HL7851G

GaAlAs Laser Diode

HITACHI

Description

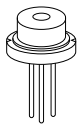
The HL7851G is a high power 0.78 µm band GaAlAs laser diode with a multi-quantum well (MQW) structure. It is suitable as a light source for optical disk memories, levelers and various other types of optical equipment. Hermetic sealing of the package assures high reliability.

Features

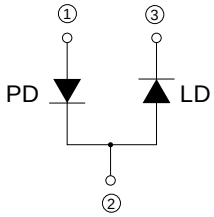
- Visible light output: λ_p = 785 nm Typ.
- Small beam ellipticity: 9.5:23
- High output power: 50 mW (CW)
- Built-in monitor photodiode

Package Type

• HL7851G: G2



Internal Circuit



Absolute Maximum Ratings (T_c = 25°C)

Item	Symbol	Rated Value	Unit
Optical output power	P_O	50	mW
Pulsed optical output power	$P_{O\ (pulse)}$	60*1	mW
LD reverse voltage	$V_{R\ (LD)}$	2	V
PD reverse voltage	$V_{R\ (PD)}$	30	V
Operating temperature	T_{opr}	–10 to +60	°C
Storage temperature	T_{stg}	–40 to +85	°C

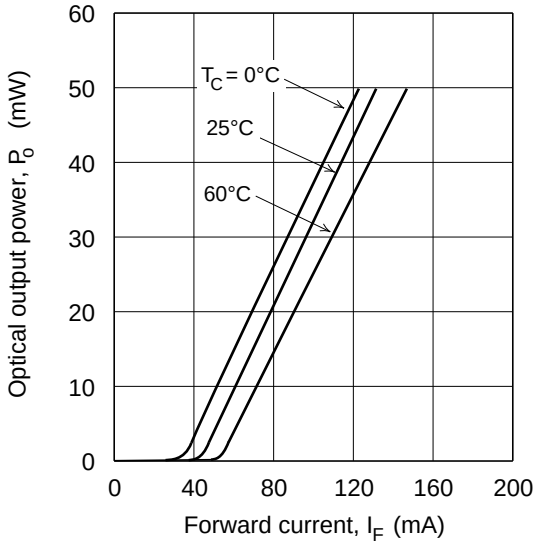
Note: 1. Maximum 50% duty cycle, maximum 1 µs pulse width

Optical and Electrical Characteristics (T_c = 25 ±3°C)

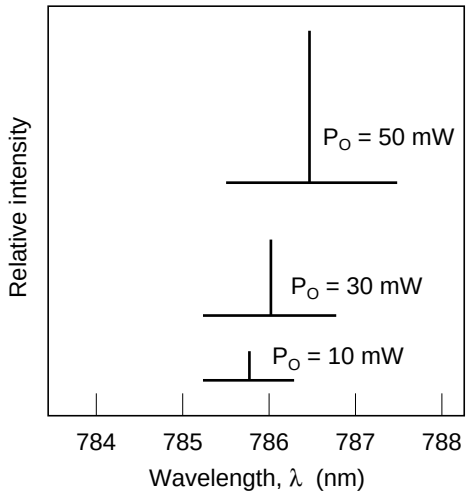
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Optical output power	P_O	50	—	—	mW	Kink free
Threshold current	I_{th}	—	45	70	mA	
Slope efficiency	η	0.35	0.55	0.7	mW/mA	$\frac{40\ (mW)}{I_{(45\ mW)} - I_{(5\ mW)}}$
Operating current	I_{op}	—	140	170	mA	P_O = 50 Mw
LD Operating voltage	V_{op}	—	2.3	2.7	V	P_O = 50 mW
Lasing wavelength	λ_p	775	785	795	nm	P_O = 50 mW
Beam divergence (parallel)	$\theta_{//}$	8	9.5	12	deg.	P_O = 50 mW, FWHM
Beam divergence (perpendicular)	$\theta_{\perp}$	18	23	28	deg.	P_O = 50 mW, FWHM
Monitor current	I_S	25	—	150	µA	P_O = 5 mW, $V_{R\ (PD)}$ = 5 V
Astigmatism	A_S	—	5	—	µm	P_O = 5 mW, NA = 0.4

Typical Characteristic Curves

Optical Output Power vs. Forward Current

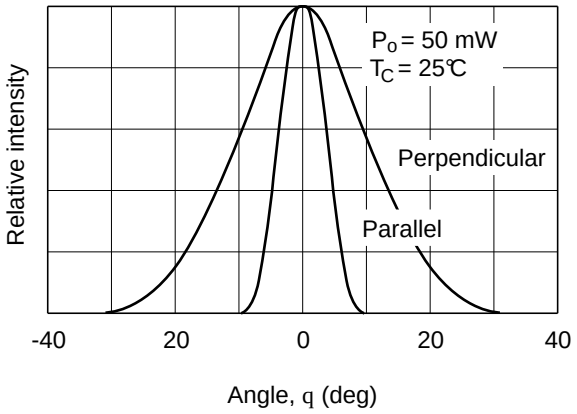


Lasing Spectrum

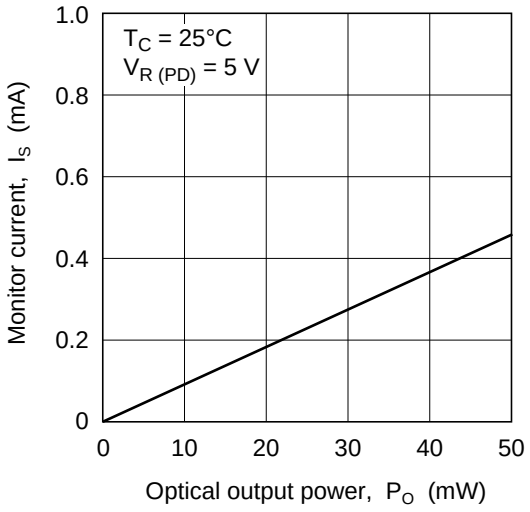


Typical Characteristic Curves (cont)

Far Field Pattern

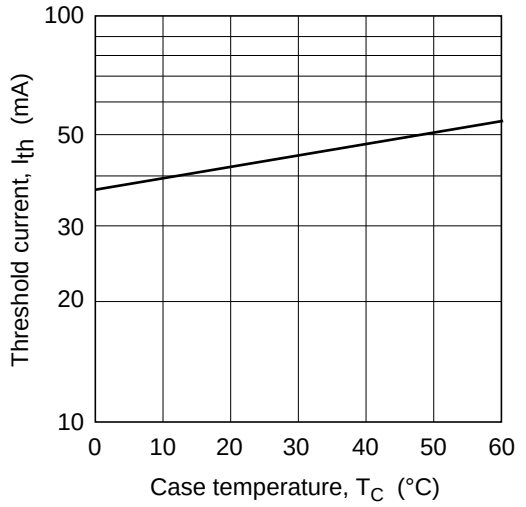


Monitor Current vs. Optical Output Power

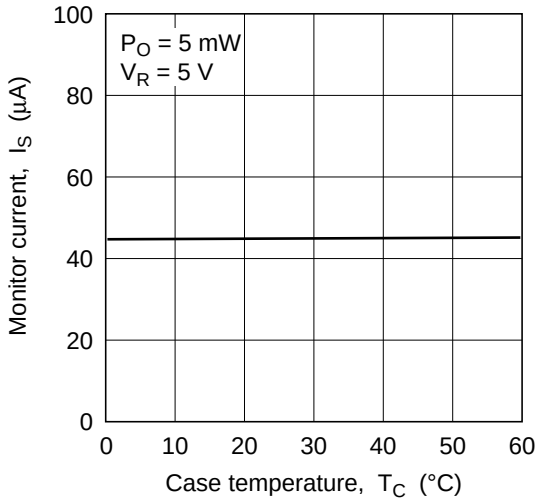


Typical Characteristic Curves (cont)

Temperature Dependence of Threshold Current

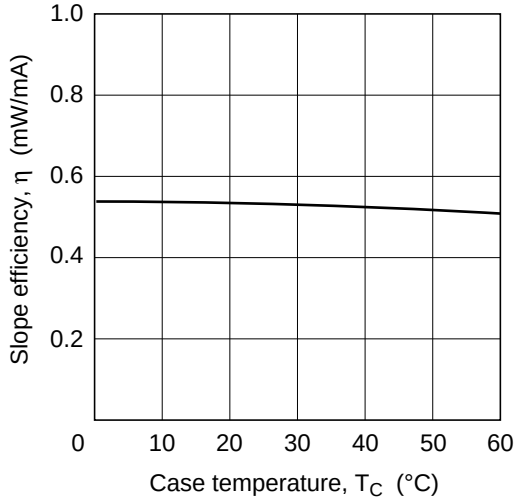


Temperature Dependence of Monitor Current



Typical Characteristic Curves (cont)

Temperature Dependence of Slope Efficiency



Temperature Dependence of Lasing Wavelength