

HL7831G/HG**GaAlAs LD**

T-41-05

Description

The HL7831G/HG are 0.78 μm band GaAlAs laser diodes with a double heterojunction structure. MOCVD technology is employed for precise device analysis and optimization to realize low noise.

Features

- Visible light output: $\lambda_p = 770$ to 795 nm
- Built-in monitor photodiode
- Multi longitudinal mode
- Low noise: $S/N = 60$ dB min.
- Astigmatism: $|A_s| \leq 10$ μm (HL7831HG)

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

Item	Symbol	Rated Value	Units
Optical output power	P_O	5	mW
Pulse optical output power	$P_{O(\text{pulse})}$	6*	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 +60	$^\circ\text{C}$
Storage temperature	T_{stg}	-45 to +85	$^\circ\text{C}$

* At a duty cycle under 50% and pulse widths under 1 μs

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

Item	Symbol	Min	Typ	Max	Units	Test Conditions
Threshold current	I_{th}	—	50	80	mA	
Optical output power	P_O	5	—	—	mW	Kink free
Slope efficiency	η	0.1	0.25	0.6	mW/mA	$\frac{3(\text{mW})}{I(4\text{mW}) - I(1\text{mW})}$
Lasing wavelength	λ_p	770	785	795	nm	$P_O = 3$ mW
Beam divergence (parallel)	θ_{\parallel}	9	13	16	deg.	$P_O = 3$ mW
Beam divergence (perpendicular)	θ_{\perp}	20	35	48	deg.	$P_O = 3$ mW
Monitor current	HL7831G HL7831HG	I_S	0.3 0.15	1.0 —	1.6 0.6	mA $V_R(\text{PD}) = 5$ V $P_O = 3 \pm 0.05$ mW
Noise	S/N	60	—	—	dB	$P_O = 3$ mW, $f = 750$ kHz, $\Delta f = 30$ kHz

HITACHI

Internal Circuit

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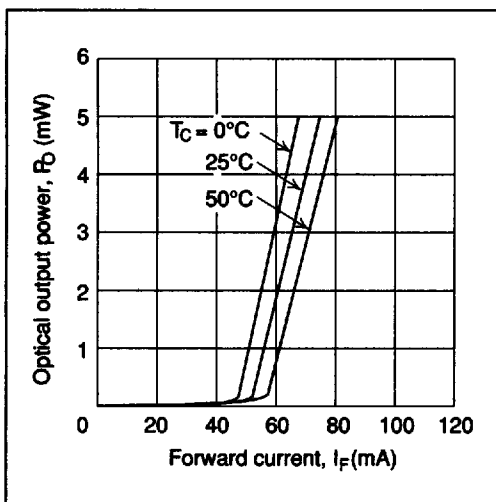
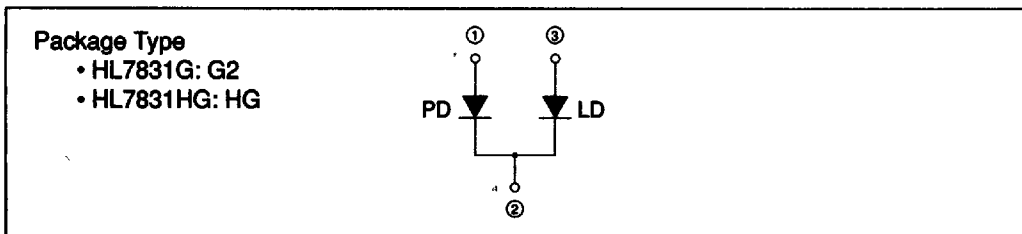


Figure 1 Optical Output Power vs. Forward Current

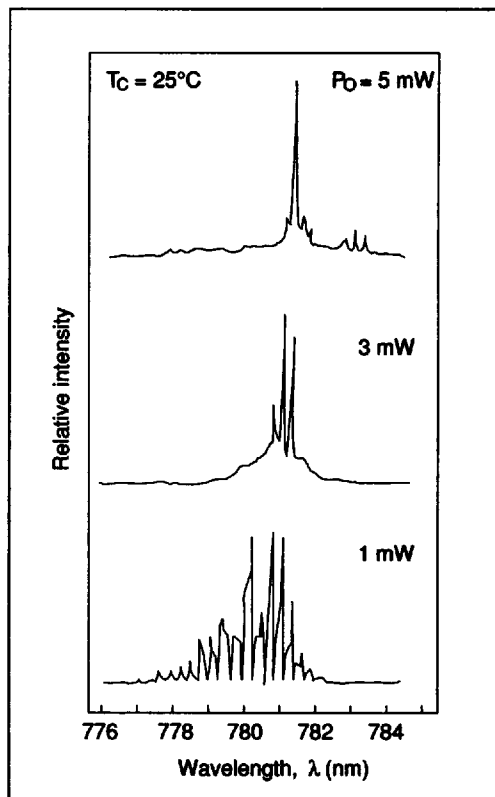


Figure 2 Lasing Spectrum

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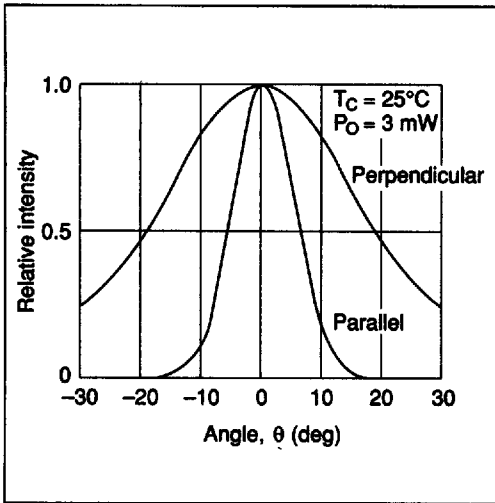


Figure 3 Far Field Pattern (HL7831G)

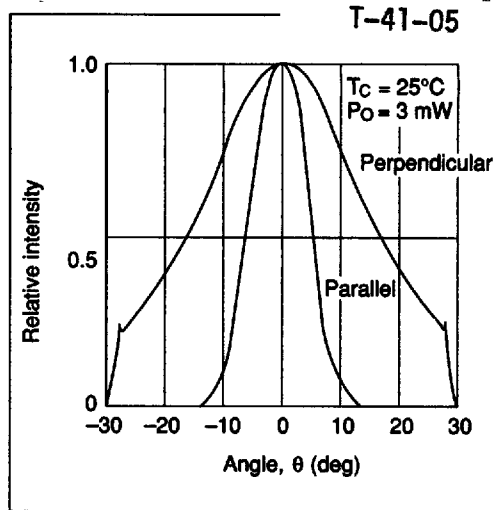


Figure 4 Far Field Pattern (HL7831HG)

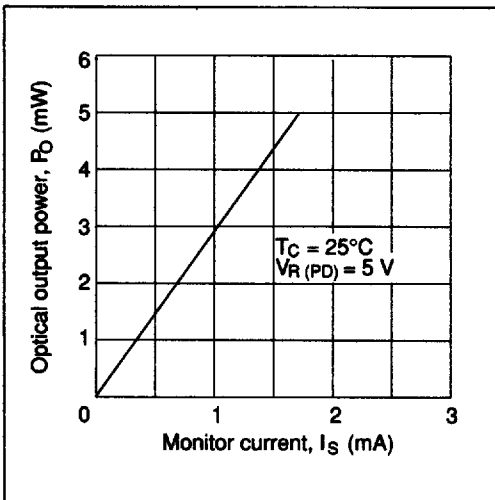


Figure 5 Optical Output Power vs. Monitor Current (HL7831G)

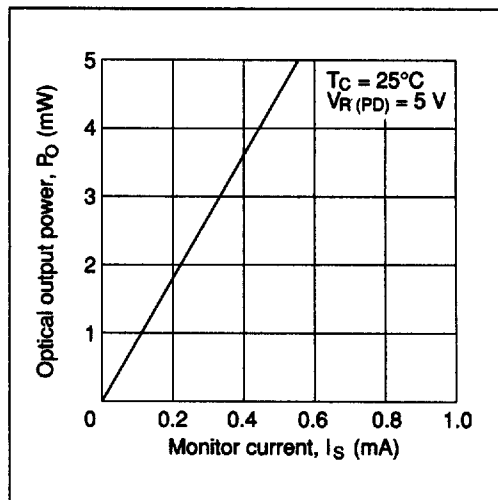


Figure 6 Optical Output Power vs. Monitor Current (HL7831HG)

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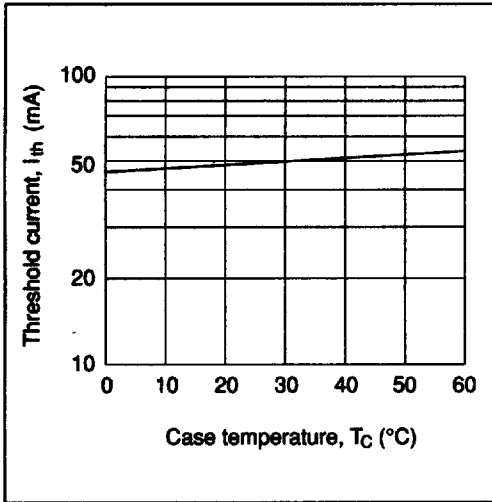


Figure 7 Threshold Current vs. Case Temperature

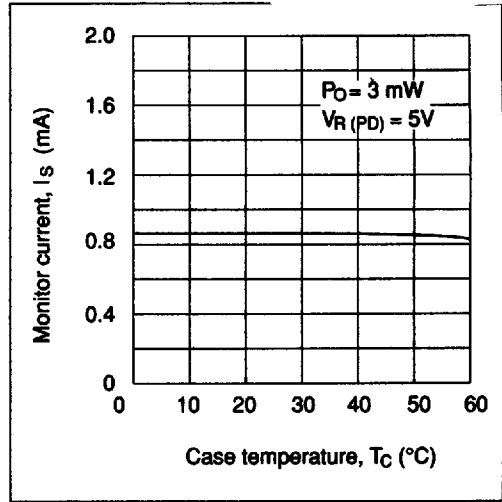


Figure 8 Monitor Current vs. Case Temperature (HL7831G)

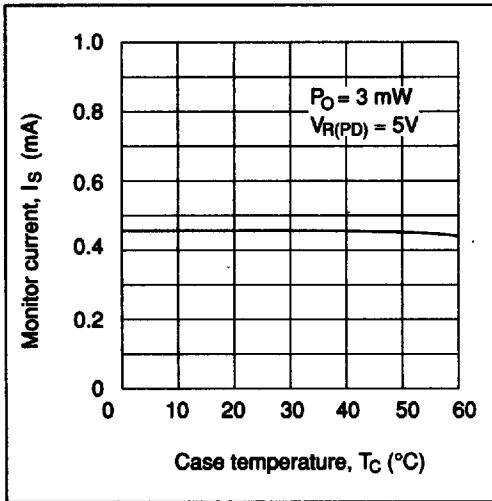


Figure 9 Monitor Current vs. Case Temperature (HL7831HG)

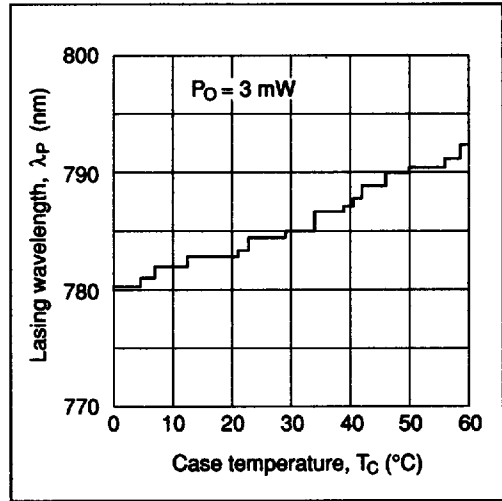


Figure 10 Lasing Wavelength vs. Case Temperature

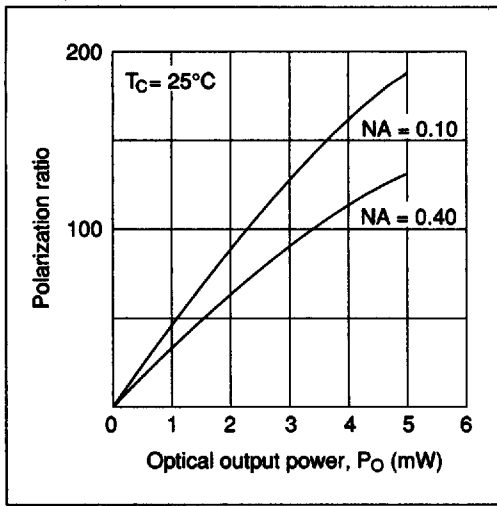


Figure 11 Polarization Ratio vs. Optical Output Power (HL7831G)

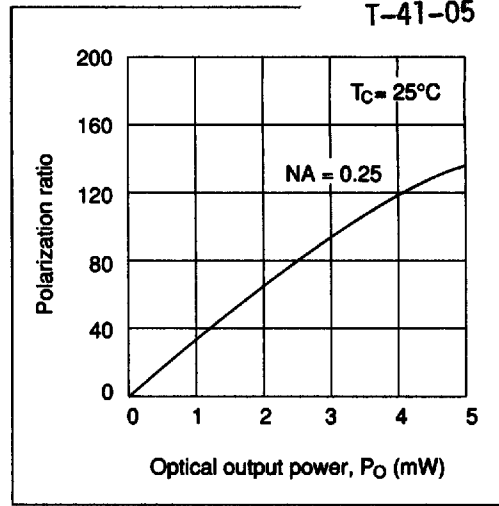


Figure 12 Polarization Ratio vs. Optical Output Power (HL7831HG)