

HL6503MG

Visible High Power Laser Diode for DVD-RAM

HITACHI

ADE-208-670D (Z)
5th Edition
Dec. 2000

Description

The HL6503MG is a 0.66 μm band AlGaInP laser diode (LD) with a multi-quantum well (MQW) structure. It is suitable as a light source for large capacity optical disc memories, such as DVD-RAM, and various other types of optical equipment.

Hermetic sealing of the small package (ϕ 5.6 mm) assures high reliability.

Application

- Optical disc memories
- Optical equipment

Features

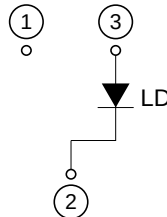
- High output power : 50 mW (CW)
- Visible light output : $\lambda_p = 664 \text{ nm}$ Typ
- Small package : ϕ 5.6 mm
- Low astigmatism : 5 μm Typ ($P_o = 5 \text{ mW}$)

Internal Circuit

Package Type
• HL6503MG: MG



Internal Circuit



Absolute Maximum Ratings (T_C = 25°C)

Item	Symbol	Value	Unit
Optical output power	P _O	50	mW
Pulse optical output power	P _{O(pulse)}	70 *	mW
Laser diode reverse voltage	V _{R(LD)}	2	V
Operating temperature	Topr	−10 to +60	°C
Storage temperature	Tstg	−40 to +85	°C

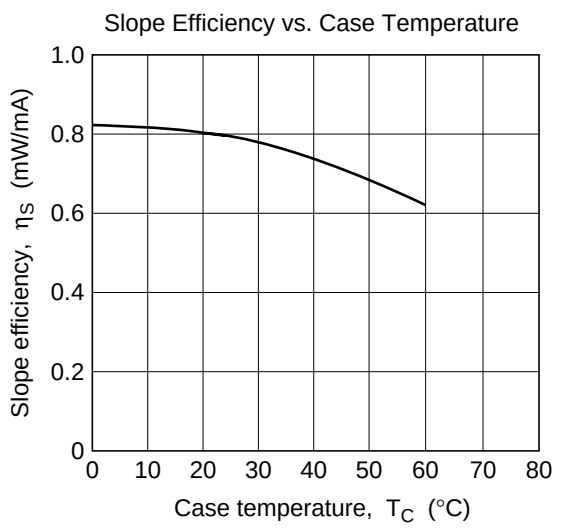
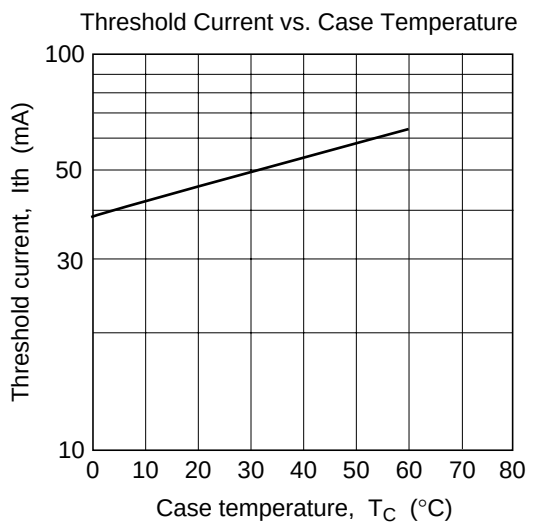
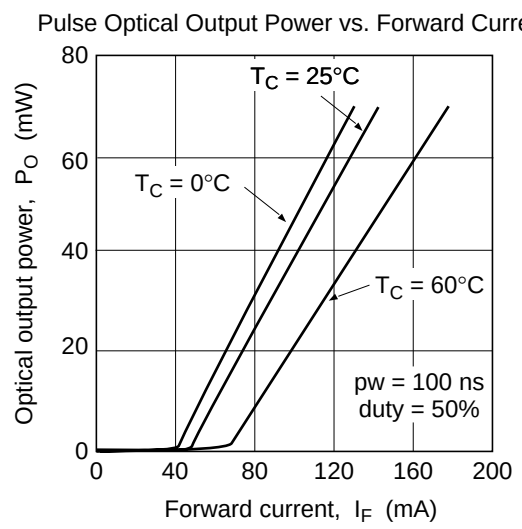
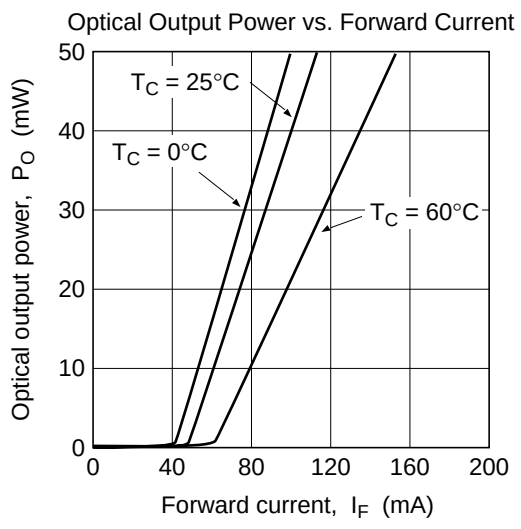
Note: Pulse condition : Pulse width = 100 ns, duty = 50%

Optical and Electrical Characteristics (T_C = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Optical output power	P _O	50	—	—	mW	Kink free *
Pulse optical output power	P _{O(pulse)}	70	—	—	mW	Kink free *
Threshold current	I _{th}	30	45	60	mA	—
Operating current	I _{op}	—	115	135	mA	P _O = 50 mW
Operating voltage	V _{OP}	2.1	2.6	3.0	V	P _O = 50 mW
Beam divergence parallel to the junction	θ//	7	8.5	11	deg.	P _O = 50 mW
Beam divergence parpendicular to the junction	θ⊥	18	21	26	deg.	P _O = 50 mW
Asitgmatism	A _s	—	5	—	μm	P _O = 5 mW, NA = 0.55
Lasing wavelength	λ _p	655	664	667	nm	P _O = 50 mW

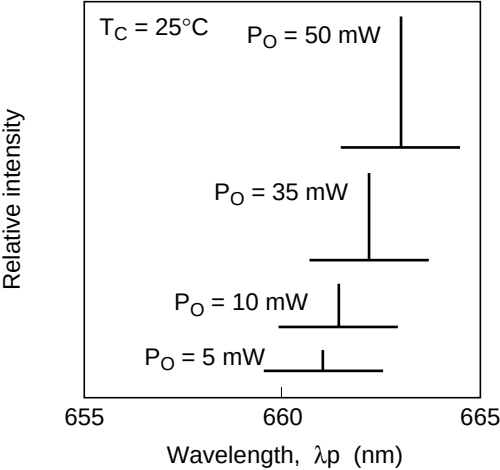
Note: Kink free is confirmed at the temperature of 25°C.

Typical Characteristic Curves

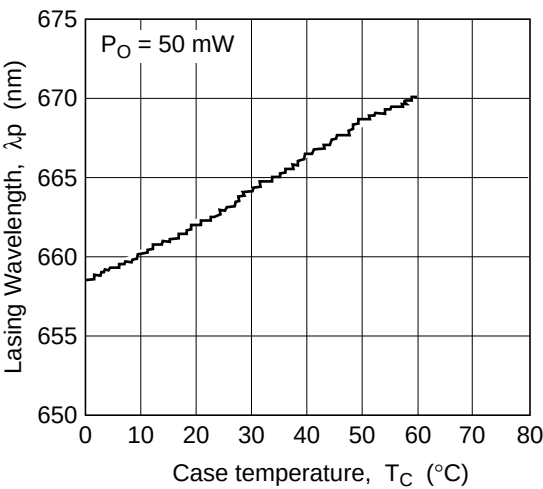


Typical Characteristic Curves (cont)

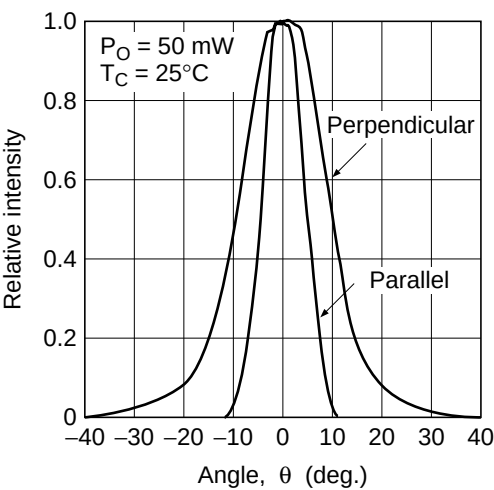
Lasing Spectrum



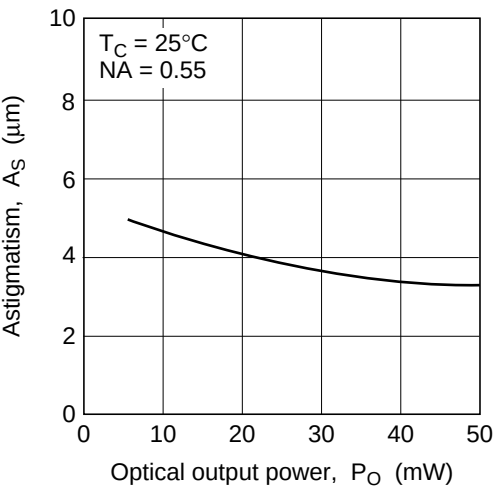
Wavelength vs. Case Temperature



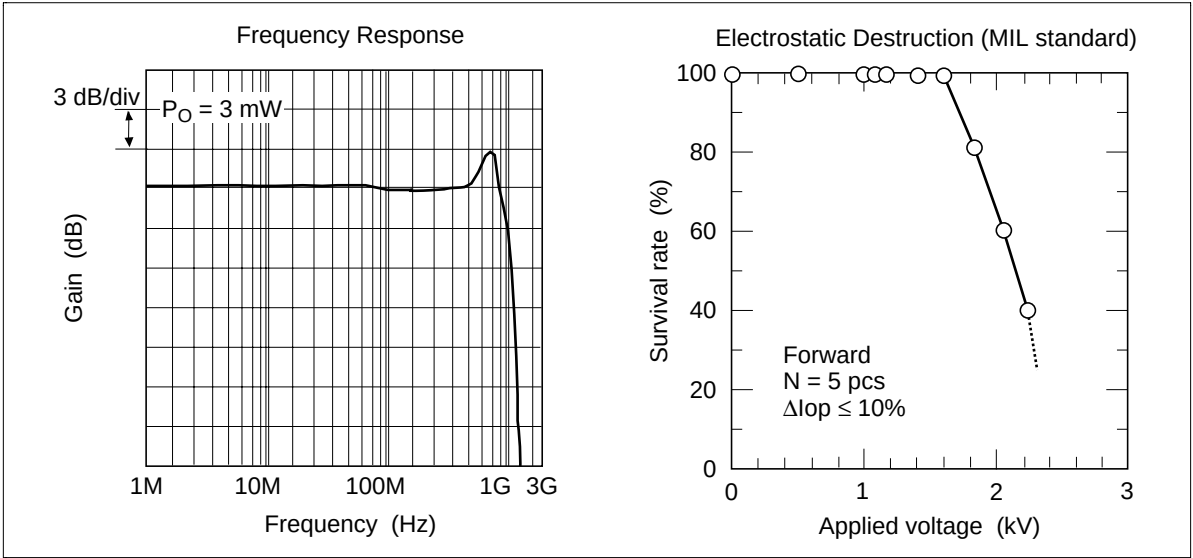
Far Field Pattern



Astigmatism vs. Optical Output Power

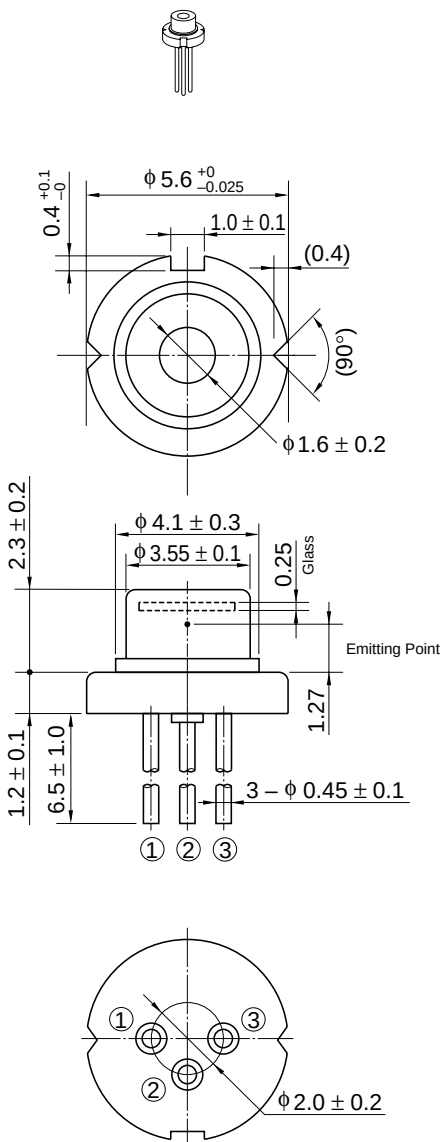


Typical Characteristic Curves (cont)



Package Dimensions

Unit: mm



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

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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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