

# HL6319G/20G

AlGaInP Laser Diodes

# HITACHI

ADE-208-479D (Z)  
5th Edition  
Dec. 2000

## Description

The HL6319G/20G are 0.63  $\mu\text{m}$  band AlGaInP laser diodes with a multi-quantum well (MQW) structure. They are suitable as light sources for laser levelers and optical equipment for measurement.

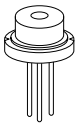
## Application

- Laser levelers
- Measurement

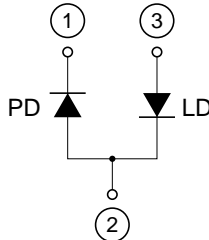
## Features

- Visible light output: 635 nm Typ (nearly equal to He-Ne gas laser)
- Optical output power: 10 mW CW
- Low operating current: 95 mA Max
- Low operating voltage: 2.7 V Max
- TM mode oscillation

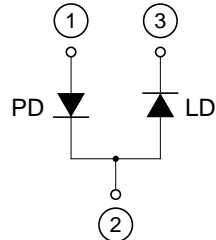
Package Type  
• HL6319G/20G: G2



Internal Circuit  
• HL6319G



Internal Circuit  
• HL6320G



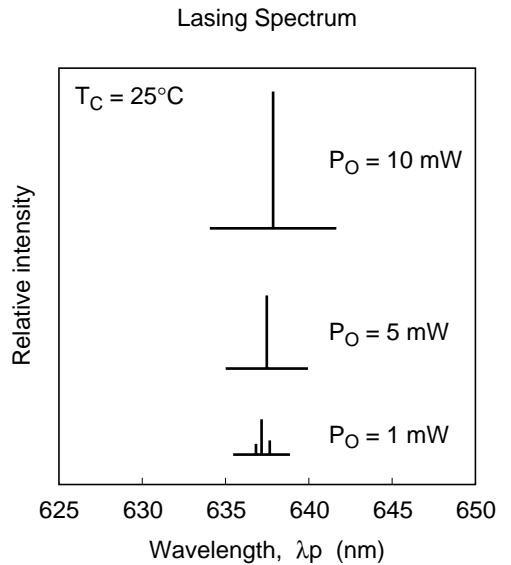
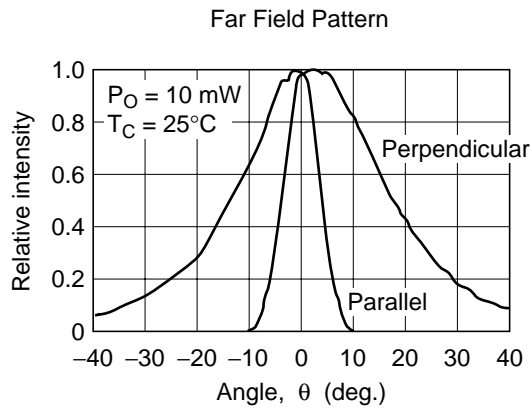
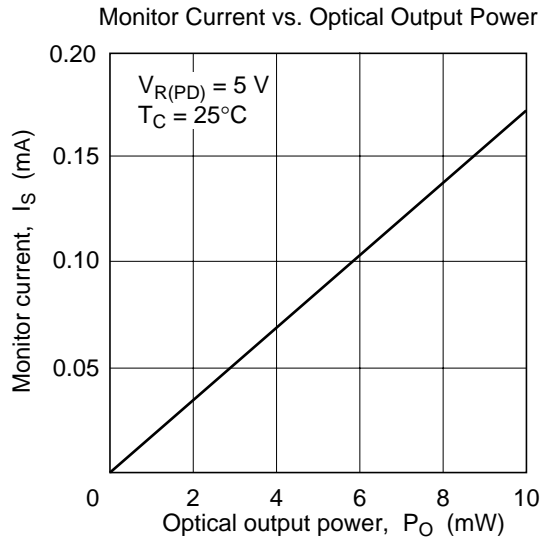
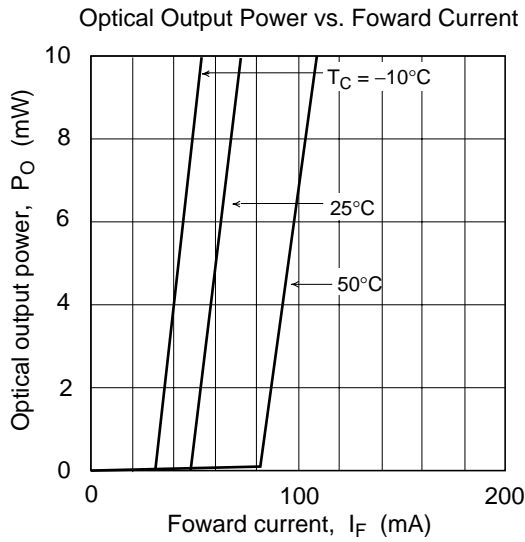
**Absolute Maximum Ratings** ( $T_C = 25^\circ\text{C}$ )

Item	Symbol	Rated 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 +50	$^\circ\text{C}$
Storage temperature	$T_{stg}$	-40 to +85	$^\circ\text{C}$

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

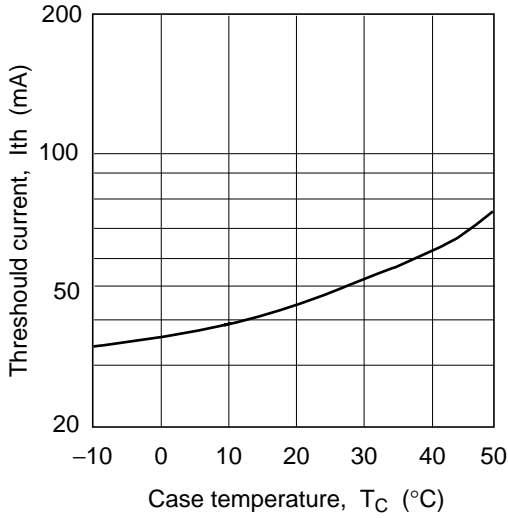
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Optical output power	$P_O$	10	—	—	mW	Kink free
Threshold current	$I_{th}$	20	50	75	mA	
Operating current	$I_{OP}$	—	70	95	mA	$P_O = 10\text{ mW}$
Operating voltage	$V_{OP}$	—	—	2.7	V	$P_O = 10\text{ mW}$
Slope efficiency	$\eta_s$	0.3	0.5	0.7	mW/mA	$6\text{ (mW)} / (I_{(8\text{mW})} - I_{(2\text{mW})})$
Beam divergence parallel to the junction	$\theta_{//}$	5	8	11	deg.	$P_O = 10\text{ mW}$
Beam divergence perpendicular to the junction	$\theta_{\perp}$	25	31	37	deg.	$P_O = 10\text{ mW}$
Astigmatism	$A_s$	—	5	—	$\mu\text{m}$	$P_O = 10\text{ mW}$ , $NA = 0.55$
Lasing wavelength	$\lambda_p$	625	635	640	nm	$P_O = 10\text{ mW}$
Monitor current	$I_s$	0.05	0.17	0.30	mA	$P_O = 10\text{ mW}$ , $V_{R(PD)} = 5\text{ V}$

Typical Characteristic Curves

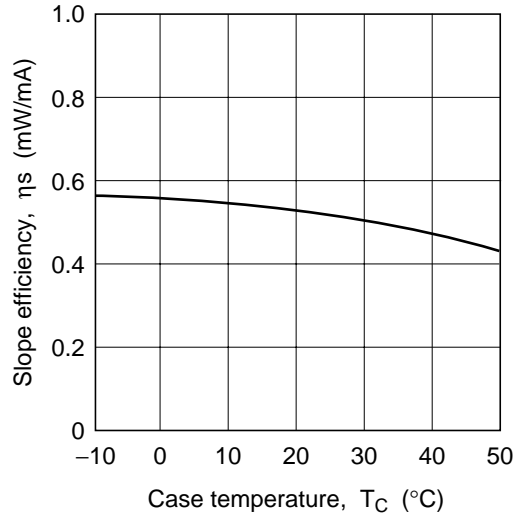


Typical Characteristic Curves (cont)

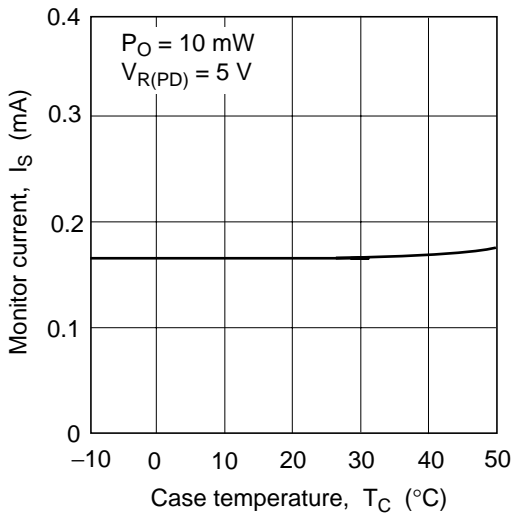
Threshold Current vs. Case Temperature



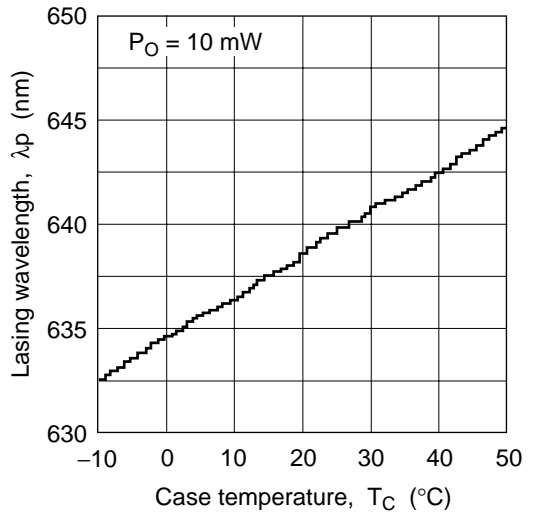
Slope Efficiency vs. Case Temperature



Monitor Current vs. Case Temperature

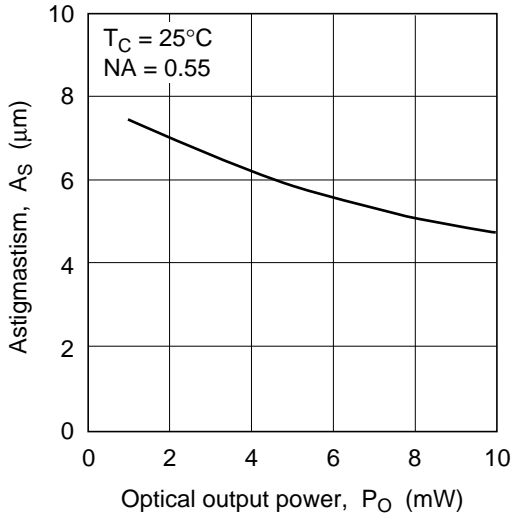


Lasing Wavelength vs. Case Temperature

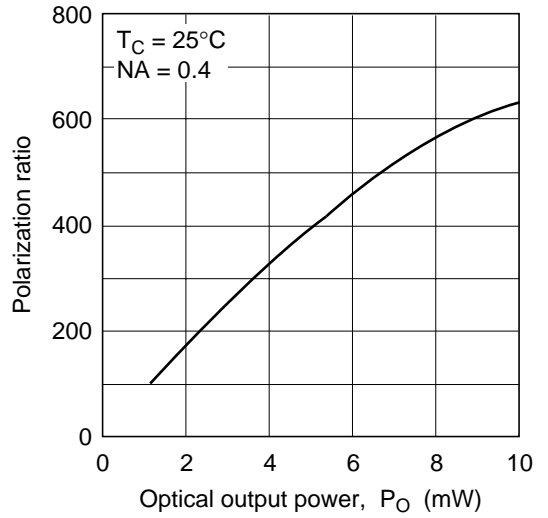


Typical Characteristic Curves (cont)

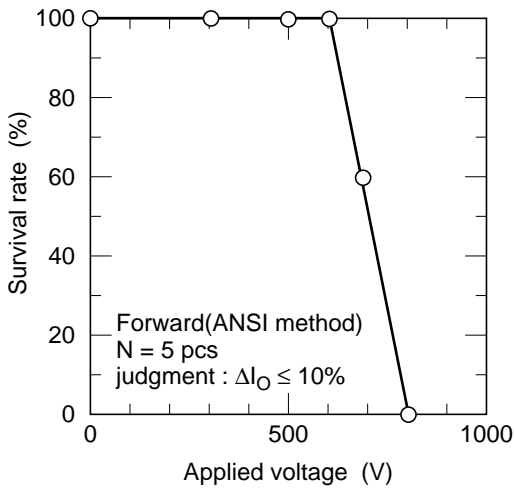
Astigmatism vs. Optical Output Power



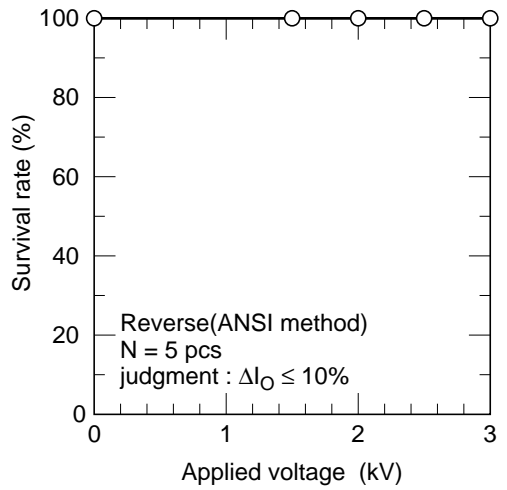
Polarization Ratio vs. Optical Output Power



Electrostatic Destruction (Forward)

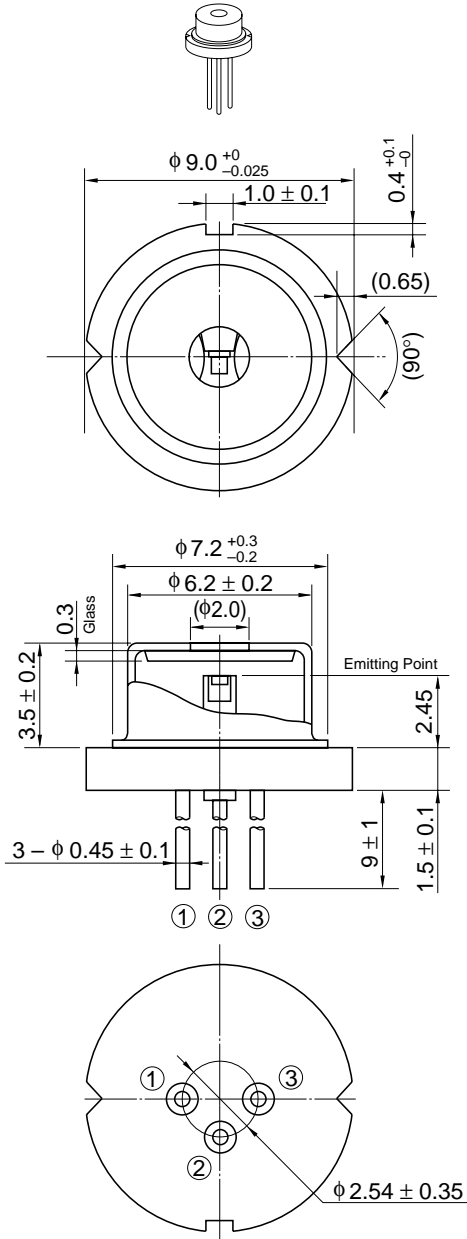


Electrostatic Destruction (Reverse)



## 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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