

AlGaAs laser diodes

RLD-78PP-B / RLD-78NP-D

The RLD-78PP-B and RLD-78NP-D are the world's first mass-produced laser diodes those are manufactured by molecular beam epitaxy. The characteristics of these laser diodes are suitable for laser beam printers.

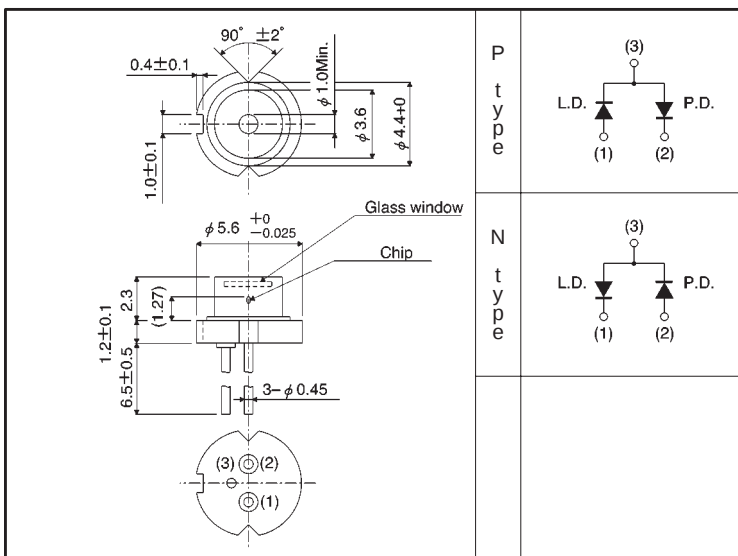
●Applications

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.

●External dimensions (Units: mm)



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

Parameter		Symbol	Limits	Unit
Output		P_o	5	mW
Reverse voltage	Laser	V_R	2	V
	PIN photodiode	V_R (PIN)	30	V
Operating temperature		T_{opr}	$-10 \sim +60$	$^\circ\text{C}$
Storage temperature		T_{stg}	$-40 \sim +85$	$^\circ\text{C}$

●Electrical and optical characteristics (Tc = 25℃)

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 =3mW
Operating voltage	V _{op}	—	1.9	2.3	V	P _o =3mW
Differential efficiency	η	0.1	0.2	0.3	mW/mA	$\frac{2\text{mW}}{I(3\text{mW})-I(1\text{mW})}$
Monitor current	I _m	0.3	0.55	0.9	mA	P _o =3mW
Parallel divergence angle	θ _∥ * ¹	8	11	15	deg	P _o =3mW
Perpendicular divergence angle	θ _⊥ * ¹	25	30	38	deg	
Parallel deviation angle	Δφ _∥	—	—	±2	deg	
Perpendicular deviation angle	Δφ _⊥	—	—	±3	deg	
Emission point accuracy	$\begin{matrix} \Delta X \\ \Delta Y \\ \Delta Z \end{matrix}$	—	—	±80	μm	—
Peak emission wavelength	λ	770	785	795	nm	P _o =3mW
Droop	ΔP	—	5	10	%	P _o =3mW

* θ_∥ and θ_⊥ are defined as the angle within which the intensity is 50% of the peak value.

●Electrical and optical characteristic curves

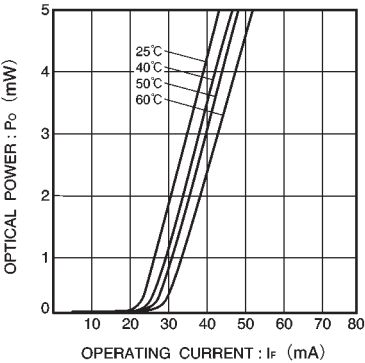


Fig. 1 Optical output vs. operating current

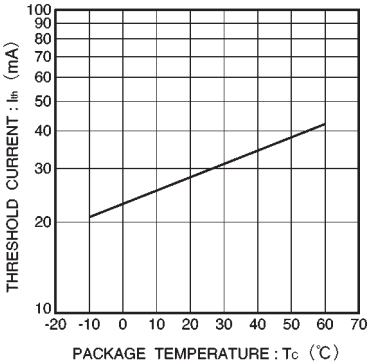


Fig. 2 Dependence of threshold current on temperature

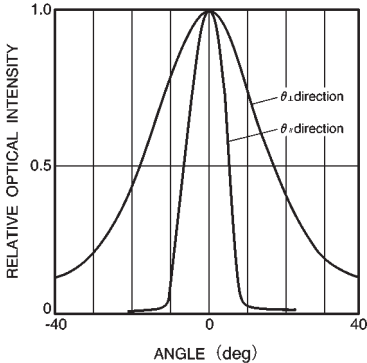


Fig. 3 Far field pattern

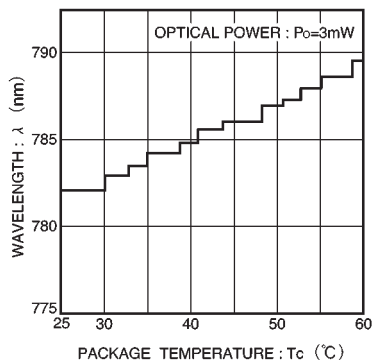


Fig. 4 Dependence of wavelength on temperature

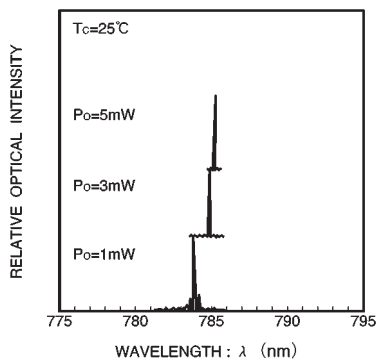


Fig. 5 Dependence of emission spectrum on optical output

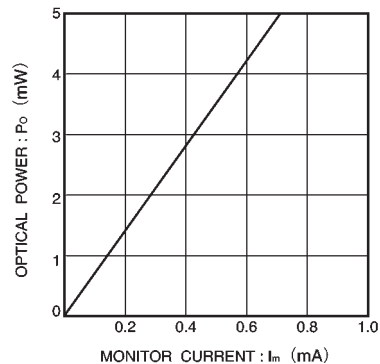


Fig. 6 Monitor current vs. optical output

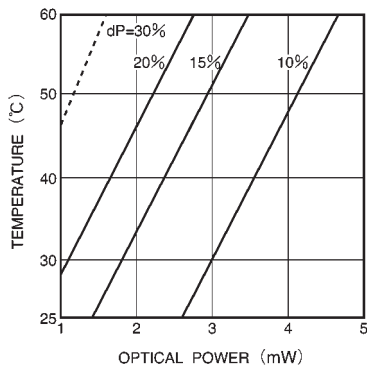


Fig. 7 Temperature vs. output guidelines for various droop percentages

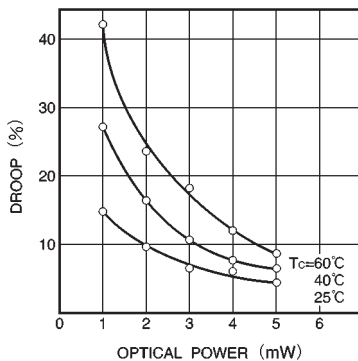


Fig. 8 Dependence of droop on output and temperature

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