

HL8319E/G**GaAlAs LD**

T-41-05

Description

The HL8319E/G are high-power 0.8 μm band GaAlAs laser diodes with a double heterojunction structure. Their internal circuit configuration is suited for operation on a single negative supply voltage. They are suitable as light sources for optical disk memories and various other types of optical equipment. Hermetic sealing of the package assures high reliability.

Features

- Infrared light output: $\lambda_p = 810$ to 850 nm Typ.
- High power: continuous wave operation at 40 mW, pulsed operation at 50 mW
- Built-in monitor photodiode
- Single longitudinal mode
- Low astigmatism: $A_S = 3$ μm Typ.

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

Item	Symbol	Rated Value	Units
Optical output power	P_O	40	mW
Pulse optical output power	$P_{O(\text{pulse})}$	50*	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}	-40 to +85	$^\circ\text{C}$

* Maximum 50% duty cycle, maximum 1 μs pulse width

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

Item	Symbol	Min	Typ	Max	Units	Test Conditions
Optical output power	P_O	40	—	—	mW	Kink free
Threshold current	I_{th}	—	40	70	mA	
Slope efficiency	η	0.4	0.7	0.9	mW/mA	$\frac{I_{(32\text{ mW})} - I_{(8\text{ mW})}}{24\text{ (mW)}}$
Lasing wavelength	λ_p	810	830	850	nm	$P_O = 40$ mW
Beam divergence (parallel)	θ_{\parallel}	8	11	14	deg.	$P_O = 40$ mW, FWHM
Beam divergence (perpendicular)	θ_{\perp}	18	25	32	deg.	$P_O = 40$ mW, FWHM
Monitor current	I_S	40	100	240	μA	$P_O = 4$ mW, $V_R(\text{PD}) = 5$ V
Astigmatism	A_S	—	—	10	μm	$P_O = 4$ mW, NA = 0.4

HITACHI

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Internal Circuit

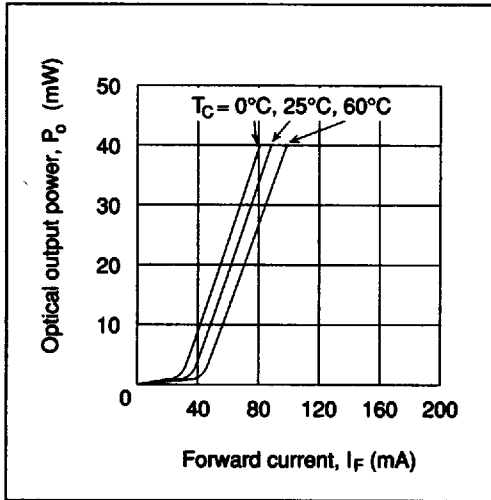
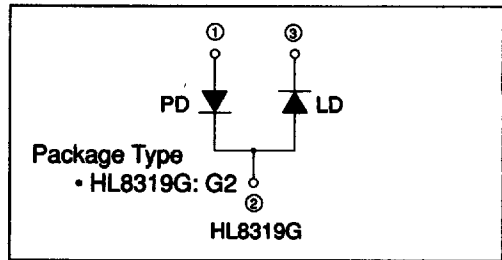
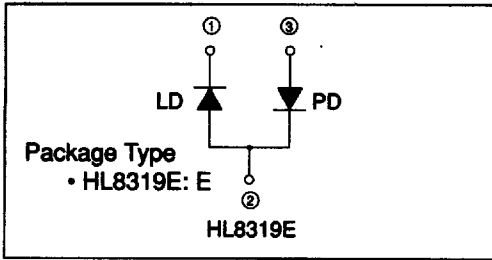


Figure 1 Optical Output Power vs. Forward Current

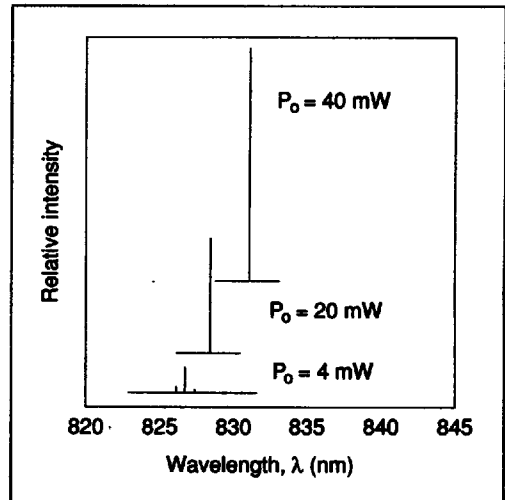


Figure 2 Lasing Spectrum

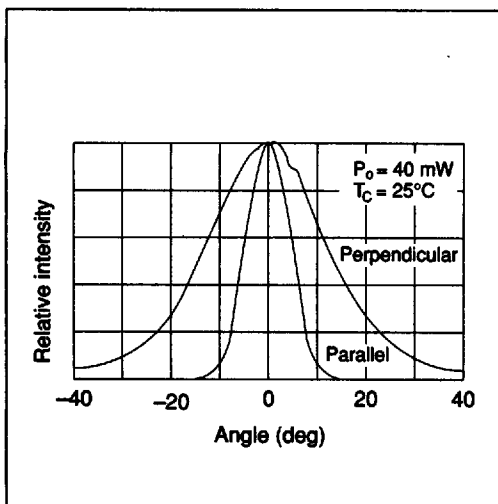


Figure 3 Far Field Pattern

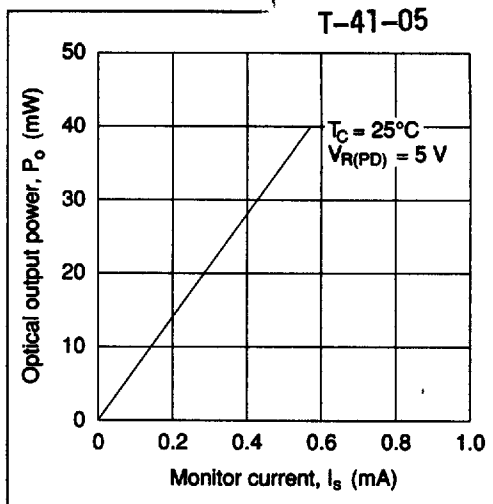


Figure 4 Monitor Current vs. Optical Output Power

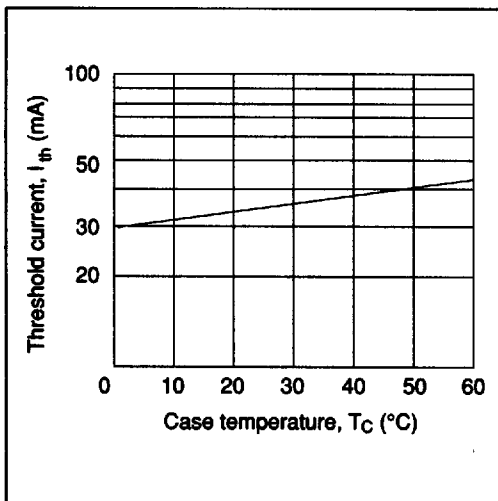


Figure 5 Temperature Dependence of Threshold Current

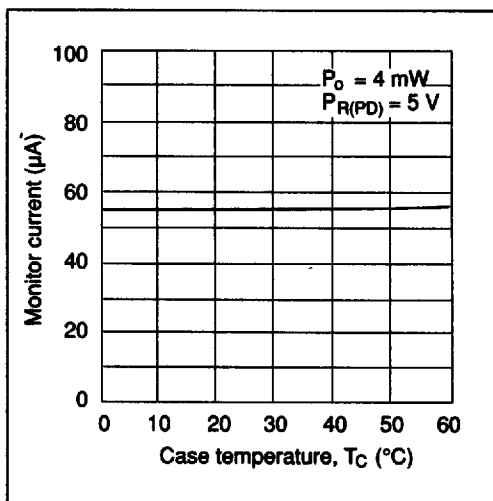


Figure 6 Temperature Dependence of Monitor Current

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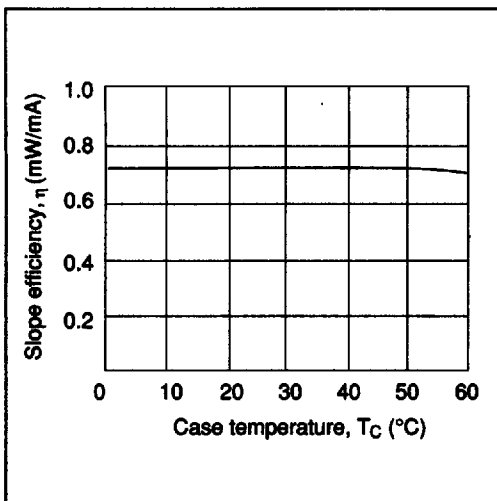


Figure 7 Temperature Dependence of Slope Efficiency

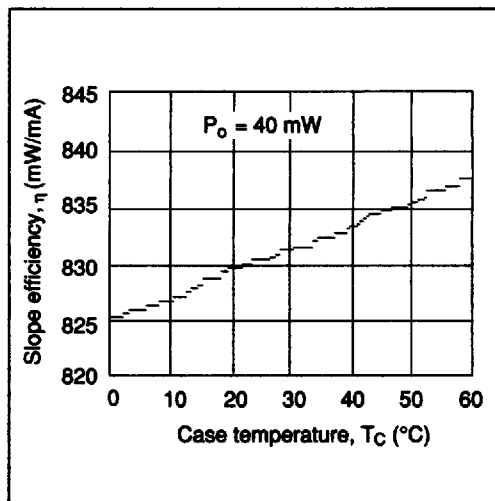


Figure 8 Temperature Dependence of Lasing Wavelength

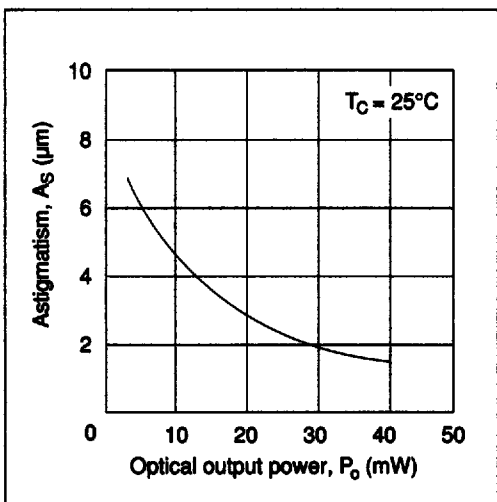


Figure 9 Optical Output Power Dependence of Astigmatism

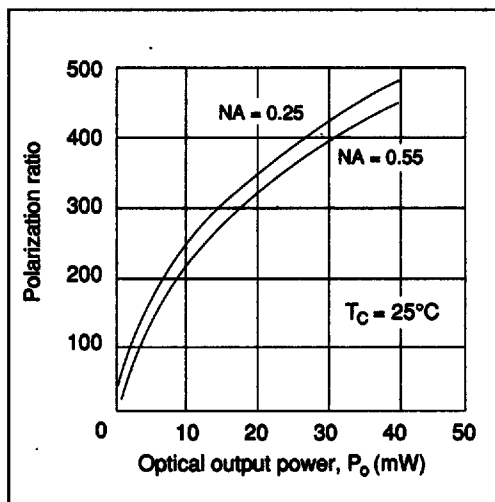


Figure 10 Optical Output Power Dependence of Polarization Ratio