

AlGaAs laser diode

RLD-78MD

The RLD-78MD is a laser diode designed for minidisc playback. This device has low noise at high optical output levels.

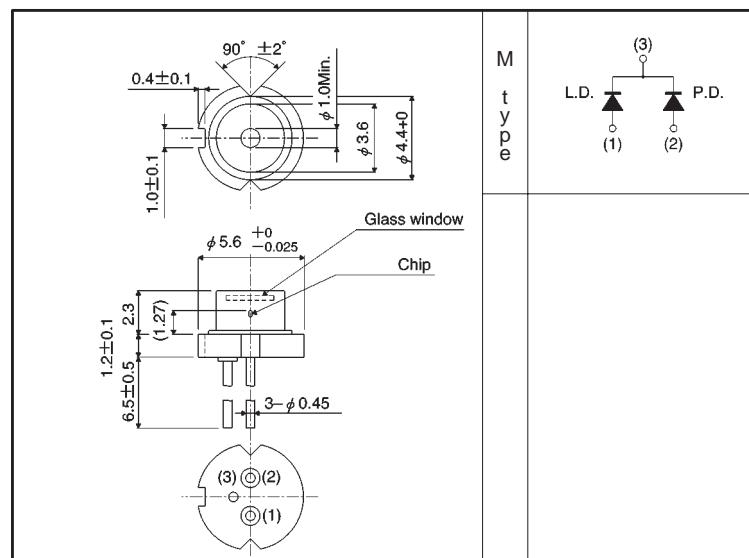
● Applications

Minidisc (MD) playback

● Features

- 1) Optical output is high at 4 to 8 mW.
- 2) Reduced facet reflection.
- 3) High-precision, compact package.
- 4) General purpose polarity type is available. (M type)

● External dimensions (Units: mm)



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

Parameter		Symbol	Limits	Unit
Output		P_o	10	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}	—	35	60	mA	—
Operating current	I_{op}	—	45	70	mA	$P_o=7\text{mW}$
Operating voltage	V_{op}	—	1.9	2.3	V	$P_o=7\text{mW}$
Differential efficiency	η	0.4	0.55	0.8	mW / mA	$\frac{2\text{mW}}{I(7\text{mW}) - I(5\text{mW})}$
Monitor current	I_m	0.05	0.15	0.4	mA	$P_o=7\text{mW}, V_{R(PIN)}=15\text{V}$
Parallel divergence angle	$\theta_{//}^*$	8	11	15	deg	$P_o=7\text{mW}$
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	ΔX ΔY ΔZ	—	—	± 80	μm	—
Peak emission wavelength	λ	770	785	810	nm	$P_o=7\text{mW}$
Signal-to-noise ratio	S / N	60	—	—	dB	$f=720\text{kHz}, \Delta f=10\text{kHz}$

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

● Electrical and optical characteristic curves

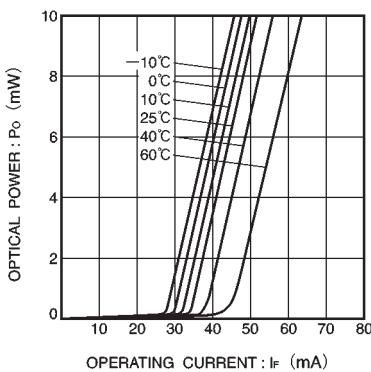


Fig. 1 Optical output vs. operating current

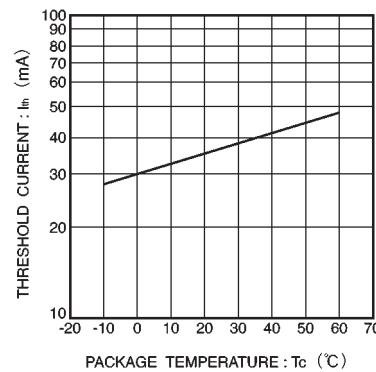


Fig. 2 Dependence of threshold current on temperature

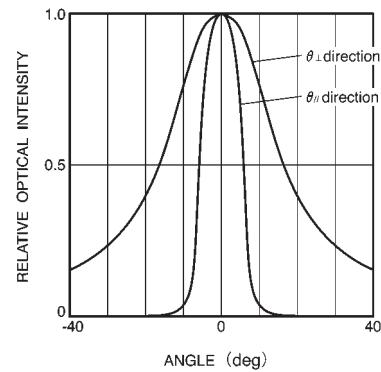


Fig. 3 Far field pattern

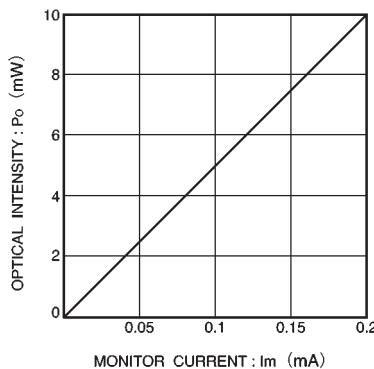


Fig. 4 Monitor current vs . optical output

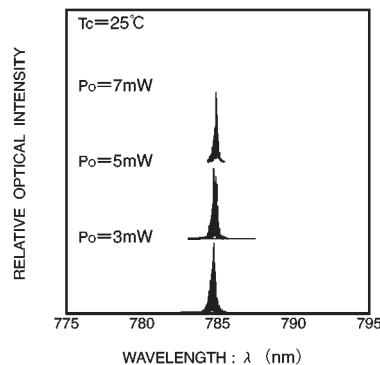


Fig. 5 Dependence of emission spectrum on optical output

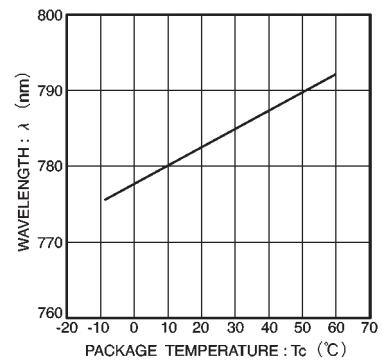


Fig. 6 Dependence of wavelength on temperature

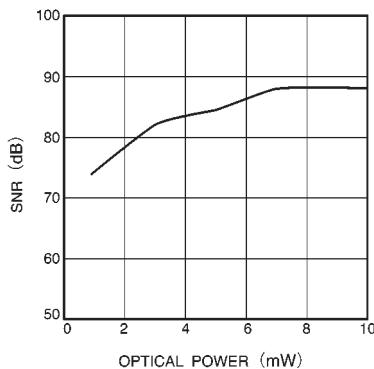


Fig. 7 Dependence of signal to noise ratio on optical power