

HL7801E

Laser Diode

Description

HL7801E is a 0.78 μm GaAlAs laser diode with double heterojunction structure.

It is suitable as a light source in laser beam printers, laser levelers and various other types of optical equipment.

A screw-on type package facilitates the adjustment of optical components. Hermetic sealing of the package achieves high reliability.

Features

- Visible light output: $\lambda_p = 760\text{--}800\text{ nm}$
- Built-in photodiode for monitoring laser output
- Low astigmatism: $A_s = 2\ \mu\text{m}$ typ.
- Small beam ellipticity:
 $\theta_{//} = 15\text{ deg.}$, $\theta_{\perp} = 30\text{ deg.}$ typ.
- Single longitudinal mode

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

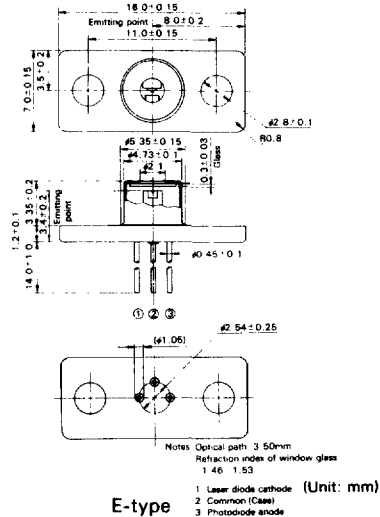
Items	Symbols	Values	Units
Optical output power	P_O	5	mW
Laser diode reverse voltage	$V_{R(LD)}$	2	V
Photodiode reverse voltage	$V_{R(PD)}$	30	V
Operating temperature	T_{opr}	-10 to +60	$^{\circ}\text{C}$
Storage temperature	T_{stg}	-40 to +80	$^{\circ}\text{C}$

The absolute maximum ratings are limiting values, to be applied individually, beyond which the device may be permanently damaged. Functional operation under any of these conditions is not guaranteed. Exposing a circuit to its absolute maximum rating for extended periods of time may affect the device's reliability.

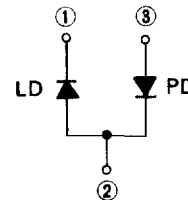
Optical and Electrical Characteristics ($T_C = 25^{\circ}\text{C}$)

Items	Symbols	min.	typ.	max.	Units	Test conditions
Threshold current	I_{th}		50	90	mA	
Optical output power	P_O	5			mW	Kink free
Slope efficiency	η	0.13	0.25		mW/mA	$\frac{3(\text{mW})}{I(4\text{ mW}) - I(1\text{ mW})}$
Lasing wavelength	λ_p	760	780	800	nm	$P_O = 3\text{ mW}$
Beam divergence parallel to the junction	$\theta_{//}$	10	15	20	deg.	$P_O = 3\text{ mW}$
Beam divergence perpendicular to the junction	θ_{\perp}	20	30	40	deg.	$P_O = 3\text{ mW}$
Monitor current	I_S	0.1	0.3		mA	$P_O = 3\text{ mW}$

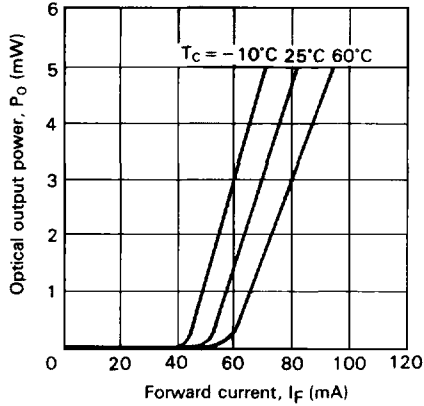
Package Dimensions



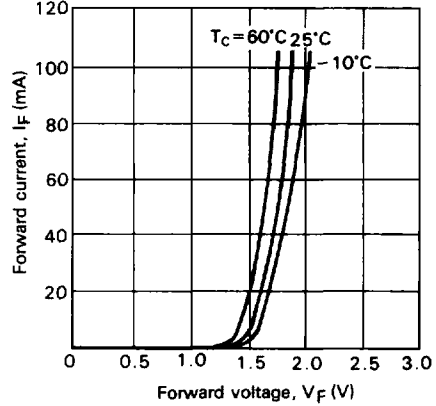
Internal Circuit



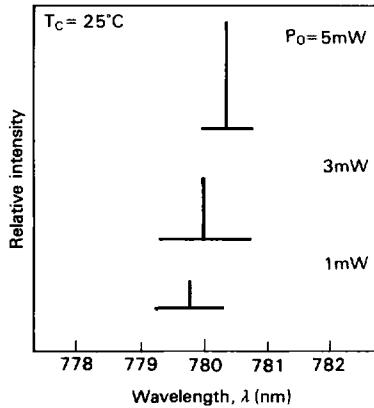
Optical Output Power vs. Forward Current



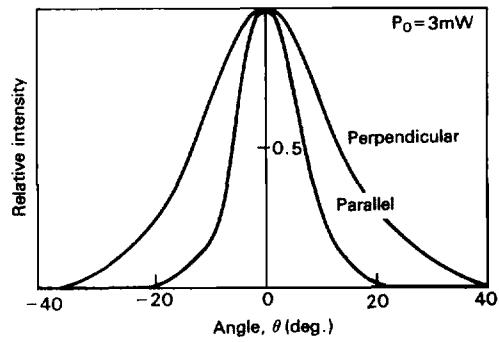
Forward Current vs. Forward Voltage



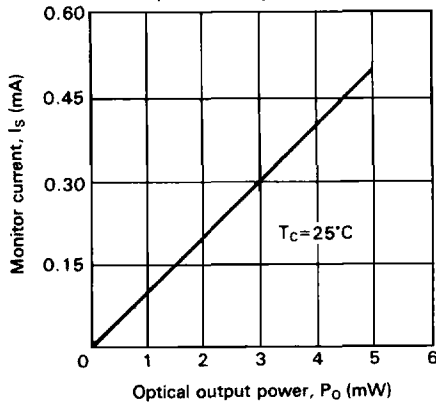
Lasing Spectrum



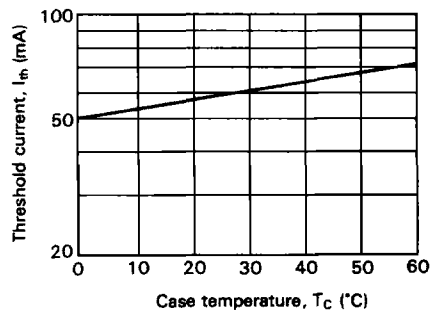
Far Field Pattern



Monitor Current vs. Optical Output Power



Threshold Current vs. Case Temperature



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