

# 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.

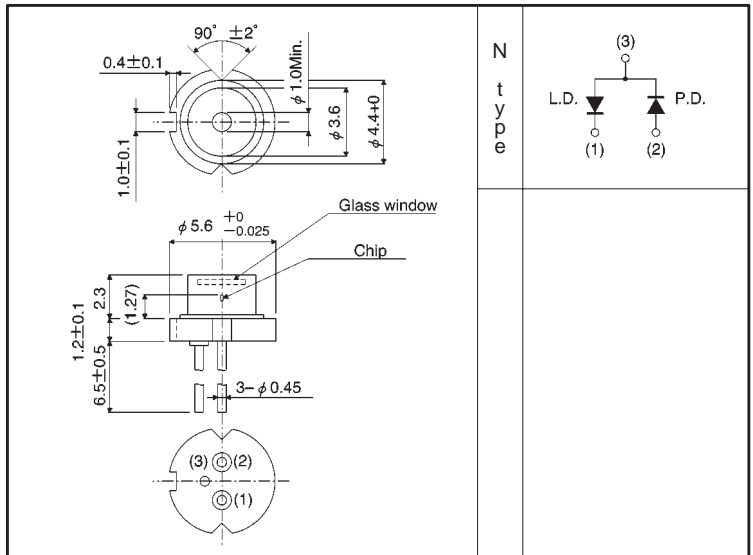
●Applications

- 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 (Tc = 25°C)

Parameter		Symbol	Limits	Unit
Output		Po	10	mW
Reverse voltage	Laser	VR	2	V
	PIN photodiode	VR (PIN)	30	V
Operating temperature		Topr	-10~+60	°C
Storage temperature		Tstg	-40~+85	°C

●Electrical and optical characteristics (Tc = 25°C)

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

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

●Electrical and optical characteristic curves

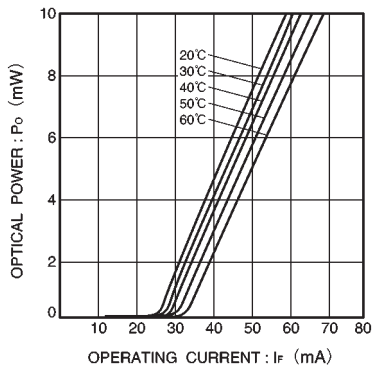


Fig. 1 Optical output vs. operating current

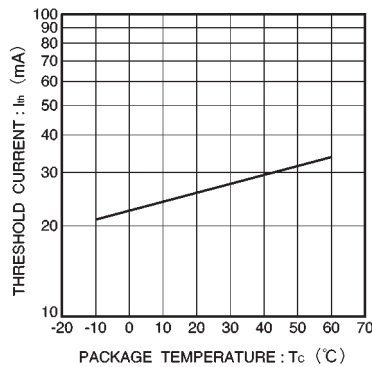


Fig. 2 Dependence of threshold current on temperature

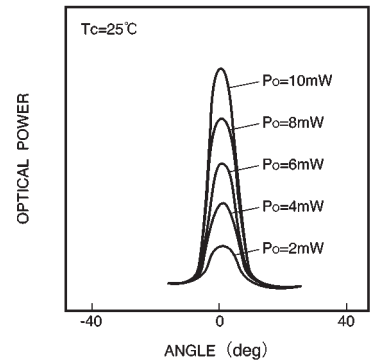


Fig. 3 Parallel far field pattern

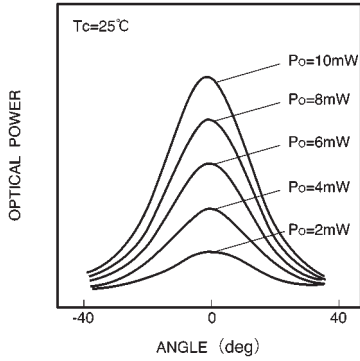


Fig. 4 Perpendicular far field pattern

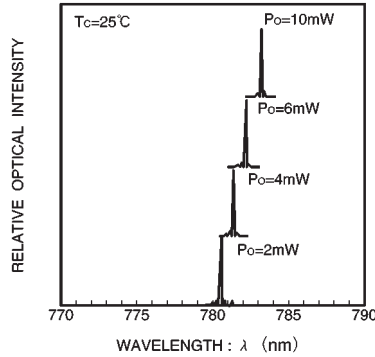


Fig. 5 Dependence of emission spectrum on optical output

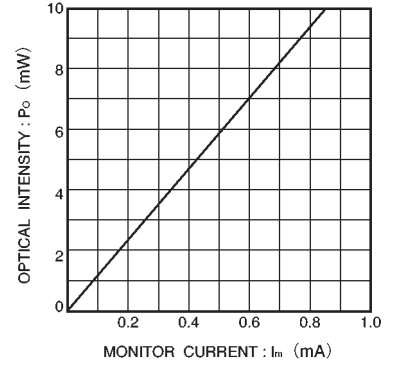


Fig. 6 Monitor current vs. optical output

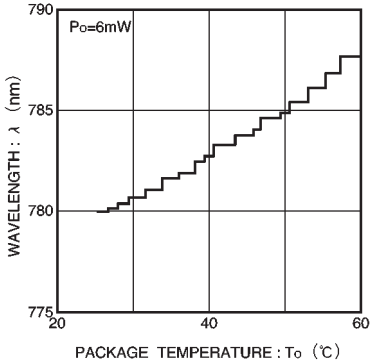


Fig. 7 Dependence of wavelength on temperature

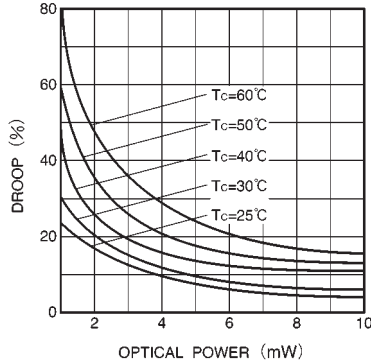


Fig. 8 Dependence of droop on output and temperature

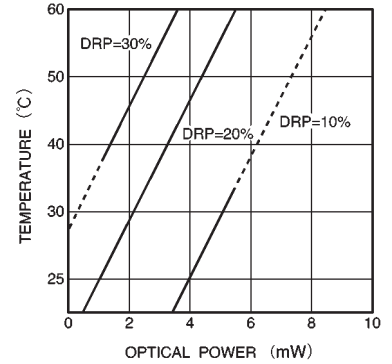


Fig. 9 Temperature vs. output guidelines for various droop percentages