AlGaAs laser diodes

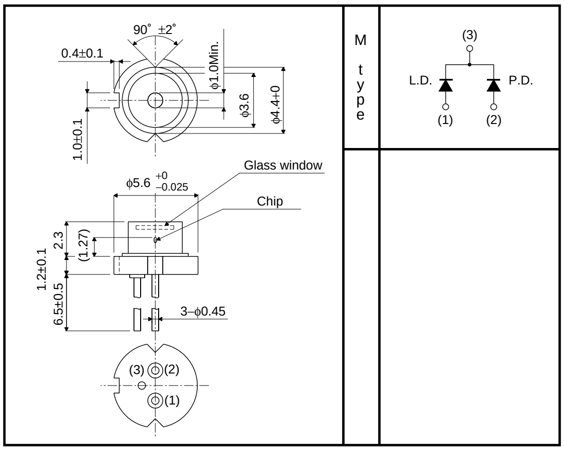
RLD78MA-E

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		Topr	−10~+60	°C
Storage temperature		Tstg	−40~+85	°C

ROHM

●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	$\theta_{\perp}$*	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, Δf=10kHz

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

●Electrical and optical characteristic curves

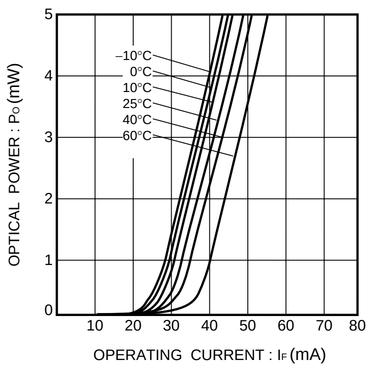


Fig.1 Optical output vs.operating current

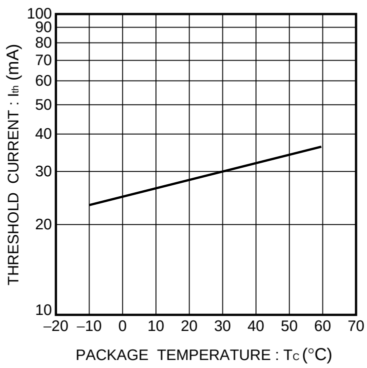


Fig.2 Dependence of threshold current on temperature

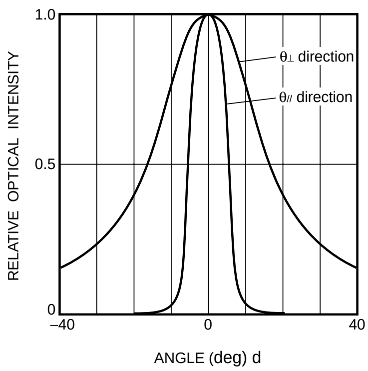


Fig.3 Far field pattern

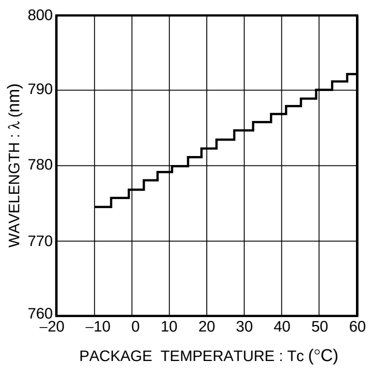


Fig.4 Dependence of wavelength on temperature

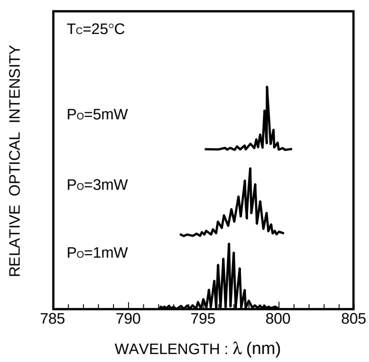


Fig.5 Dependence of emission spectrum on optical output

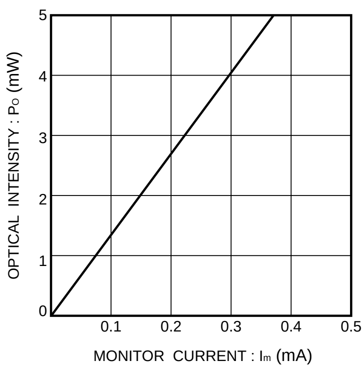


Fig.6 Monitor current vs.optical output

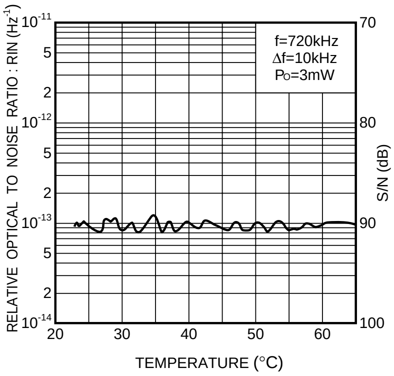


Fig.7 Temperature dependence of noise

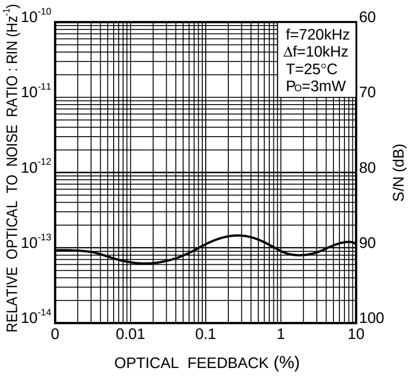


Fig.8 Dependence of noise on optical feedback