

AlGaAs laser diodes

RLD78MA-E

The RLD-78MA-E is world's first mass-produced laser diodes that is manufactured by molecular beam epitaxy. The signal-to-noise ratio is stable in comparison to conventional manufacturing techniques. This device is ideal for use in compact disc players.

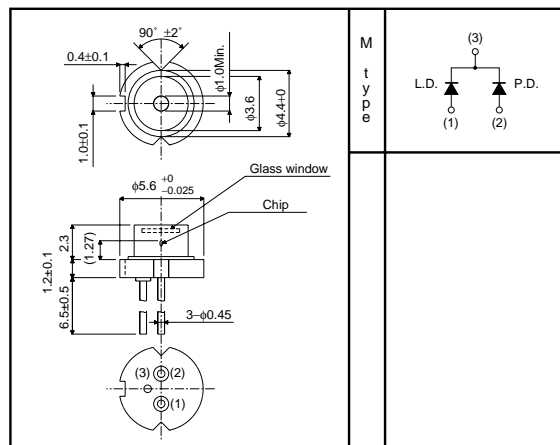
●Applications

Compact disc players

●Features

- 1) Signal-to-noise ratio guaranteed over entire operating temperature range.
- 2) Reduced facet reflection.
- 3) One-third the dispersion compared with conventional laser diodes.
- 4) High-precision, compact package.

●External dimensions (Units : mm)



●Absolute maximum ratings (Tc=25°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~+60	°C	
Storage temperature	T _{stg}	-40~+85	°C	

Laser diodes

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Threshold current	I_{th}	–	35	60	mA	–
Operating current	I_{op}	–	45	70	mA	$P_o=3mW$
Operating voltage	V_{op}	–	1.9	2.3	V	$P_o=3mW$
Differential efficiency	η	0.1	0.25	0.6	mW/mA	$\frac{2mW}{I(3mW) - I(1mW)}$
Monitor current	I_m	0.1	0.2	0.6	mA	$P_o=3mW, V_{R(PIN)}=15V$
Parallel divergence angle	$\theta_{//}^*$	8	11	15	deg	$P_o=3mW$
Perpendicular divergence angle	θ_{\perp}^*	20	37	45	deg	
Parallel deviation angle	$\Delta\phi_{//}$	–	–	± 2	deg	
Perpendicular deviation angle	$\Delta\phi_{\perp}$	–	–	± 3	deg	
Emission point accuracy	ΔX ΔY ΔZ	–	–	± 80	μm	–
Peak emission wavelength	λ	770	785	810	nm	$P_o=3mW$
Signal-to-noise ratio	S/N	60	–	–	dB	$f=720kHz, \Delta f=10kHz$

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

●Electrical and optical characteristic curves

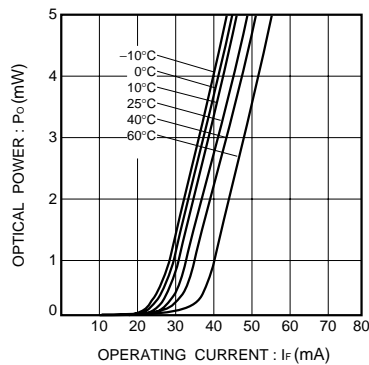


Fig.1 Optical output vs.operating current

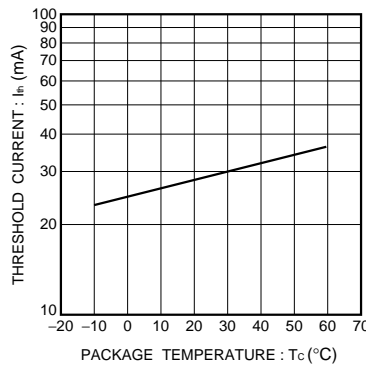


Fig.2 Dependence of threshold current on temperature

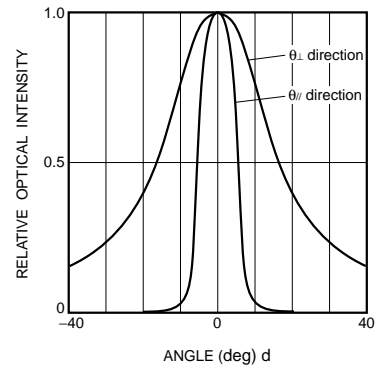


Fig.3 Far field pattern

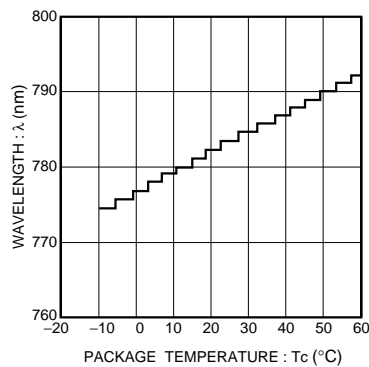


Fig.4 Dependence of wavelength on temperature

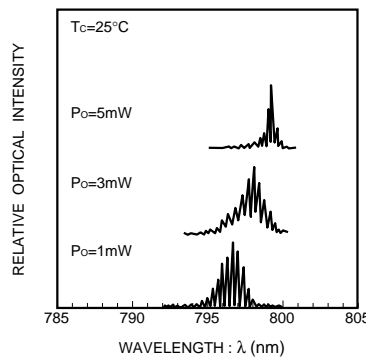


Fig.5 Dependence of emission spectrum on optical output

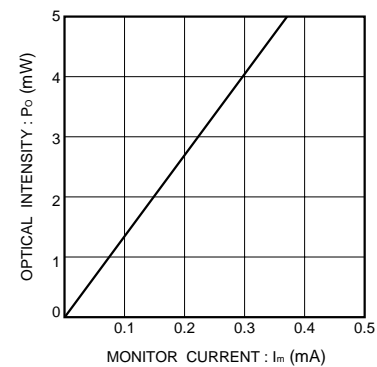


Fig.6 Monitor current vs.optical output

Laser diodes

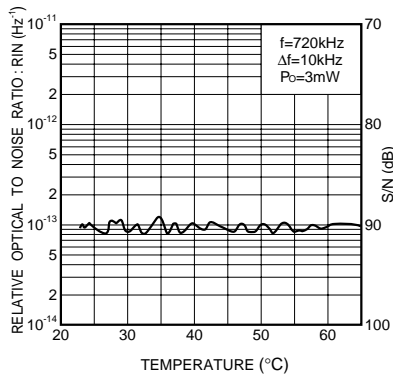


Fig.7 Temperature dependence of noise

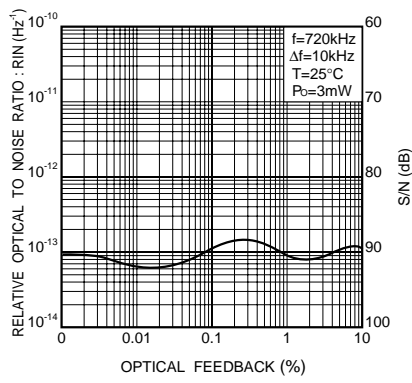


Fig.8 Dependence of noise on optical feedback