

AlGaAs laser diodes

RLD-78MV

The RLD-78MV is the world's first mass-produced laser diodes to be mass produced by molecular beam epitaxy. Low-noise is achieved through self-pulsation. This laser diode is ideal for use in video disc players.

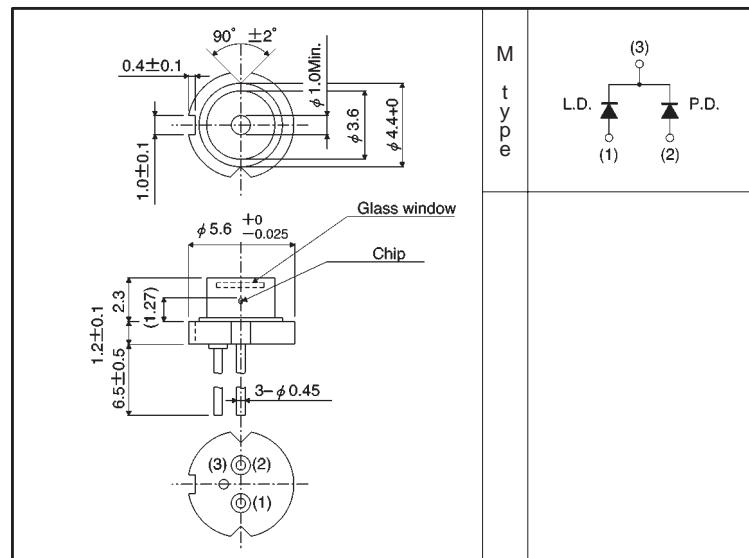
● Applications

Video disc players (VD) (LD)

● Features

- 1) Low noise.
- 2) Low astigmatism.
- 3) Noise is independent of optical feedback.
- 4) Signal-to-noise ratio guaranteed over entire operating temperature range.
- 5) High-precision, compact package.

● 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}	$-10 \sim +60$	°C
Storage temperature		T_{stg}	$-40 \sim +85$	°C

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Threshold current	I_{th}	—	45	60	mA	—
Operating current	I_{op}	—	55	70	mA	$P_o=3\text{mW}$
Operating voltage	V_{op}	—	1.9	2.3	V	$P_o=3\text{mW}$
Differential efficiency	η	0.1	0.25	0.6	mW / mA	$\frac{2\text{mW}}{I(3\text{mW})-I(1\text{mW})}$
Monitor current	I_m	0.1	0.2	0.6	mA	$P_o=3\text{mW}, V_{R(PIN)}=15\text{V}$
Parallel divergence angle	$\theta_{//}^*$	8	11	15	deg	$P_o=3\text{mW}$
Perpendicular divergence angle	θ_{\perp}^*	20	37	45	deg	
Parallel deviation angle	$\Delta \theta_{//}$	—	—	± 2	deg	
Perpendicular deviation angle	$\Delta \theta_{\perp}$	—	—	± 3	deg	
Emission point accuracy	$\frac{\Delta X}{\Delta Y}$ $\frac{\Delta Y}{\Delta Z}$	—	—	± 80	μm	—
Peak emission wavelength	λ	770	785	810	nm	$P_o=3\text{mW}$
Signal-to-noise ratio	S / N	60	—	—	dB	$f=10\text{kHz}, \Delta f=10\text{kHz}$

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

● Electrical and optical characteristic curves

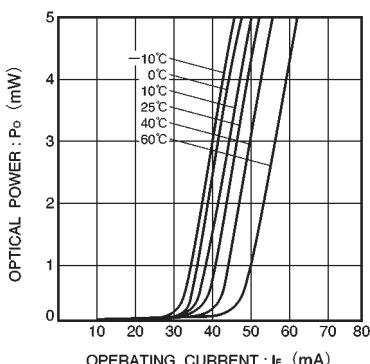


Fig. 1 Optical output vs. operating current

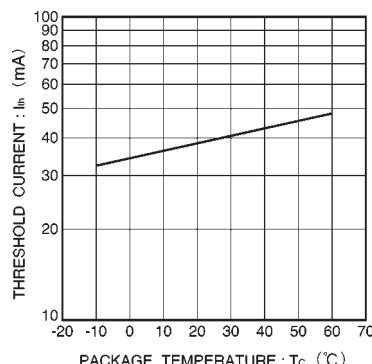


Fig. 2 Dependence of threshold current on temperature

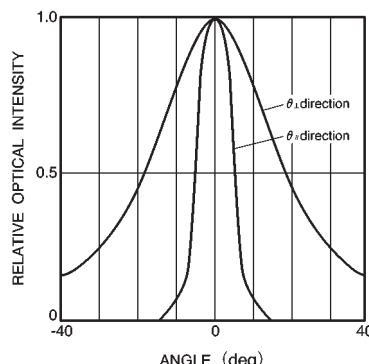


Fig. 3 Far field pattern

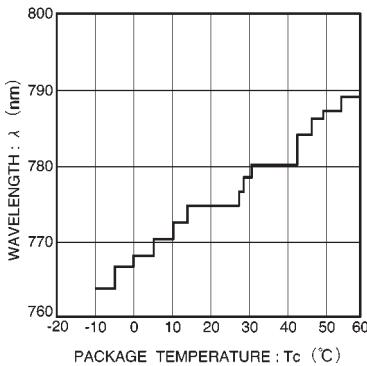


Fig. 4 Dependence of wavelength on temperature

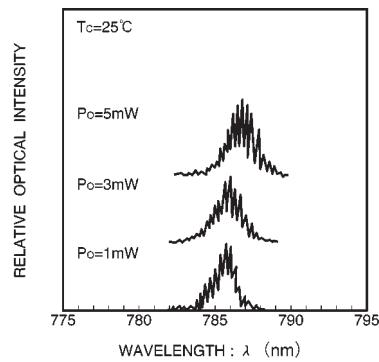


Fig. 5 Dependence of emission spectrum on optical output

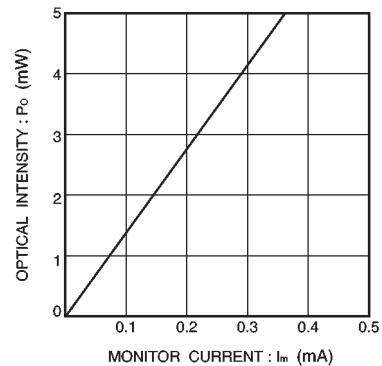


Fig. 6 Monitor current vs. optical output

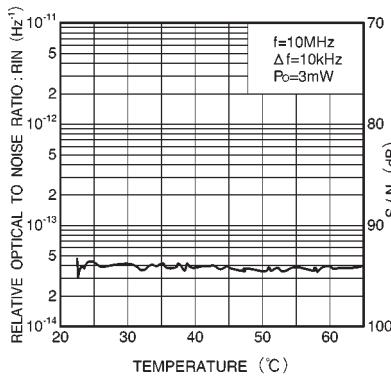


Fig. 7 Temperature dependence of noise

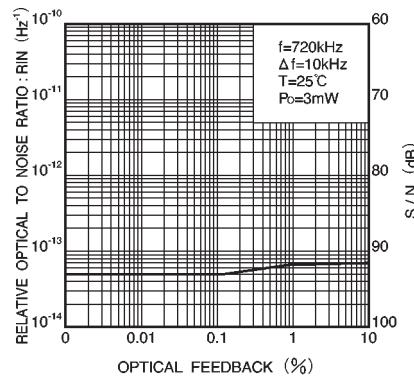


Fig. 8 Dependence of noise on optical feedback