

AlGaAs laser diode

RLD-78MA5

The RLD-78MA5 is a laser diode that used a laser chip with a low operating current. This device is ideal for pickups in portable CD players.

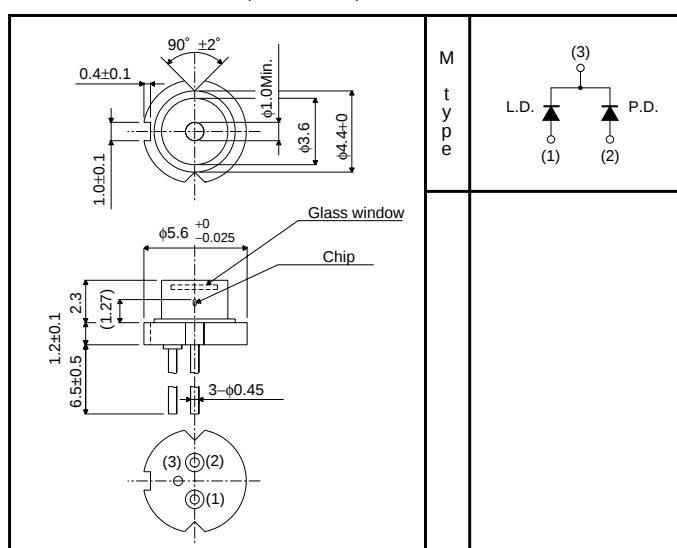
●Applications

Portable CD players

●Features

- 1) Low operating current.
- 2) Low S/N
- 3) High-precision, compact package.

●External dimensions (Units : mm)



●Absolute maximum ratings (Tc=25°C)

Absolute Maximum Ratings (V _{CE} = 0)				
Parameter		Symbol	Limits	Unit
Output		P _O	4	mW
Reverse voltage	Laser	V _R	2	V
	PIN photodiode	V _{R (PIN)}	30	V
Operating temperature		T _{opr}	-10~+70	°C
Storage temperature		T _{stg}	-40~+85	°C

Laser diodes

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Threshold current	I_{th}	–	20	25	mA	–
Operating current	I_{op}	–	25	30	mA	$P_o=2.5\text{mW}$
Operating voltage	V_{op}	–	1.9	2.3	V	$P_o=2.5\text{mW}$
Differential efficiency	η	0.3	0.7	1.0	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	$P_o=2.5\text{mW}, V_{R(PIN)}=15\text{V}$
Parallel divergence angle	$\theta_{//}^*$	8	11	15	deg	$P_o=2.5\text{mW}$
Perpendicular divergence angle	$\theta_{\perp}^*$	20	37	45	deg	
Parallel deviation angle	$\Delta\phi_{//}$	–	–	± 2	deg	
Perpendicular deviation angle	$\Delta\phi_{\perp}$	–	–	± 5	deg	
Emission point accuracy	ΔX ΔY ΔZ	–	–	± 80	μm	–
Peak emission wavelength	λ	770	785	810	nm	$P_o=2.5\text{mW}$
Signal-to-noise ratio	S / N	60	–	–	dB	$f=720\text{kHz}, \Delta f=10\text{kHz}$

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

●Electrical and optical characteristic curves

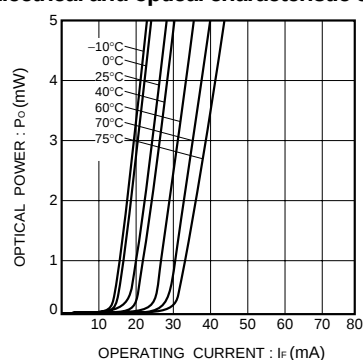


Fig. 1 Optical output vs. operating current

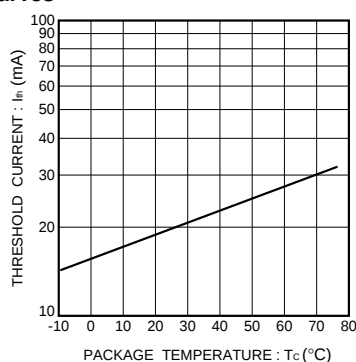


Fig. 2 Dependence of threshold current on temperature

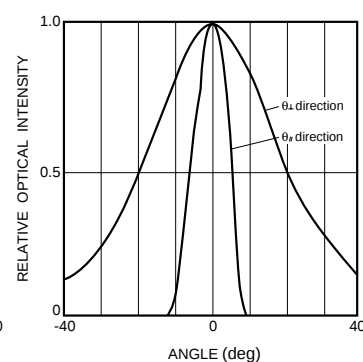


Fig. 3 Far field pattern

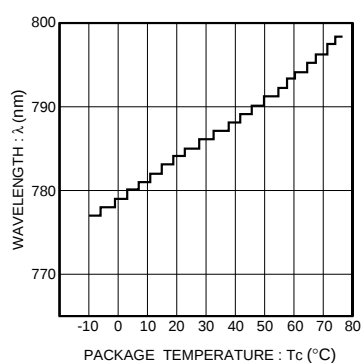


Fig. 4 Dependence of wavelength on temperature

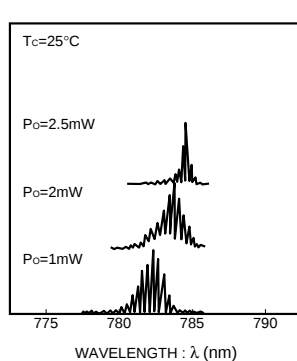


Fig. 5 Dependence of emission spectrum on optical output

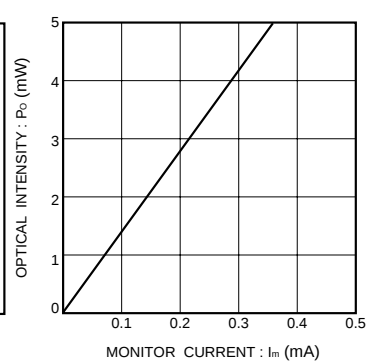


Fig. 6 Monitor current vs. optical output

Laser diodes

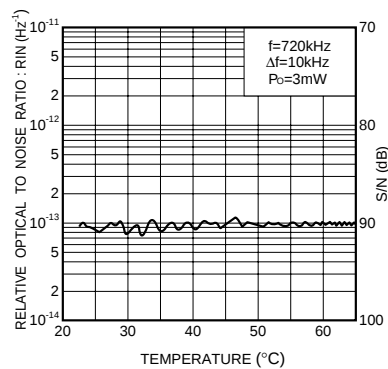


Fig. 7 Temperature dependence of noise

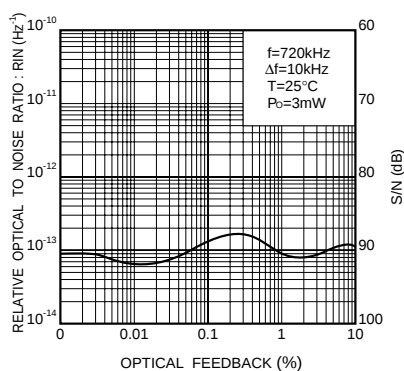


Fig. 8 Dependence of noise on optical feedback