

# AlGaAs laser diodes

## RLD-78NP10-B

The RLD-78NP10-B is one of the world's first mass-produced laser diodes that is manufactured by molecular beam epitaxy. The characteristics of this laser diode are suitable for high-speed laser beam printers.

## ● Applications

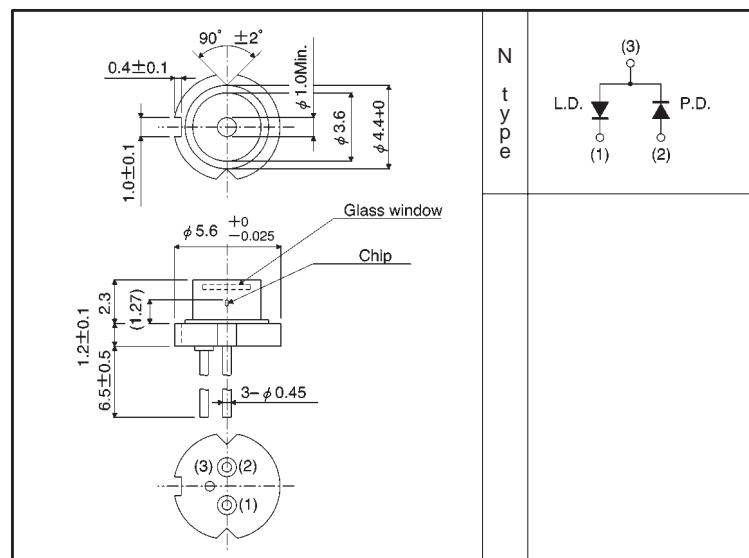
## Laser beam printers

## High-speed laser beam printers

## ● Features

- 1) One-third dispersion compared with conventional laser diodes.
- 2) High-precision, compact package.
- 3) Low droop.
- 4) Can be driven by single power supply (N type).

### ● External dimensions (Units: mm)



- Absolute maximum ratings ( $T_c = 25^\circ\text{C}$ )

Parameter		Symbol	Limits	Unit
Output		P <sub>o</sub>	10	mW
Reverse voltage	Laser	V <sub>R</sub>	2	V
	PIN photodiode	V <sub>R</sub> (PIN)	30	V
Operating temperature		T <sub>opr</sub>	−10~+60	°C
Storage temperature		T <sub>stg</sub>	−40~+85	°C

● Electrical and optical characteristics ( $T_c = 25^\circ\text{C}$ )

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Threshold current	$I_{th}$	15	25	45	mA	—
Operating current	$I_{op}$	25	45	65	mA	$P_o=6\text{mW}$
Operating voltage	$V_{op}$	—	1.9	2.3	V	$P_o=6\text{mW}$
Differential efficiency	$\eta$	0.2	0.4	0.6	$\text{mW}/\text{mA}$	$\frac{4\text{mW}}{I(6\text{mW})-I(2\text{mW})}$
Monitor current	$I_m$	0.2	0.4	1.0	mA	$P_o=6\text{mW}$
Parallel divergence angle	$\theta_{//}^*$	8	11	15	deg	$P_o=6\text{mW}$
Perpendicular divergence angle	$\theta_{\perp}^*$	25	30	38	deg	
Parallel deviation angle	$\Delta\theta_{//}$	—	—	$\pm 2$	deg	
Perpendicular deviation angle	$\Delta\theta_{\perp}$	—	—	$\pm 3$	deg	
Emission point accuracy	$\frac{\Delta X}{\Delta Y}$ $\frac{\Delta Y}{\Delta Z}$	—	—	$\pm 80$	$\mu\text{m}$	—
Peak emission wavelength	$\lambda$	770	785	795	nm	$P_o=6\text{mW}$
Droop	$\Delta P$	—	5	10	%	$P_o=6\text{mW}$

\*  $\theta_{//}$  and  $\theta_{\perp}$  are defined as the angle within which the intensity is 50% of the peak value.

## ● Electrical and optical characteristic curves

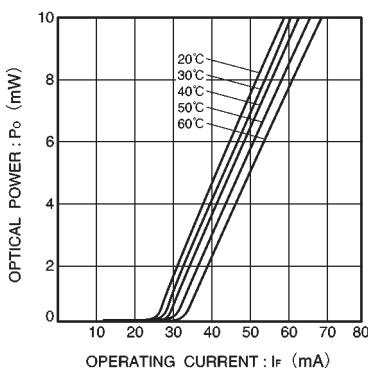


Fig. 1 Optical output vs. operating current

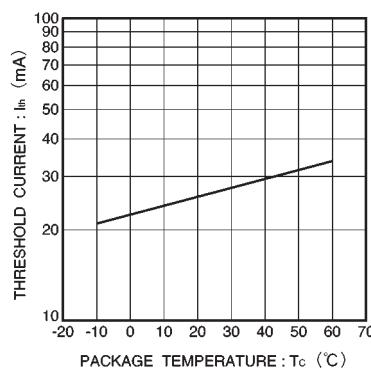


Fig. 2 Dependence of threshold current on temperature

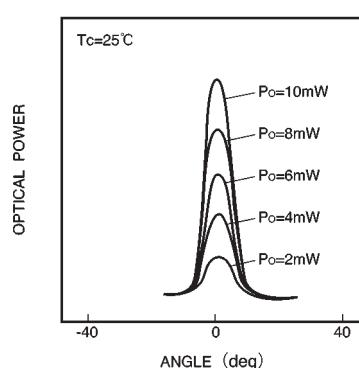


Fig. 3 Parallel far field pattern

