# HL6512MG

Visible High Power Laser Diode for Recordable DVD

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ODE-208-1455B (Z)

Rev.2
Jan. 2003

## Description

The HL6512MG is a 0.65 μm band AlGalnP laser diode (LD) with a multi-quantum well (MQW) structure. Its beam divergence (parallel to the junction) has a small variation to the optical output power. The characteristic makes it possible to suppress the variation of spot size between higher and lower output powers. Therefore, it is suitable as a light source for large capacity rewritable optical disc memories, such as DVD-R, and various other types of optical equipment. Hermetic sealing of the small package (ϕ 5.6mm) assures high reliability.

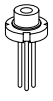
## Application

- Optical disc memories
- Optical equipment

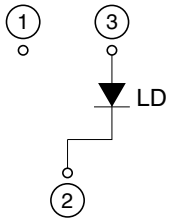
## Features

- High output power and Wide operating temperature
  : 70 mW (pulse), PW = 100ns, duty = 50%, (Topr = 70°C)
- Small package : ϕ 5.6 mm
- Visible light output : λp = 658 nm Typ
- The beam divergence (parallel to the junction) has a small variation to the output power.
- Single longitudinal mode

Package Type
HL6512MG: 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 *1 | mW |
| Laser diode reverse voltage | $V_{R(LD)}$ | 2 | V |
| Operating temperature | Topr | −10 to +70 *2 | °C |
| Storage temperature | Tstg | −40 to +85 | °C |

Notes: 1. Pulse condition : Pulse width = 100 ns, duty = 50%
2. The value of −10 to +70°C is effective under pulse operation. The value under CW operation is −10 to +60°C.

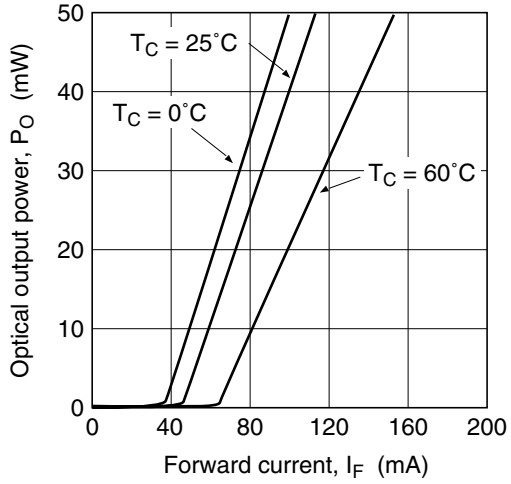
## Optical and Electrical Characteristics

($T_C$ = 25°C)

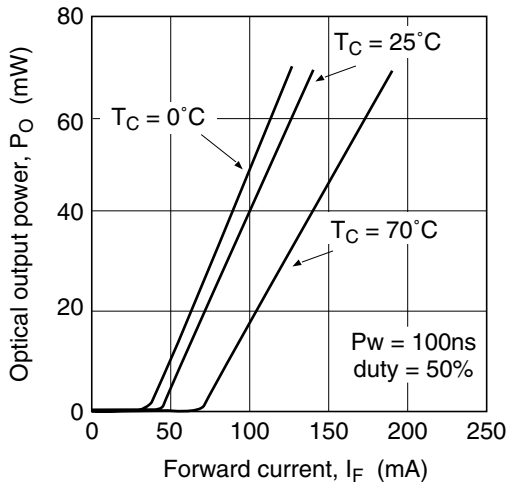
| Item | Symbol | Min | Typ | Max | Unit | Test Conditions |
|---|---|---|---|---|---|---|
| Threshold current | Ith | 30 | 45 | 60 | mA | — |
| Operating current | Iop | — | 115 | 135 | mA | $P_O$ = 50 mW |
| Operating voltage | $V_{OP}$ | 2.1 | 2.6 | 3.0 | V | $P_O$ = 50 mW |
| Beam divergence parallel 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 |
| Astigmatism | $A_S$ | — | 5 | — | μm | $P_O$ = 5 mW, NA = 0.55 |
| Lasing wavelength | λp | 650 | 658 | 662 | nm | $P_O$ = 50 mW |

## Typical Characteristic Curves

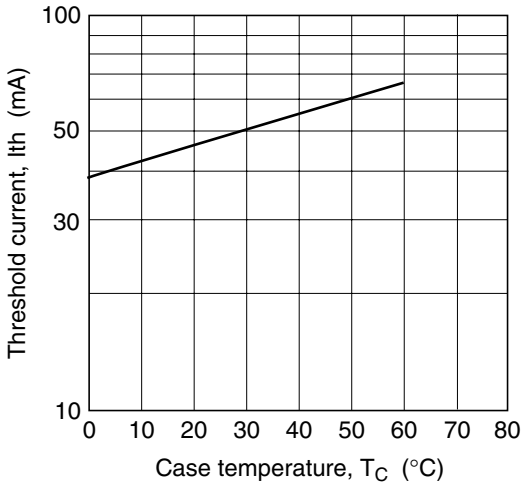
Optical Output Power vs.Forward Current



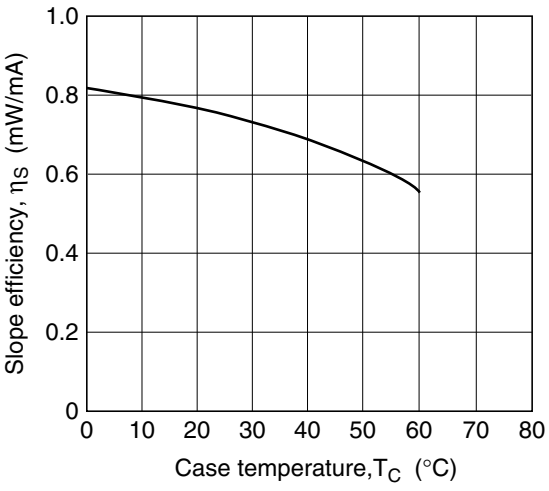

Pulse Optical Output Power vs. Forward Current




Threshold Current vs. Case Temperature




Slope Efficiency vs. Case Temperature



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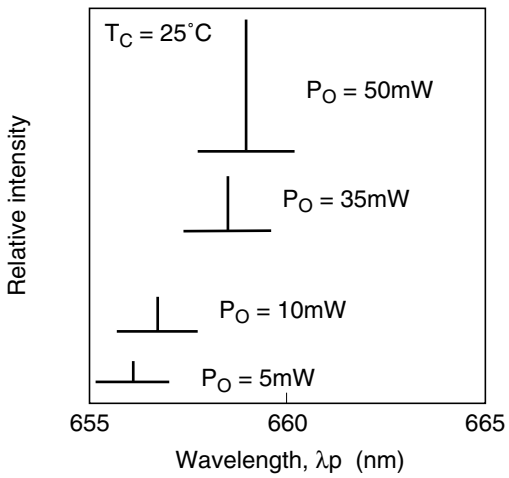
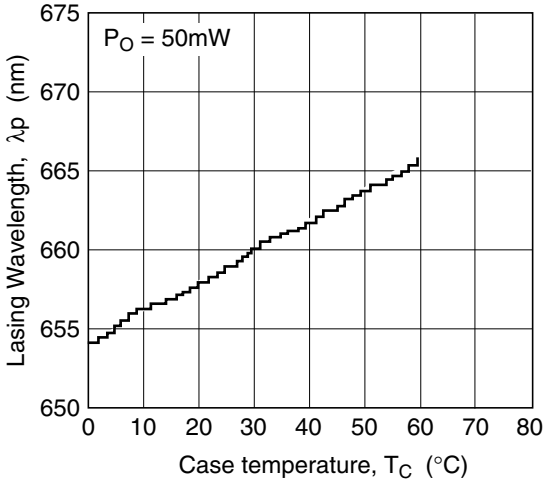
## Typical Characteristic Curves (cont)

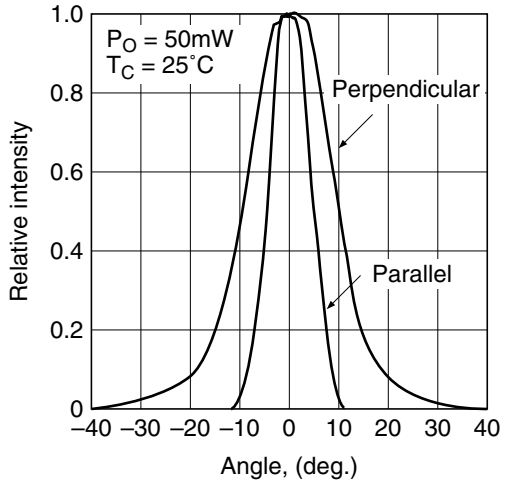
Lasing Specturn



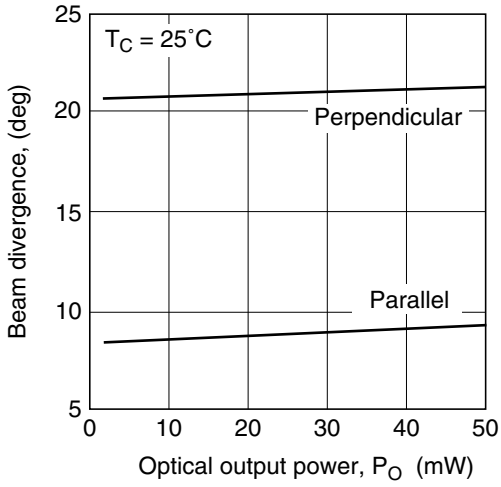

Wavelength vs. Case Temperature




Far Field Pattern




Beam Divergence vs. Optical Output Power



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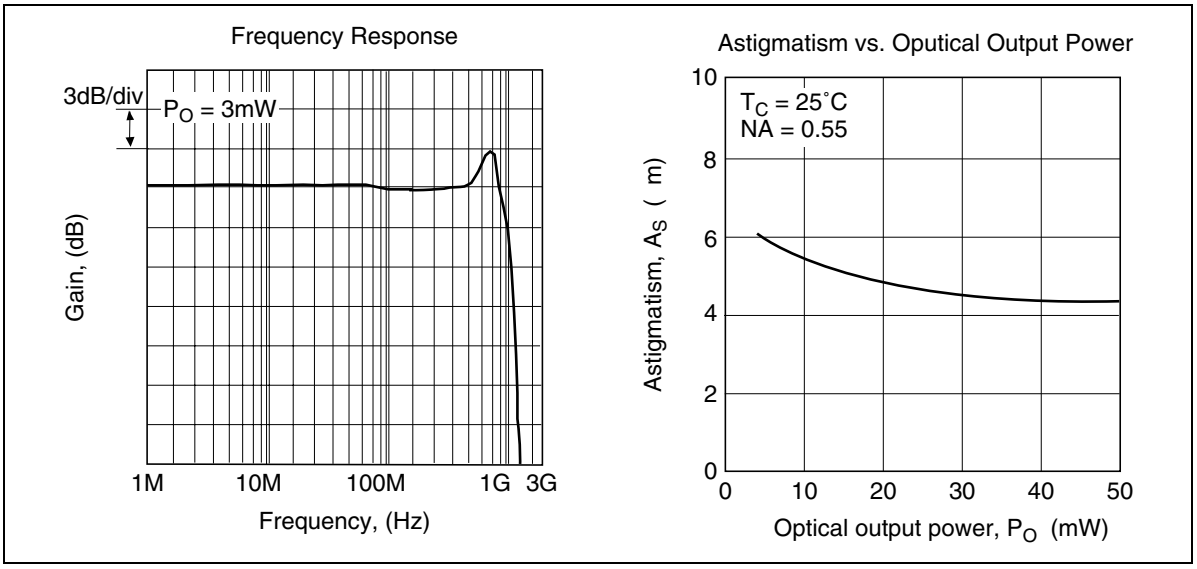
## Typical Characteristic Curves (cont)



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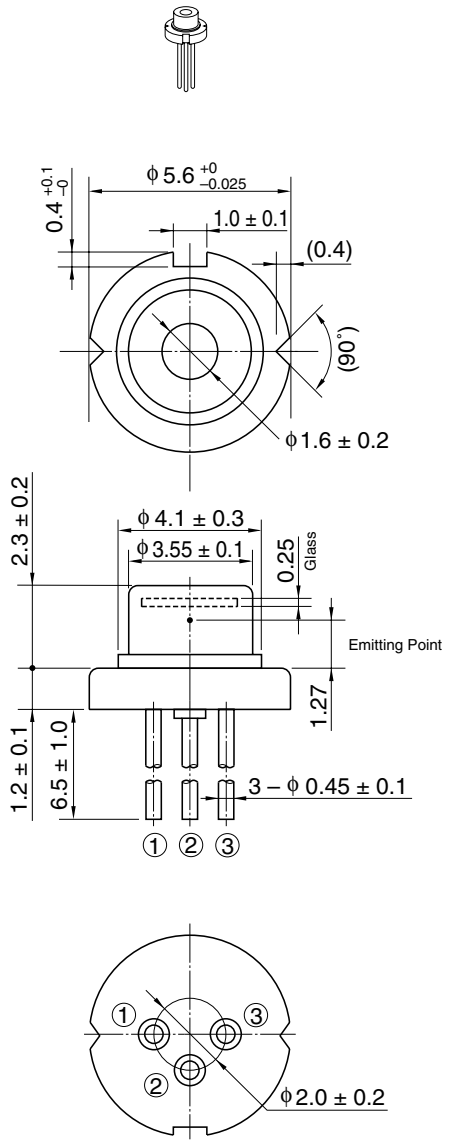
## Package Dimensions

As of July, 2002
Unit: mm




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



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## Cautions

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