

# HL6331G/32G

Low Operating Current Visible Laser Diode

# HITACHI

ADE-208-819B (Z)  
3rd Edition  
Dec. 2000

## Description

The HL6331G/32G are 0.63  $\mu\text{m}$  band AlGaInP 10mW laser diodes with a multi-quantum well (MQW) structure. They are suitable as light sources for laser levelers, laser scanners and optical equipment for measurement.

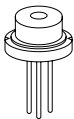
## Application

- Laser leveler
- Laser scanner
- Measurement

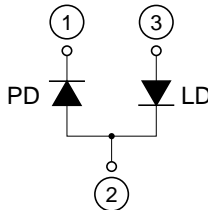
## Features

- Visible light output : 635 nm Typ
- Optical output power : 10 mW CW
- Low operating current : 55 mA Typ
- Low operating voltage : 2.4 V Max
- Operating temperature : +60°C
- TM mode oscillation

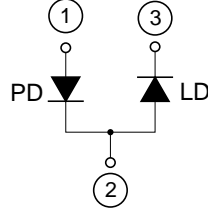
Package Type  
• HL6331G/32G: G2



Internal Circuit  
• HL6331G



Internal Circuit  
• HL6332G



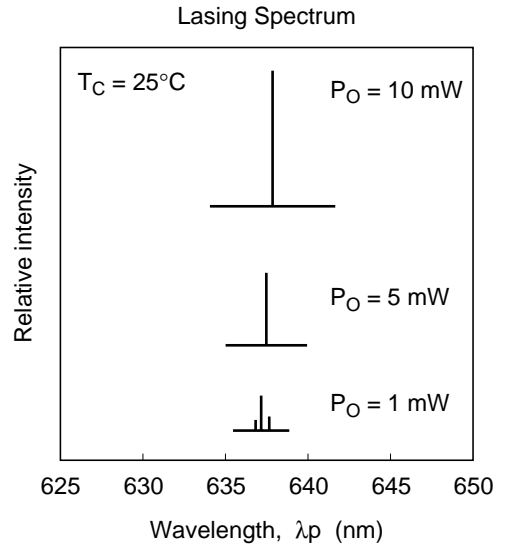
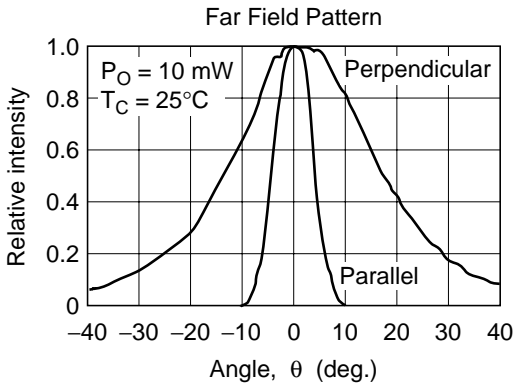
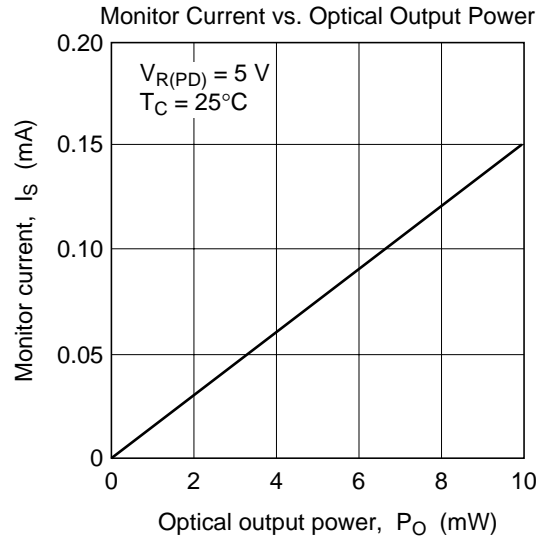
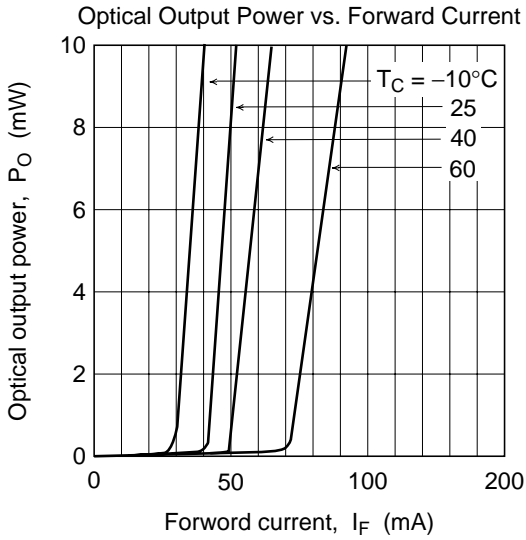
**Absolute Maximum Ratings** ( $T_C = 25^\circ\text{C}$ )

Item	Symbol	Value	Unit
Optical output power	$P_o$	10	mW
LD reverse voltage	$V_{R(LD)}$	2	V
PD reverse voltage	$V_{R(PD)}$	30	V
Operating temperature	$T_{opr}$	-10 to +60	$^\circ\text{C}$
Storage temperature	$T_{stg}$	-40 to +85	$^\circ\text{C}$

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

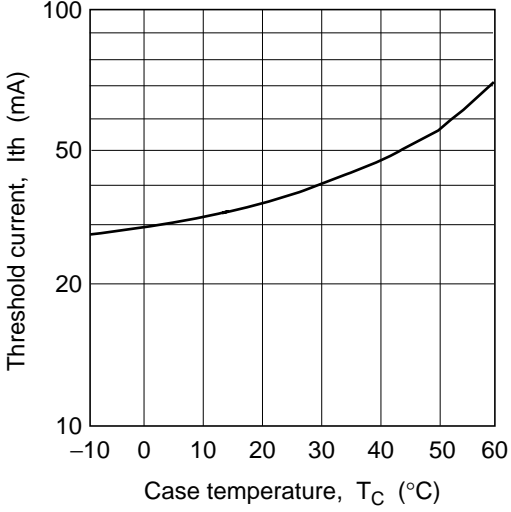
Item	Symbol	Min	Typ	Max	Unit	Test Condition
Optical output power	$P_o$	10	—	—	mW	Kink free
Threshold current	$I_{th}$	—	40	60	mA	
Operating current	$I_{op}$	—	55	75	mA	$P_o = 10 \text{ mW}$
Operating voltage	$V_{OP}$	—	2.2	2.4	V	$P_o = 10 \text{ mW}$
Slope efficiency	$\eta_s$	0.40	0.65	0.90	mW/mA	$6 \text{ (mW)} / (I_{(8\text{mW})} - I_{(2\text{mW})})$
Beam divergence parallel to the junction	$\theta_{//}$	6	8	11	deg.	$P_o = 10 \text{ mW}$
Beam divergence perpendicular to the junction	$\theta_{\perp}$	25	31	36	deg.	$P_o = 10 \text{ mW}$
Lasing wavelength	$\lambda_p$	630	635	640	nm	$P_o = 10 \text{ mW}$
Monitor current	$I_s$	0.08	0.15	0.30	mA	$P_o = 10 \text{ mW}, V_{R(PD)} = 5 \text{ V}$

Typical Characteristic Curves

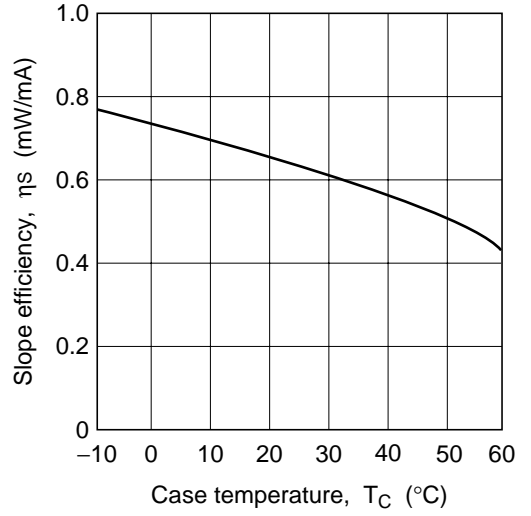


Typical Characteristic Curves (cont)

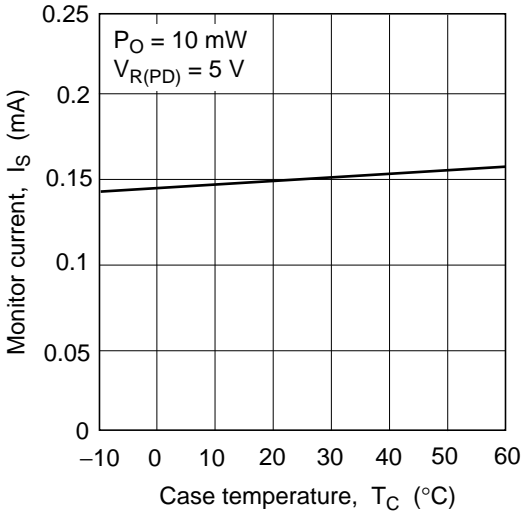
Threshold Current vs. Case Temperature



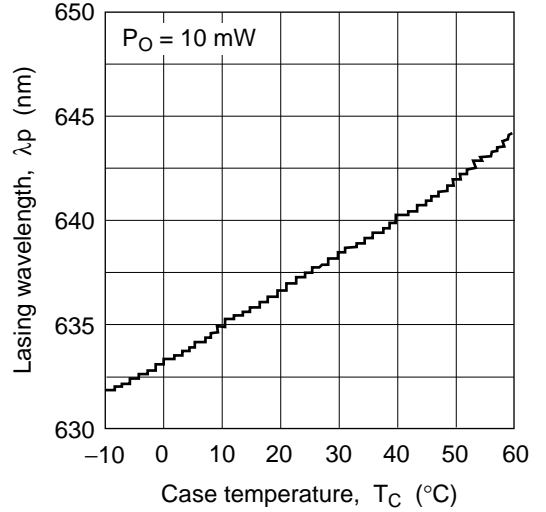
Slope Efficiency vs. Case Temperature



Monitor Current vs. Case Temperature

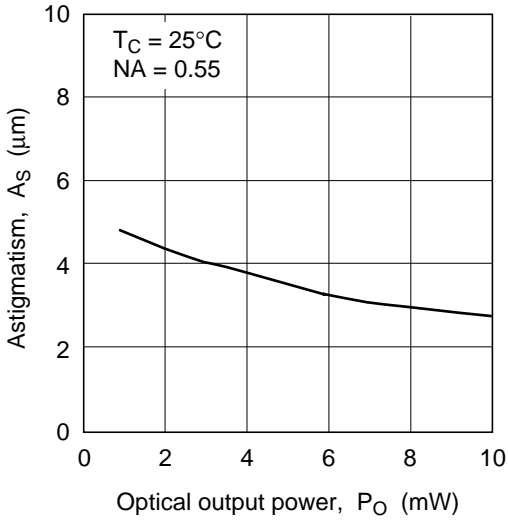


Lasing Wavelength vs. Case Temperature

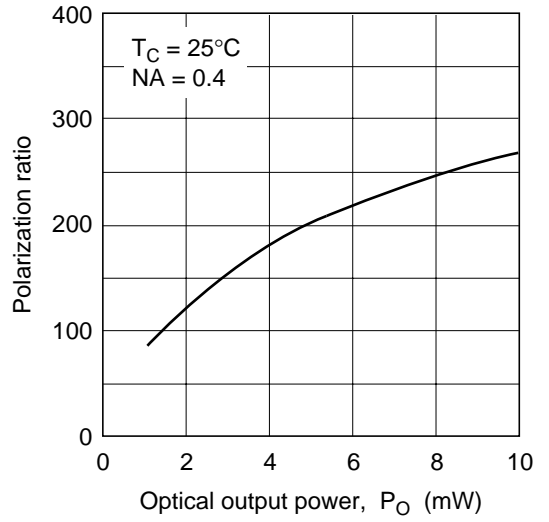


Typical Characteristic Curves (cont)

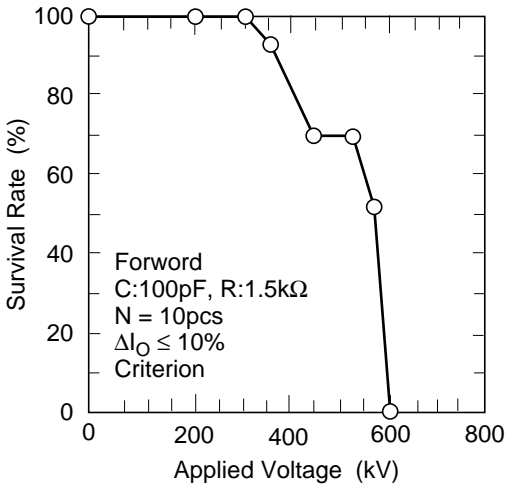
Astigmatism vs. Optical Output Power



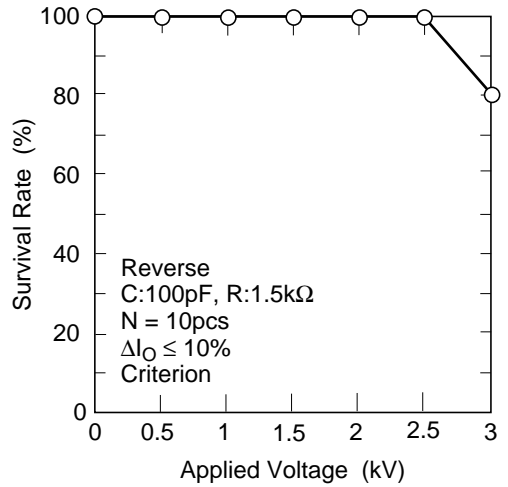
Polarization Ratio vs. Optical Output Power



Electrostatic Destruction (MIL standard) (1)

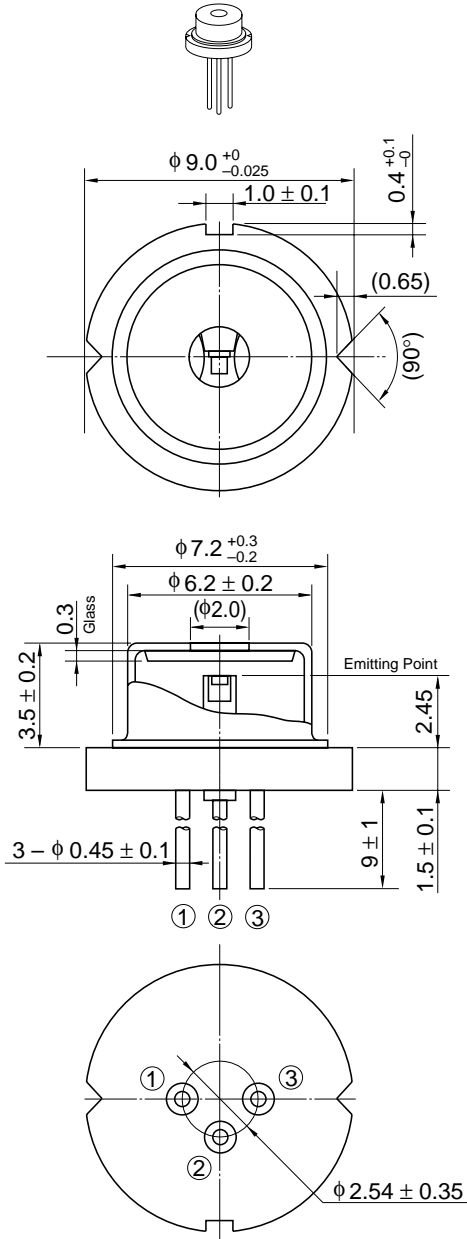


Electrostatic Destruction (MIL standard) (2)



## Package Dimensions

Unit: mm



Hitachi Code	LD/G2
JEDEC	—
EIAJ	—
Mass (reference value)	1.1 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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