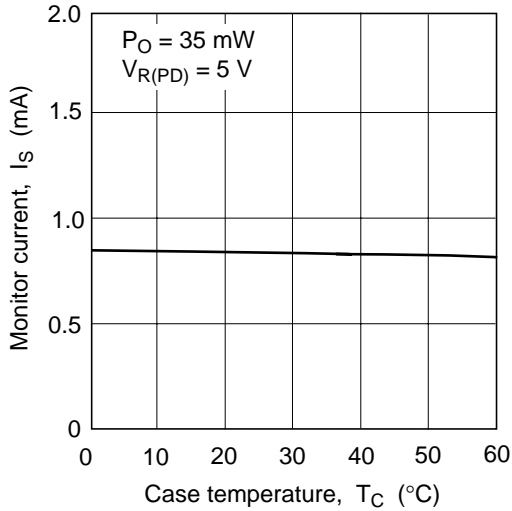
Note: Kink free is confirmed at the temperature of 25°C .

Typical Characteristic Curves

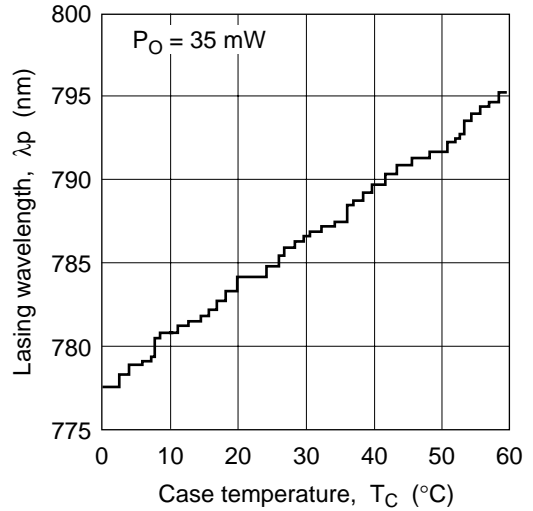


Typical Characteristic Curves (cont)

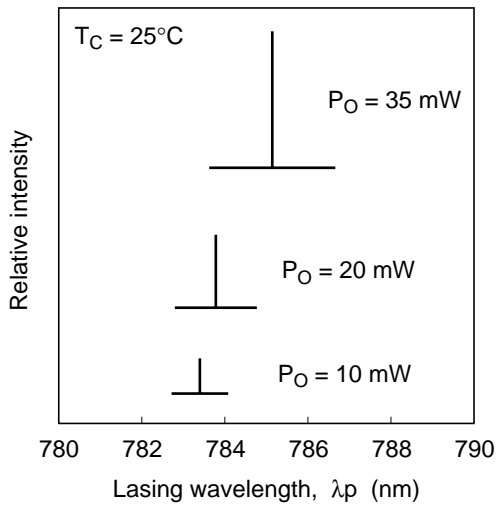
Monitor Current vs. Case Temperature



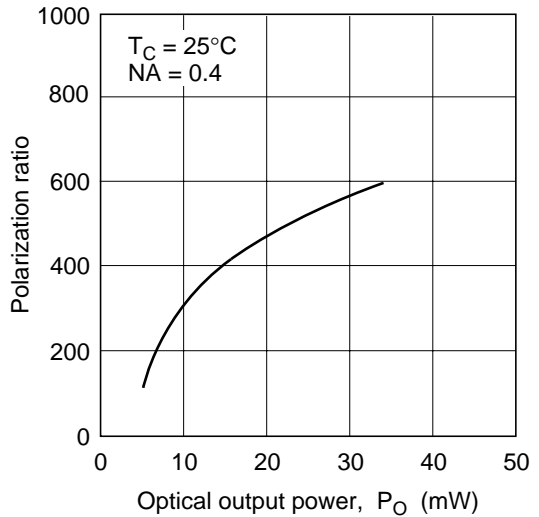
Lasing Wavelength vs. Case Temperature



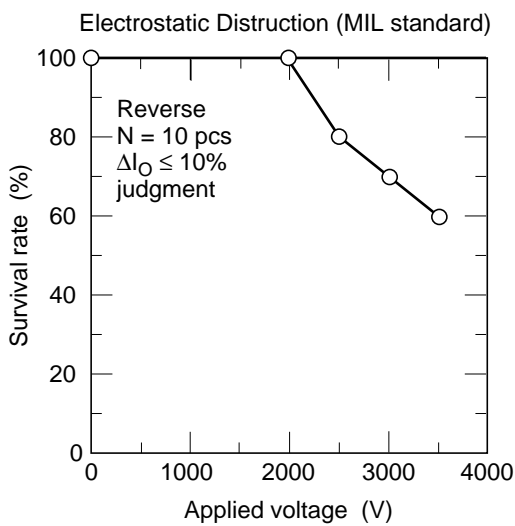
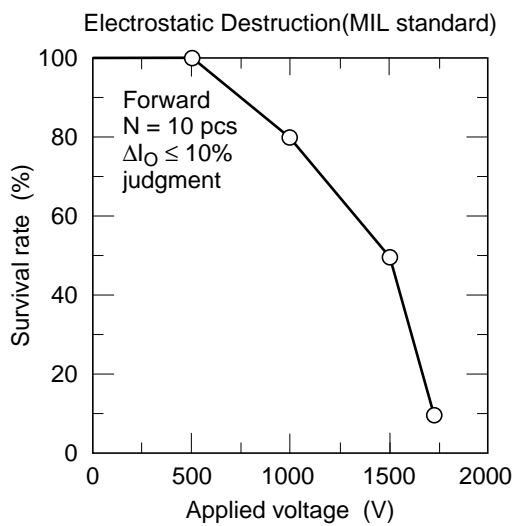
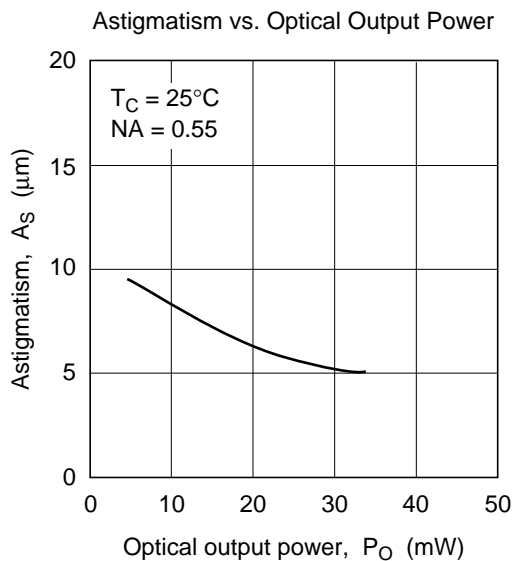
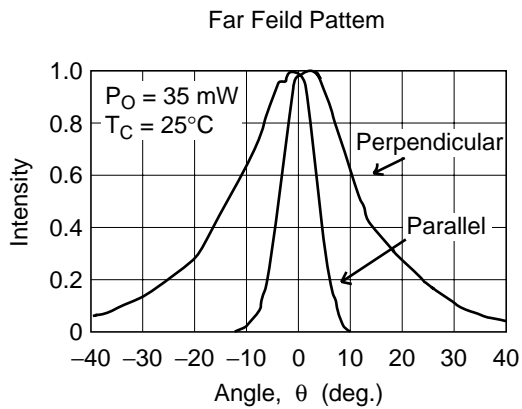
Lasing Spectrum



Polarization Ratio vs. Optical Output Power



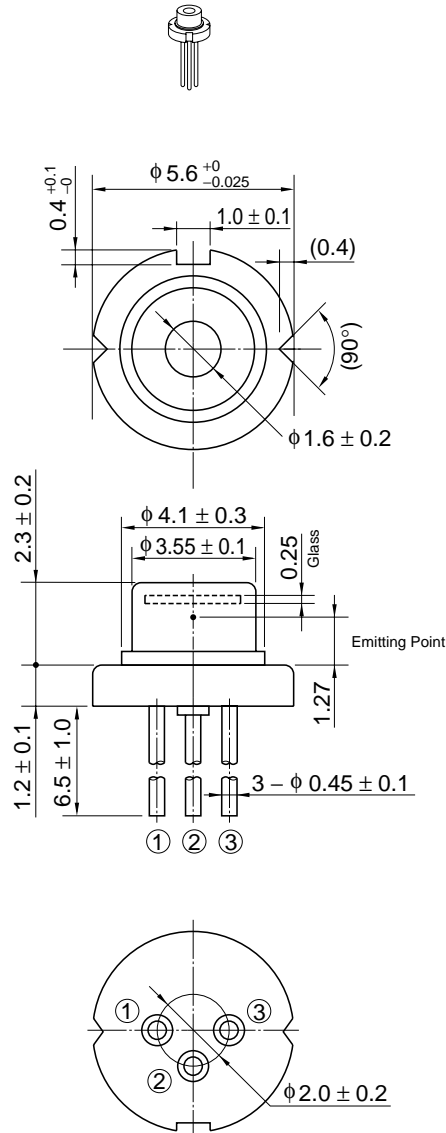
Typical Characteristic Curves (cont)



HL7859MG

Package Dimensions

As of January, 2001
Unit: mm



Hitachi Code	LD/MG
JEDEC	—
EIAJ	—
Mass (reference value)	0.3 g

Cautions

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1. The laser light is harmful to human body especially to eye no matter what directly or indirectly. The laser beam shall be observed or adjusted through infrared camera or equivalent.

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