AlGaAs laser diode in very compact package

RLD-78MAT4S

The RLD-78MAT4S is a laser diode housed in ROHM's custom small 3.3 mm package. Using a laser chip with a low operating current, this device is ideal for pickups in thin, portable CD players and CD-ROM drives.

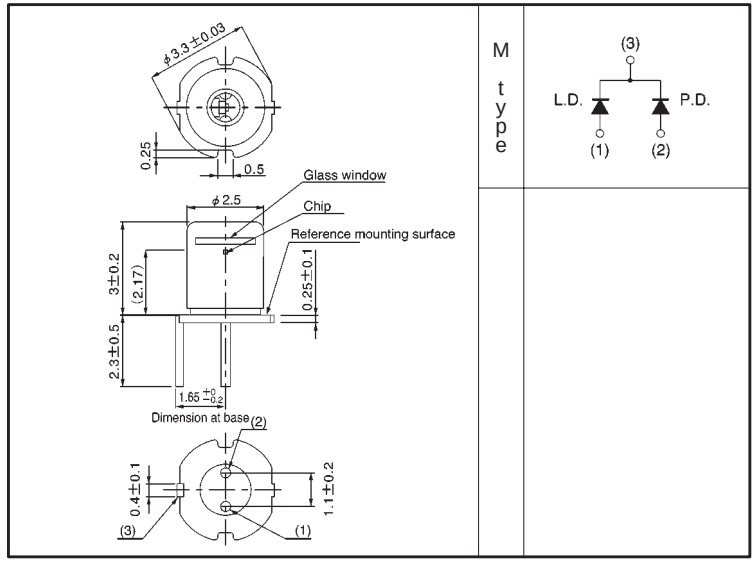
●Applications

Thin CD players, CD-ROM
CD players in cars

●Features

1) Compact package for thin CD and CD-ROM.
2) Low current consumption suitable for portable applications.
3) High operating temperature suitable for notebook computers and car applications.

●External dimensions (Units: mm)



●Absolute maximum ratings (Tc = 25°C)

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		Topr	−10～+75	℃
Storage temperature		Tstg	−40～+85	℃

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Threshold current	I_{th}	—	20	25	mA	—
Operating current	I_{op}	—	25	30	mA	Po=2.5mW
Operating voltage	V_{op}	—	1.9	2.3	V	Po=2.5mW
Differential efficiency	η	0.3	0.5	1.0	mW/mA	$\frac{2mW}{I(3mW)-I(1mW)}$
Monitor current	I_m	0.04	0.09	0.25	mA	Po=2.5mW, $V_{R(PIN)}$=15V
Parallel divergence angle	$\theta_{//}$*	8	11	15	deg	Po=2.5mW
Perpendicular divergence angle	$\theta_{\perp}$*	20	37	45	deg	
Parallel deviation angle	$\Delta\theta_{//}$	—	—	±3	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	Po=2.5mW
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

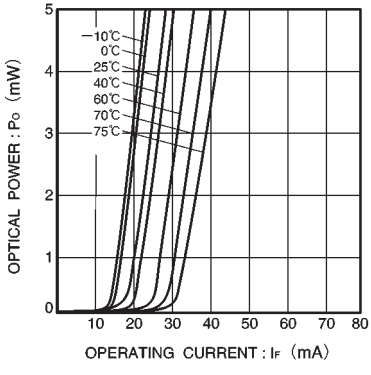


Fig. 1 Optical output vs. operating current

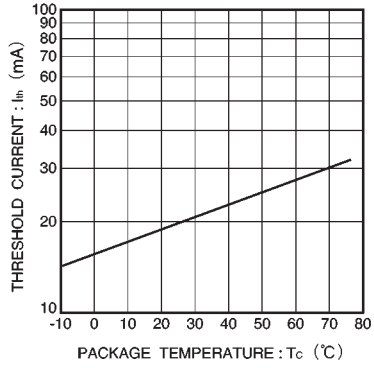


Fig. 2 Dependence of threshold current on temperature

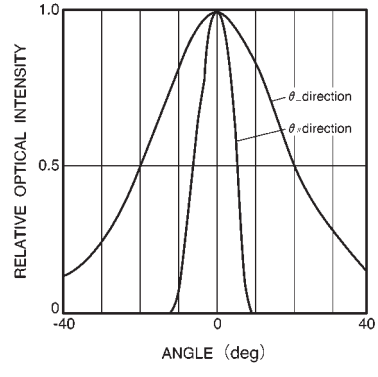


Fig. 3 Far field pattern

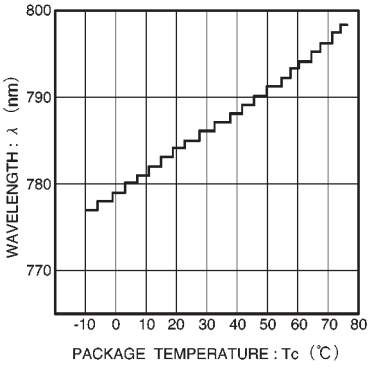


Fig. 4 Dependence of wavelength on temperature

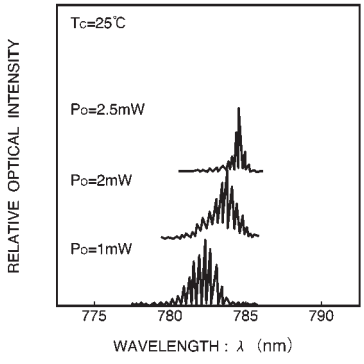


Fig. 5 Dependence of emission spectrum on optical output

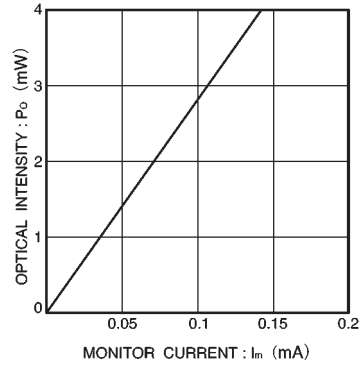


Fig. 6 Monitor current vs. optical output

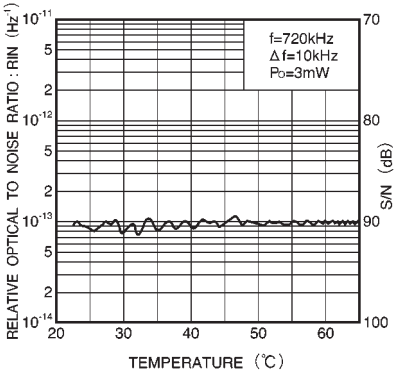


Fig. 7 Temperature dependence of noise

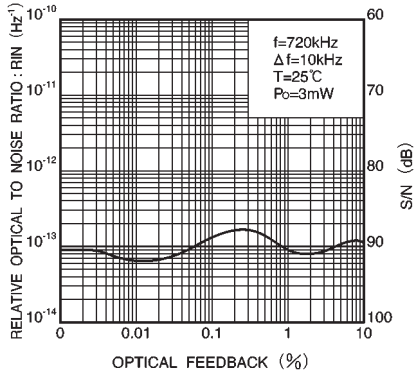


Fig. 8 Dependence of noise on optical feedback