
HL6315/16G

AlGaInP Laser Diodes

HITACHI

Description

The HL6315/16G are 0.63 μm band AlGaInP laser diodes with a multi-quantum well (MQW) structure.

They are suitable as light sources for laser pointers and optical equipment.

Application

- Laser pointer

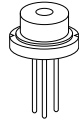
Features

- Visible light output: 635 nm Typ.
(nearly equal to He-Ne Gas Laser)
- Optical output power: 3 mW CW
- Low Operating current: 30mA typ.
- Low Operating voltage: 2.7 V Max.

HL6315/16G

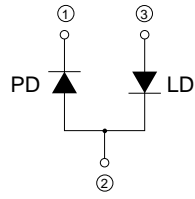
Package Type

- HL6315/16G: G2



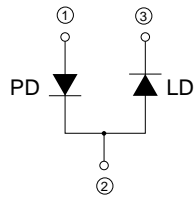
Internal Circuit

- HL6315G



Internal Circuit

- HL6316G



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

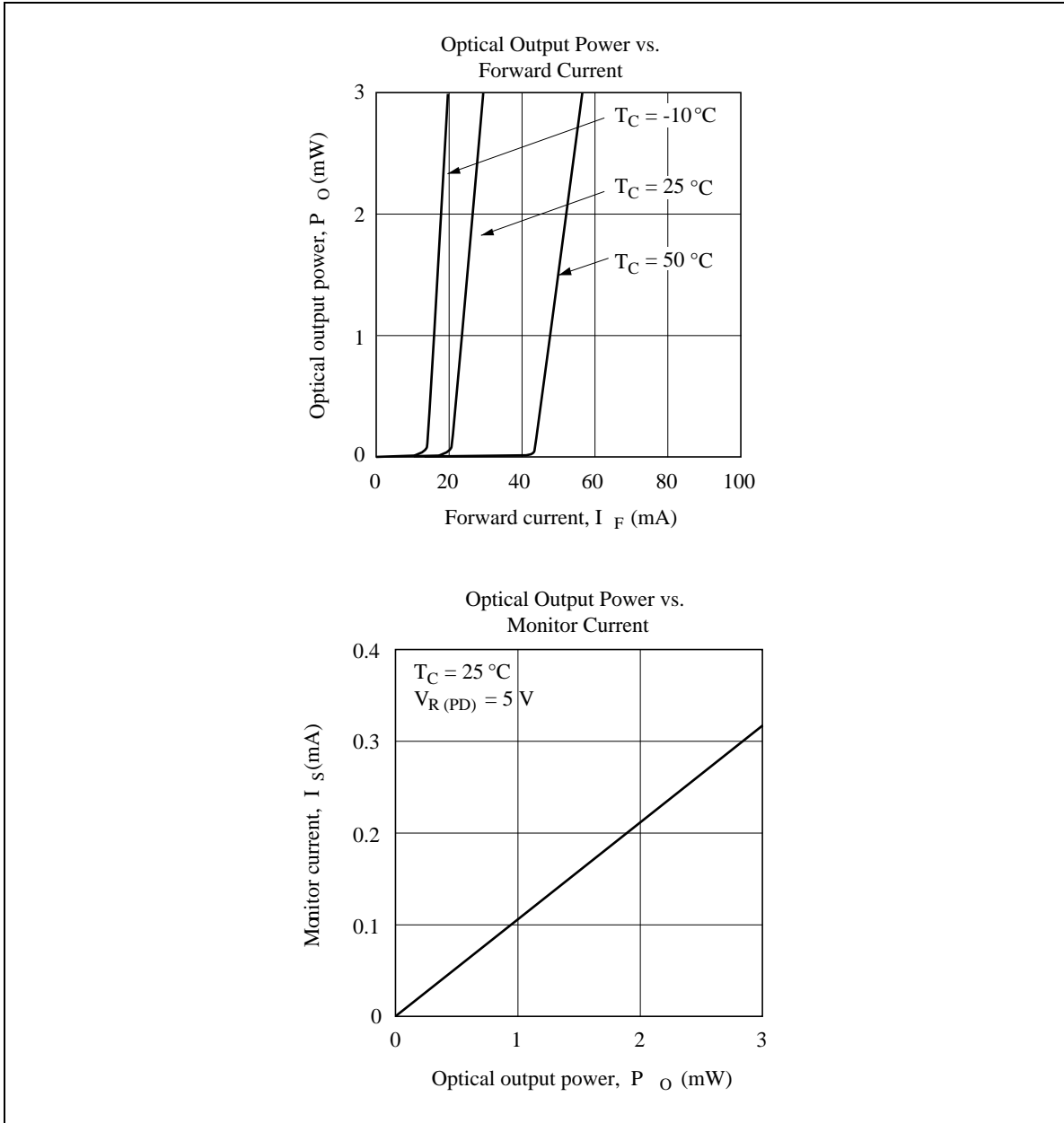
Item	Symbol	Rated Value	Unit
Optical output power	P_o	3	mW
Pulse optical output power	$P_{O(\text{pulse})}$	5*1	mW
LD reverse voltage	$V_{R(\text{LD})}$	2	V
PD reverse voltage	$V_{R(\text{PD})}$	30	V
Operating temperature	T_{opr}	-10 to +50	$^\circ\text{C}$
Storage temperature	T_{stg}	-40 to +85	$^\circ\text{C}$

Note: 1. Pulse condition: Pulse width $\leq 1\mu\text{s}$, duty $\leq 50\%$

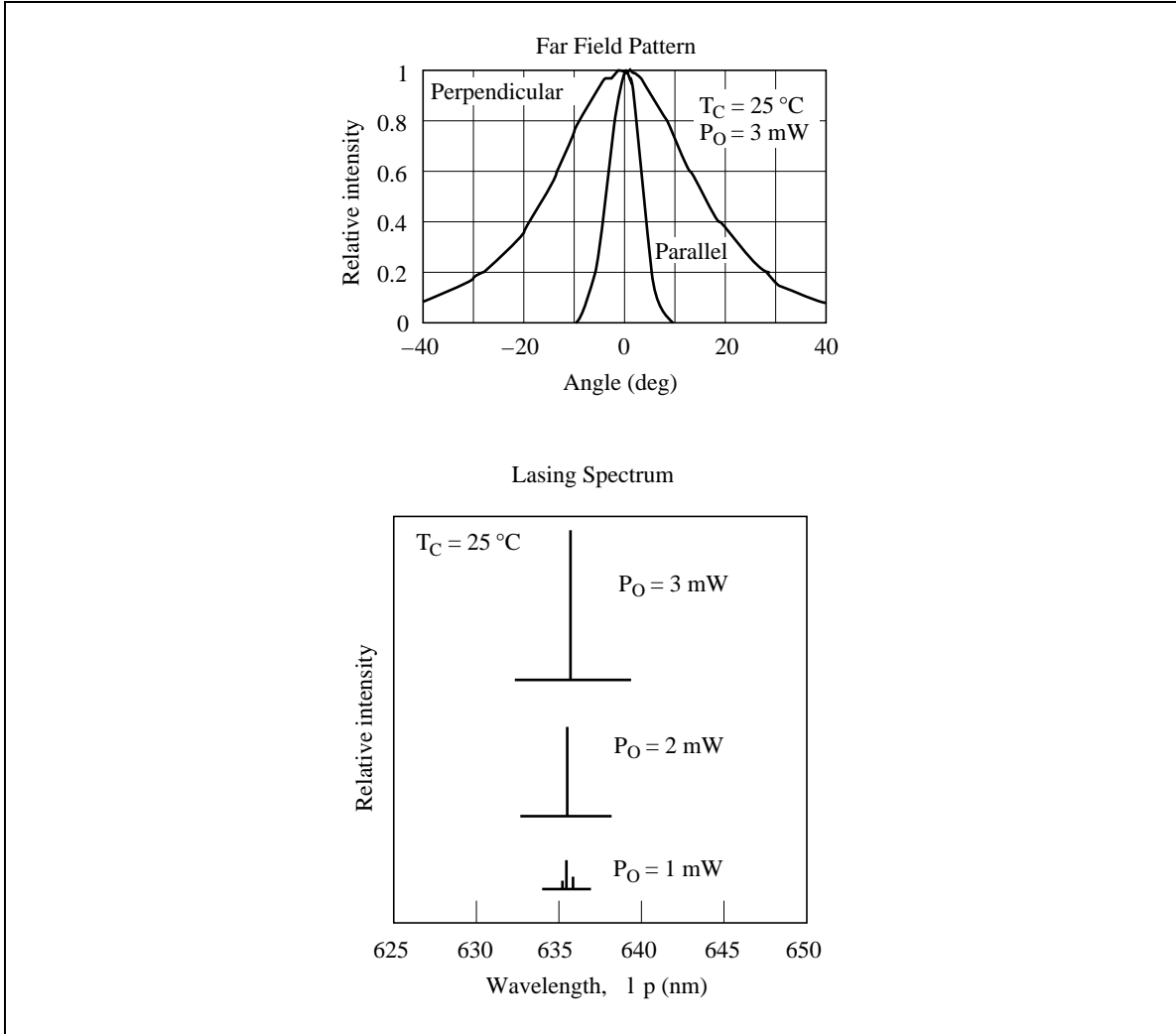
Optical and Electrical Characteristics ($T_c = 25^\circ\text{C}$)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Optical output power	P_o	3	—	—	mW	Kink free
Threshold current	I_{th}	—	25	—	mA	
Operating current	I_{op}	—	30	—	mA	$P_o = 3\text{ mW}$
Operating voltage	V_{op}	—	—	2.7	V	$P_o = 3\text{ mW}$
Lasing wavelength	λ_p	630	635	640	nm	$P_o = 3\text{ mW}$
Beam divergence (parallel)	$\theta_{//}$	6	8	10	deg.	$P_o = 3\text{ mW}$
Beam divergence (perpendicular)	θ_{\perp}	23	30	39	deg.	$P_o = 3\text{ mW}$
Monitor current	I_s	—	0.3	—	mA	$P_o = 3\text{ mW}$, $V_R = 5\text{ V}$

Typical Characteristic Curves

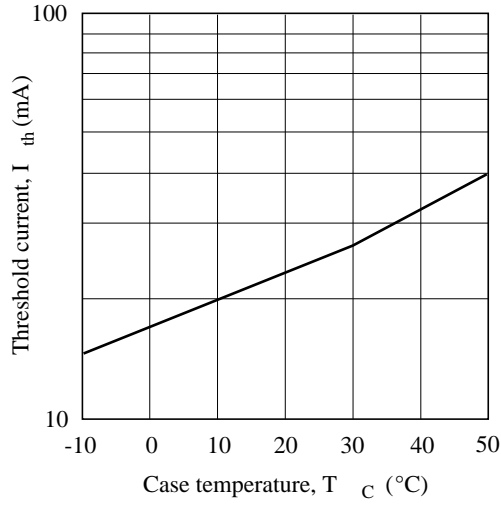


Typical Characteristic Curves (cont)

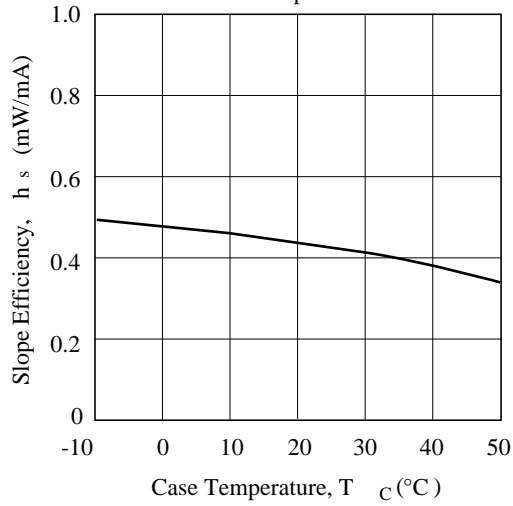


Typical Characteristic Curves (cont)

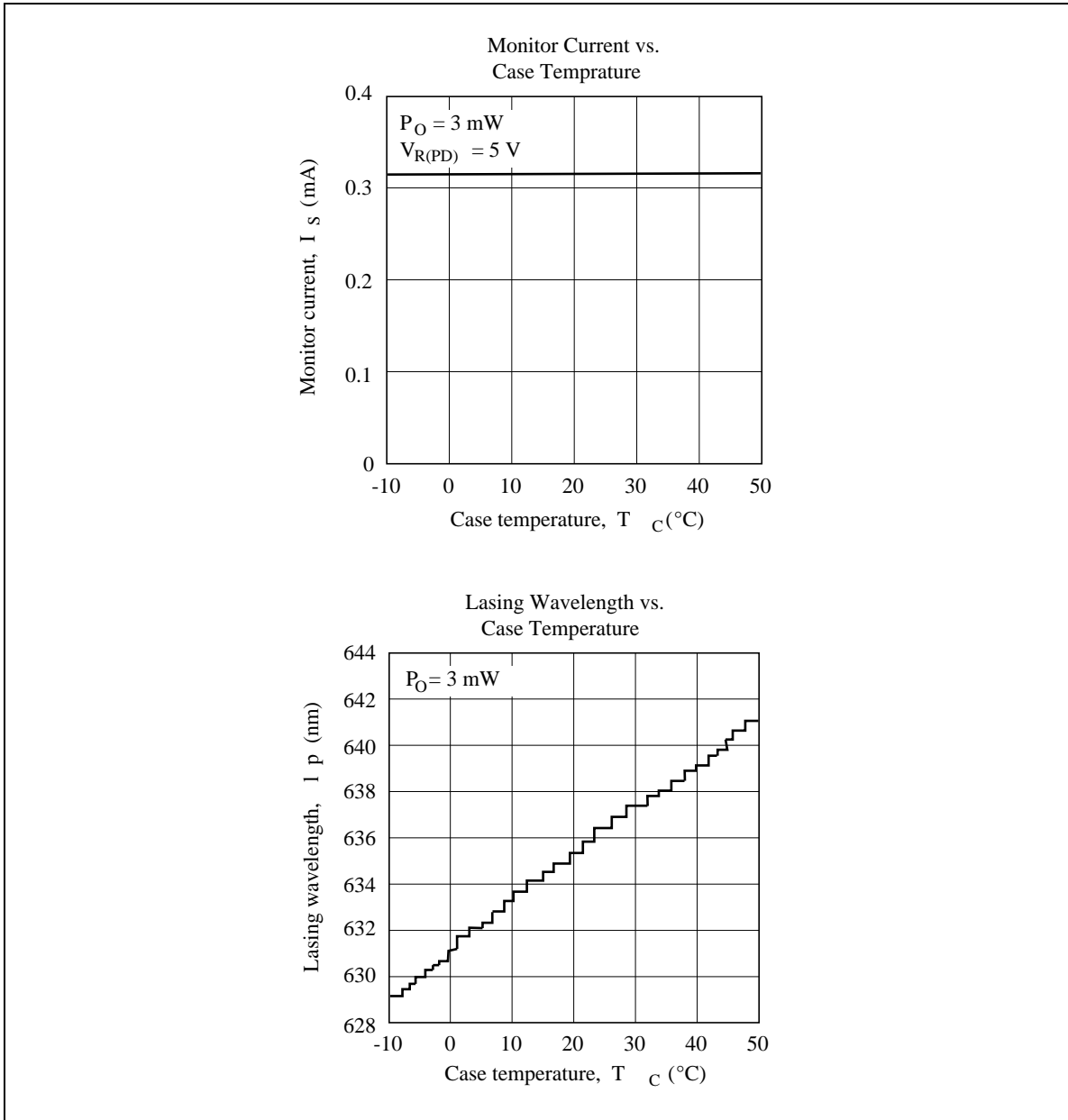
Threshold Current vs.
Case Temperature



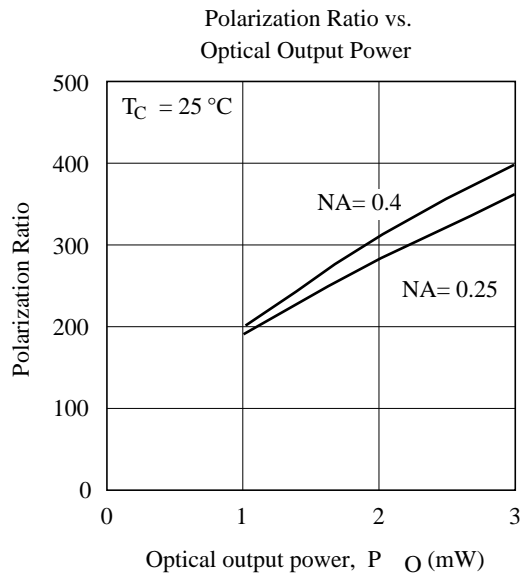
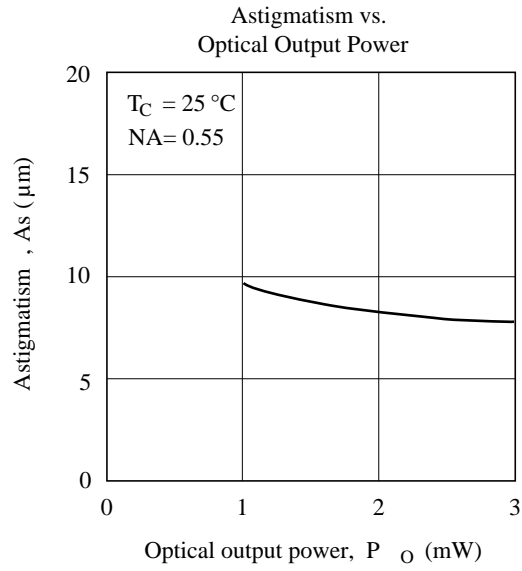
Slope Efficiency vs.
Case Temperature



Typical Characteristic Curves (cont)



Typical Characteristic Curves (cont)



Polarization direction

The polarization of 0.63 μm LD's is different from that of 0.83/0.78/0.67 μm LD's.

The polarization direction of 0.63 μm LD's is illustrated in the figure below.

