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 AlGalnP 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

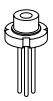
- Optical disc memories
- Optical equipment

Features

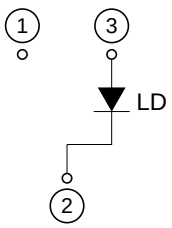
- High output power : 50 mW (CW)
- Visible light output : λp = 664 nm Typ
- Small package : ϕ 5.6 mm
- Low astigmatism : 5 μm Typ (P_O = 5 mW)

Internal Circuit

Package Type
• HL6503MG: MG



Internal Circuit



Hitachi semiconductor

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%

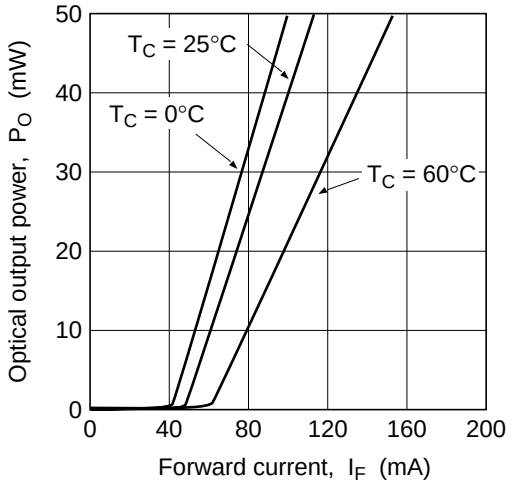
Optical and Electrical Characteristics (T_C = 25°C)

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	Ith	30	45	60	mA	—
Operating current	Iop	—	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	λp	655	664	667	nm	P_O = 50 mW

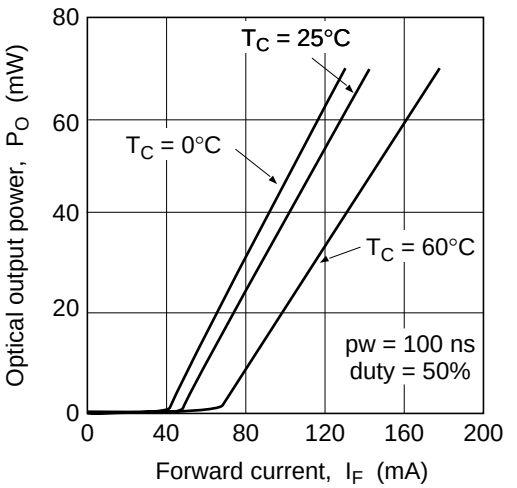
Note: Kink free is confirmed at the temperature of 25°C.

Typical Characteristic Curves

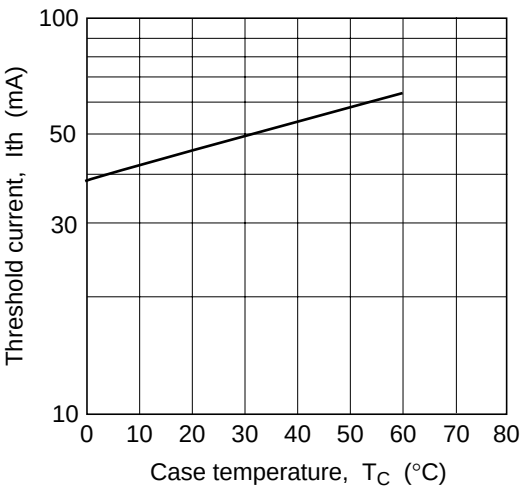
Optical Output Power vs. Forward Current



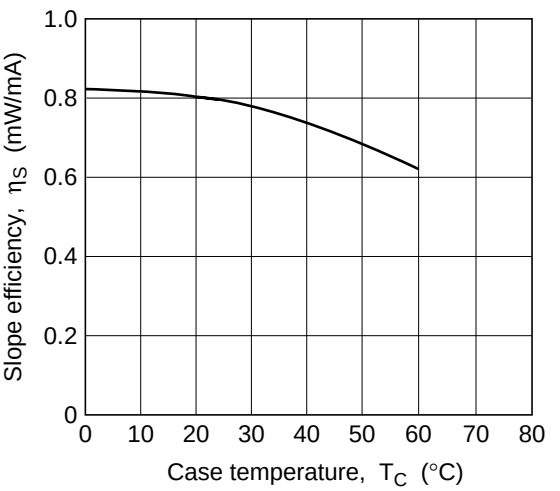
Pulse Optical Output Power vs. Forward Current



Threshold Current vs. Case Temperature

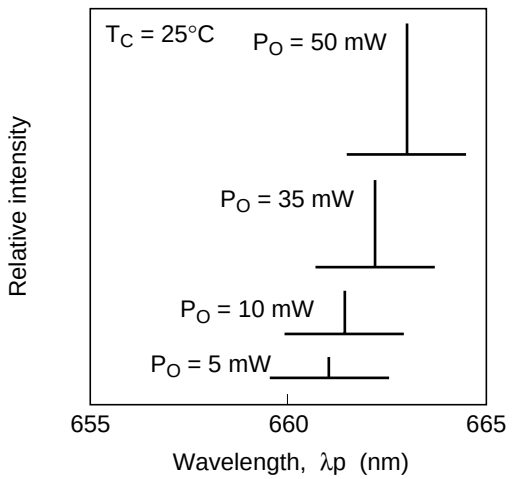


Slope Efficiency vs. Case Temperature

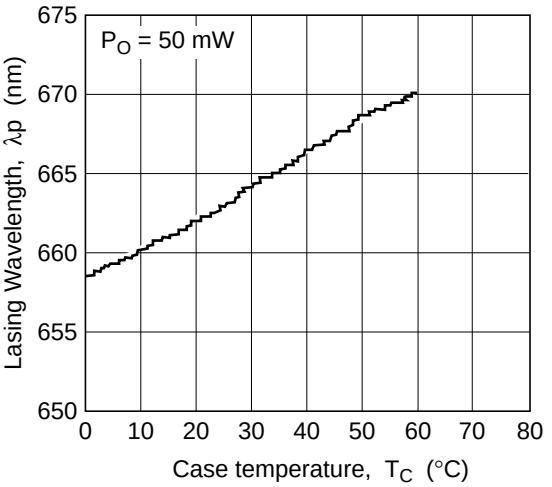


Typical Characteristic Curves (cont)

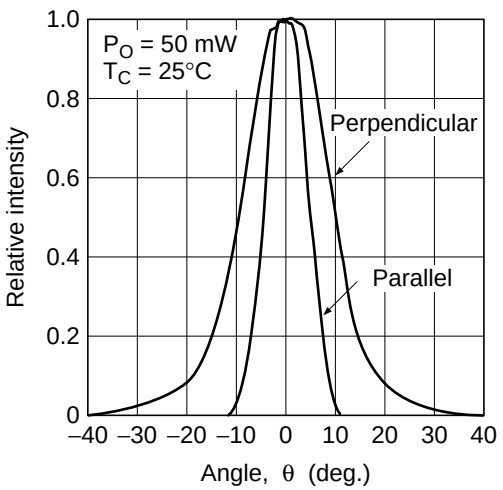
Lasing Spectrum



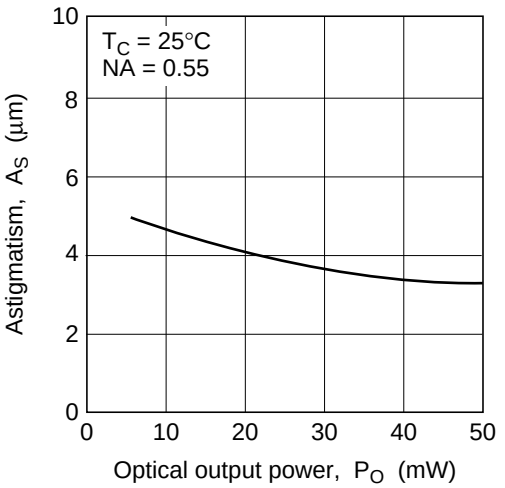
Wavelength vs. Case Temperature



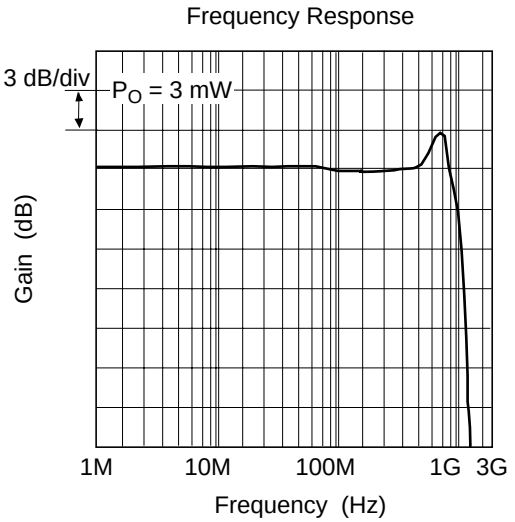
Far Field Pattern

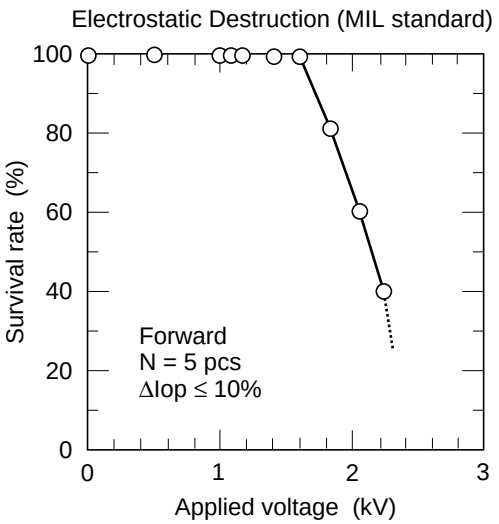


Astigmatism vs. Optical Output Power



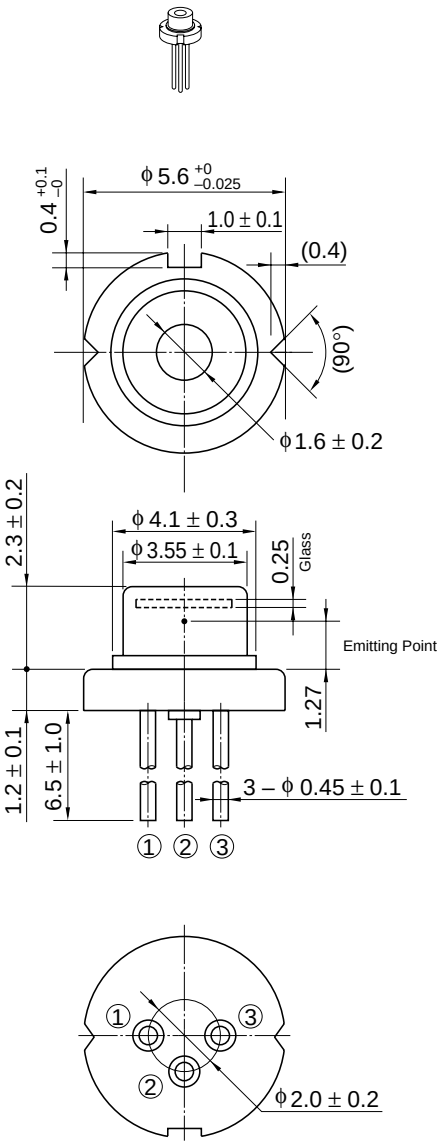
Typical Characteristic Curves (cont)





Package Dimensions

Unit: mm



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

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