

# HL6501MG

Visible High Power Laser Diode for DVD-RAM

# HITACHI

ADE-208-515H (Z)  
9th Edition  
Dec. 2000

## Description

The HL6501MG is a 0.65  $\mu\text{m}$  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 ( $\phi 5.6$  mm) assures high reliability.

## Application

- Optical disc memories
- Optical equipment

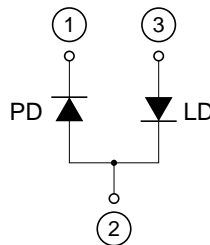
## Features

- High output power: 35 mW (CW)
- Visible light output:  $\lambda_p = 658$  nm Typ
- Small package:  $\phi 5.6$  mm
- Low astigmatism: 6  $\mu\text{m}$  Typ ( $P_0 = 5$  mW)

Package Type  
• HL6501MG: MG



Internal Circuit



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

Item	Symbol	Rated Value	Unit
Optical output power	$P_O$	35	mW
Pulse optical output power	$P_{O(\text{pulse})}$	50 *	mW
LD reverse voltage	$V_{R(\text{LD})}$	2	V
PD reverse voltage	$V_{R(\text{PD})}$	30	V
Operating temperature	$T_{\text{opr}}$	-10 to +60	$^\circ\text{C}$
Storage temperature	$T_{\text{stg}}$	-40 to +85	$^\circ\text{C}$

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

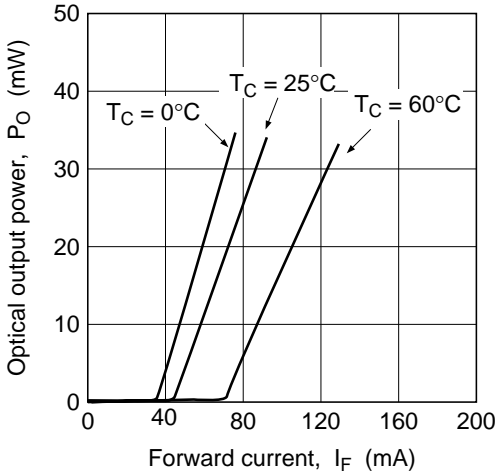
**Optical and Electrical Characteristics** ( $T_C = 25^\circ\text{C}$ )

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Optical output power	$P_O$	35	—	—	mW	Kink free *
Optical output power	$P_{O(\text{pulse})}$	50	—	—	mW	Kink free *
Threshold current	$I_{\text{th}}$	30	45	70	mA	—
Operating voltage	$V_{\text{OP}}$	2.1	2.6	3.0	V	$P_O = 30 \text{ mW}$
Slope efficiency	$\eta_s$	0.5	0.75	1.0	mW/mA	$18 \text{ (mW)} / (I_{(24\text{mW})} - I_{(6\text{mW})})$
Beam divergence parallel to the junction	$\theta_{//}$	7	8.5	10.5	deg.	$P_O = 30 \text{ mW}$
Beam divergence perpendicular to the junction	$\theta_{\perp}$	18	22	26	deg.	$P_O = 30 \text{ mW}$
Astigmatism	$A_s$	—	6	—	$\mu\text{m}$	$P_O = 5 \text{ mW}$ , $\text{NA} = 0.55$
Lasing wavelength	$\lambda_p$	645	658	665	nm	$P_O = 30 \text{ mW}$
Monitor current	$I_s$	0.05	0.3	1.5	mA	$P_O = 30 \text{ mW}$ , $V_{R(\text{PD})} = 5 \text{ V}$

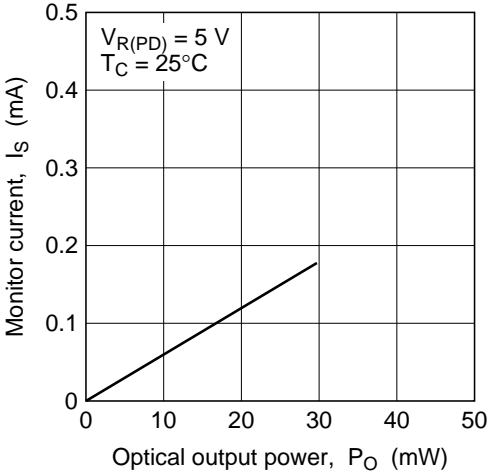
Note: Kink free is confirmed at the temperature of  $25^\circ\text{C}$ .

Typical Characteristic Curves

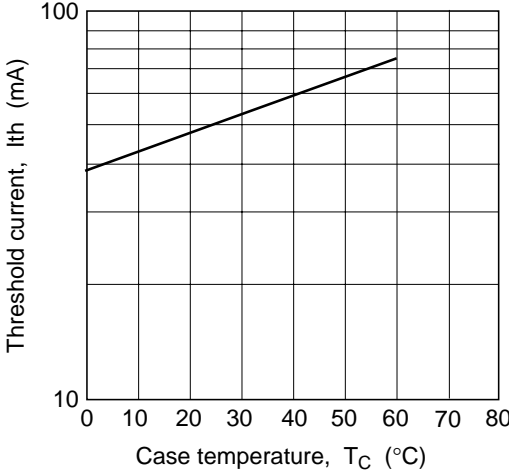
Optical Output Power vs. Forward Current



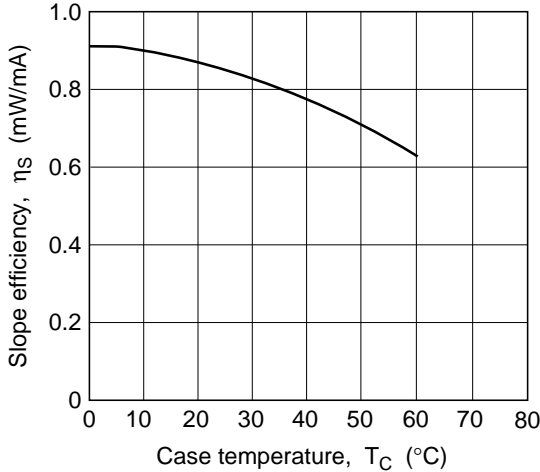
Monitor Current vs. Optical Output Power



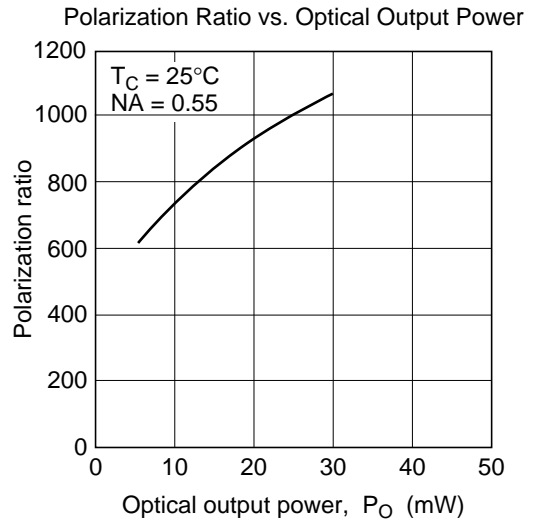
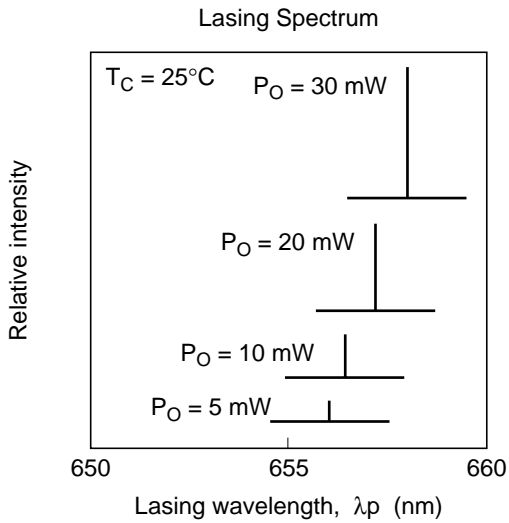
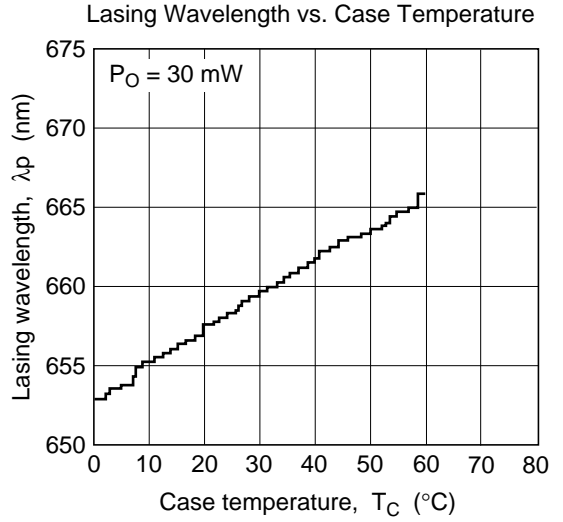
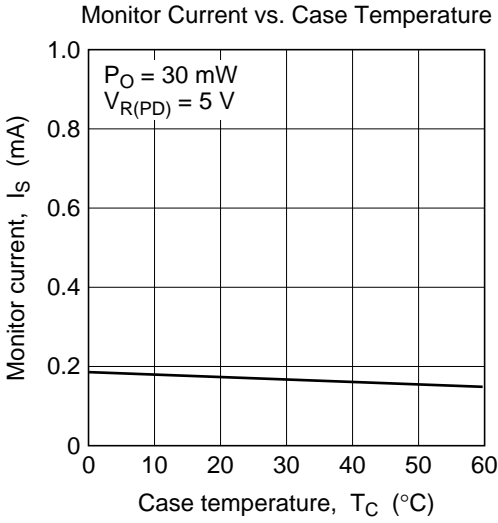
Threshold Current vs. Case Temperature



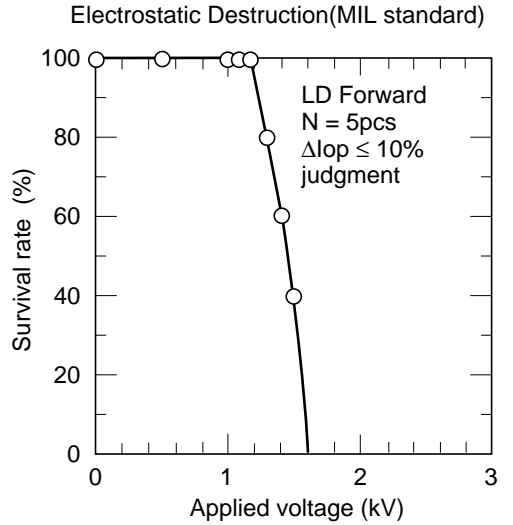
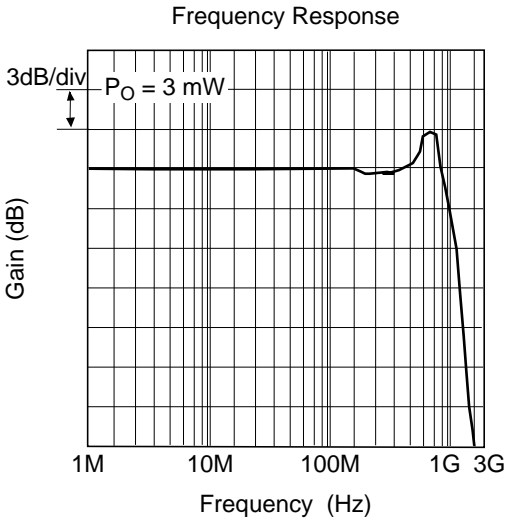
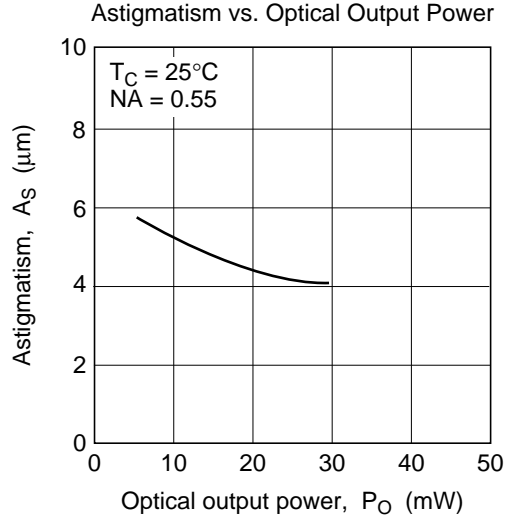
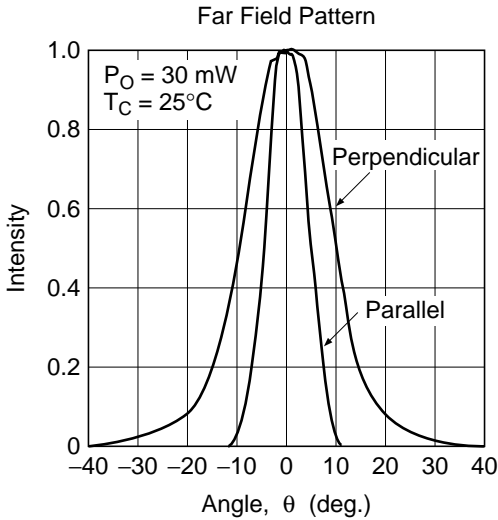
Slope Efficiency vs. Case Temperature



## Typical Characteristic Curves (cont)

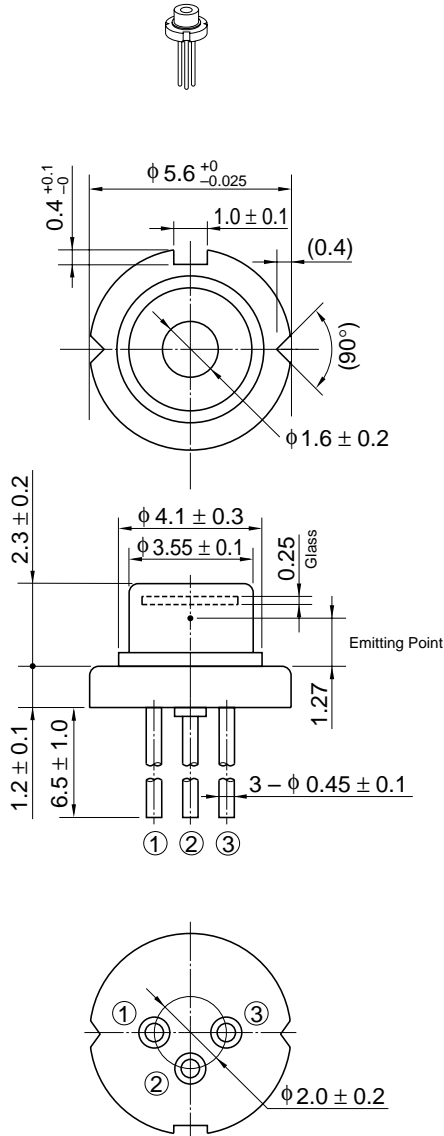


Typical Characteristic Curves (cont)



## 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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