HL6513FM

Visible High Power Laser Diode for DVD-RAM

HITACHI

ADE-208-1466A (Z)

Rev.1
Jan. 2002

Description

The HL6513FM is a 0.65 μm band AlGaInP 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-RAM, and various other types of optical equipment. Hermetic sealing of the small package (ϕ 5.6mm) assures high reliability.

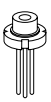
Application

- Optical disc memories
- Optical equipment

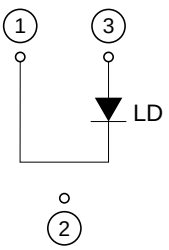
Features

- 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.

Package Type
• HL6513FM: FM



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 *[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

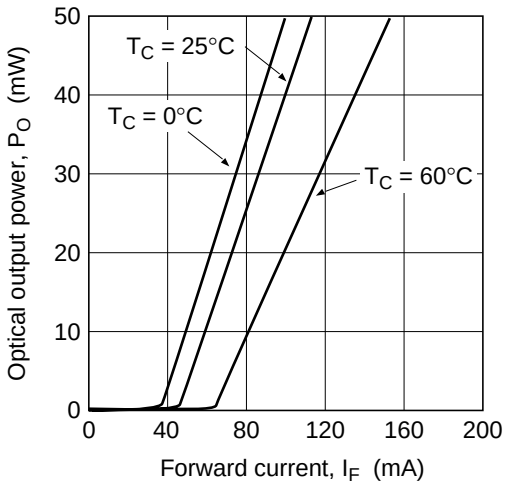
(T_C = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
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
Astigmatism	A_S	—	5	—	μm	P_O = 5 mW, NA = 0.55
Lasing wavelength	λp	650	658	662	nm	P_O = 50 mW

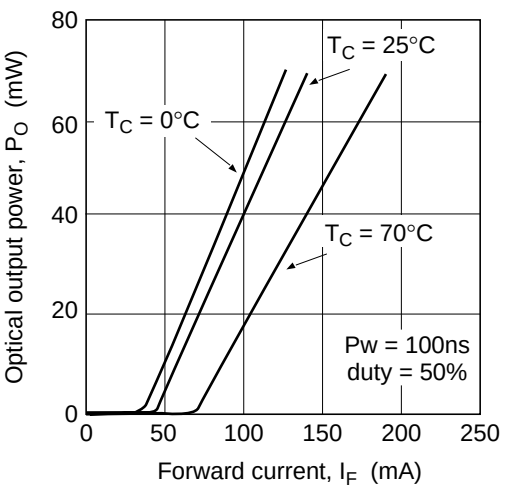
Note: Kink free is confirmed at the temperature of 25°C.

Typical Characteristic Curves

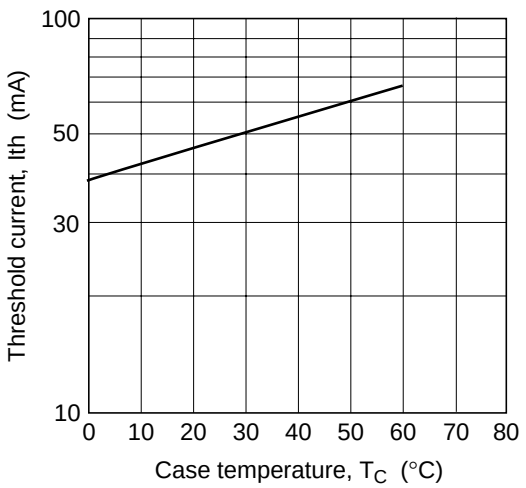
Optical Output Power vs. Forward Current



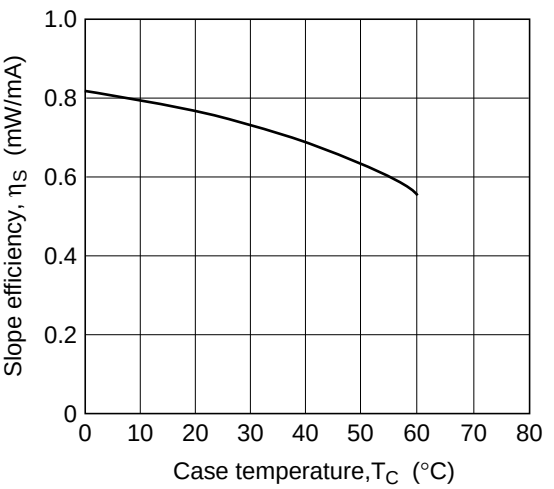
Pulse Optical Output Power vs. Forward Current



Threshold Current vs. Case Temperature

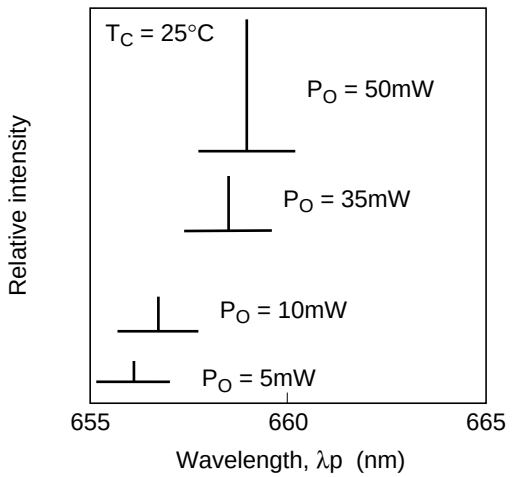


Slope Efficiency vs. Case Temperature

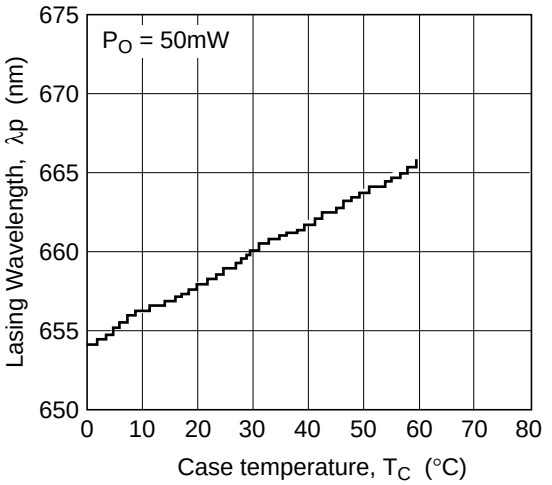


Typical Characteristic Curves (cont)

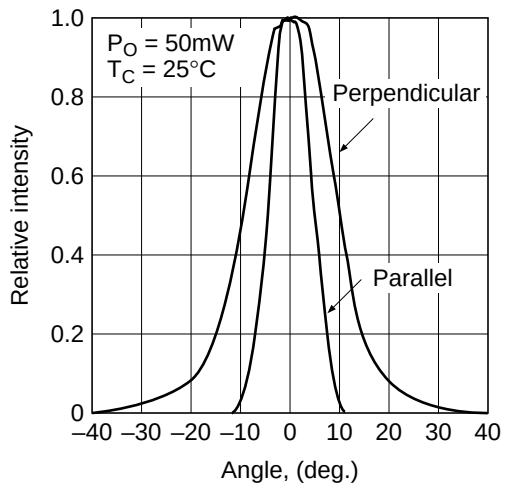
Lasing Specturn



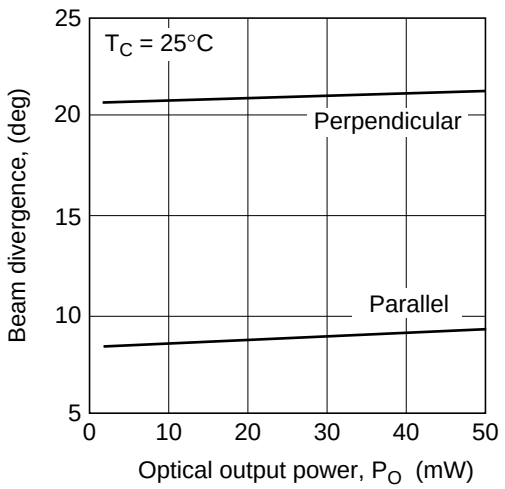
Wavelength vs. Case Temperature



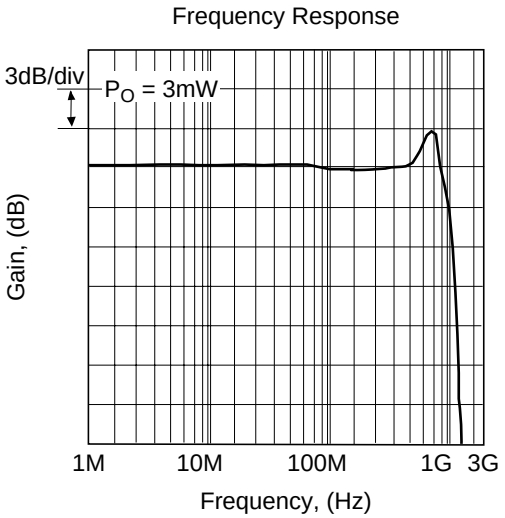
Far Field Pattern

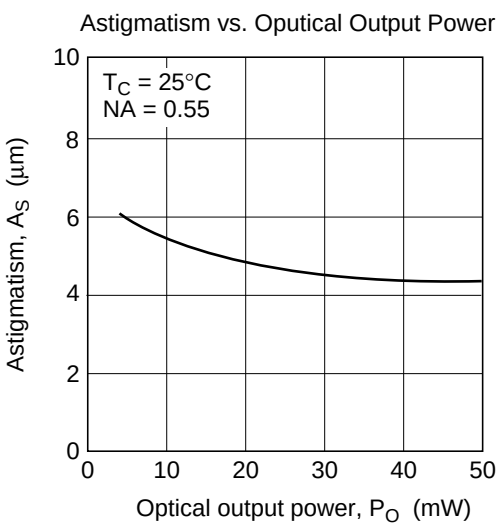


Beam Divergence vs. Optical Output Power



Typical Characteristic Curves (cont)

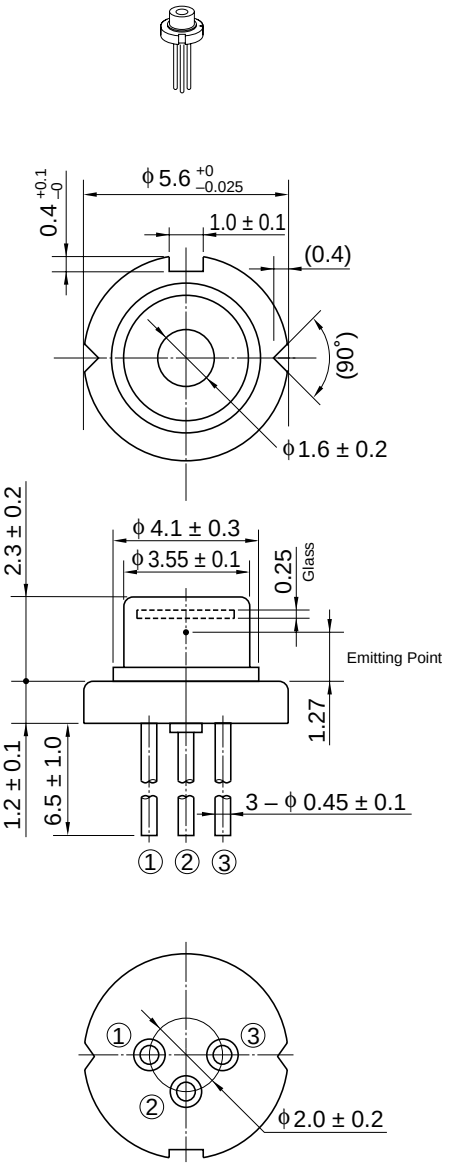




Package Dimensions

As of July, 2001

Unit: mm



Hitachi Code	LD/FM
JEDEC	—
JEITA	—
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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