

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.

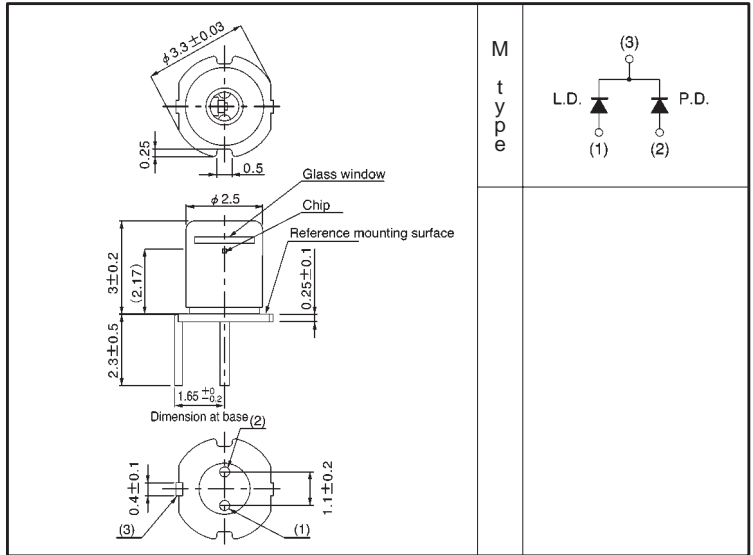
●Applications

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	T _{opr}	-10 ~ +75	°C
Storage temperature	T _{stg}	-40 ~ +85	°C

●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	θ _∥ *	8	11	15	deg	Po=2.5mW
Perpendicular divergence angle	θ _⊥ *	20	37	45	deg	
Parallel deviation angle	Δθ _∥	—	—	±3	deg	
Perpendicular deviation angle	Δθ _⊥	—	—	±3	deg	
Emission point accuracy	$\begin{matrix} \Delta X \\ \Delta Y \\ \Delta Z \end{matrix}$	—	—	±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

* θ_∥ and θ_⊥ are defined as the angle within which the intensity is 50% of the peak value.

●Electrical and optical characteristic curves

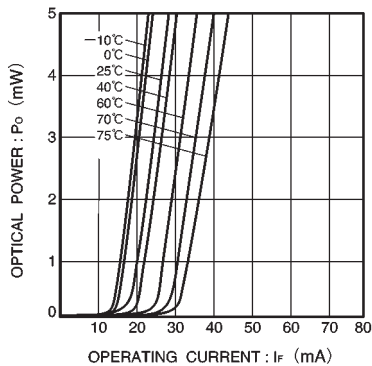


Fig. 1 Optical output vs. operating current

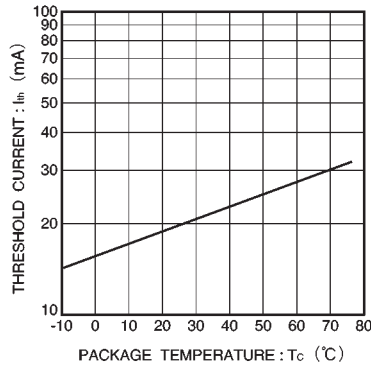


Fig. 2 Dependence of threshold current on temperature

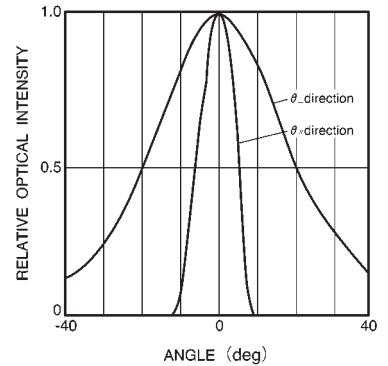


Fig. 3 Far field pattern

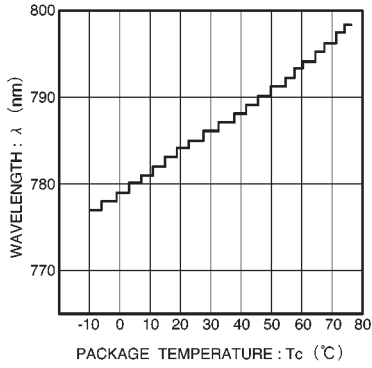


Fig. 4 Dependence of wavelength on temperature

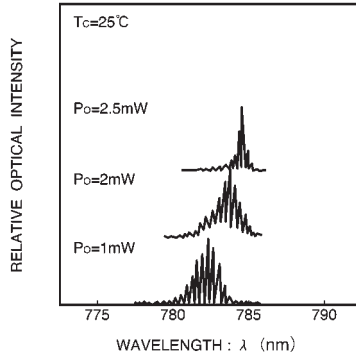


Fig. 5 Dependence of emission spectrum on optical output

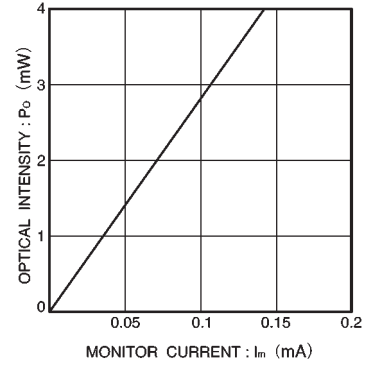


Fig. 6 Monitor current vs. optical output

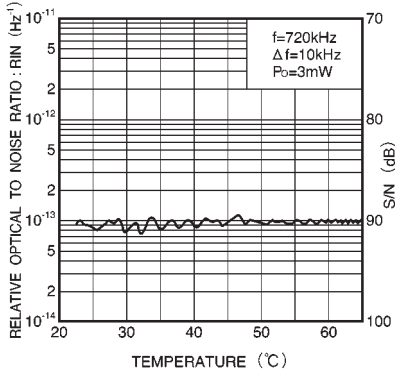


Fig. 7 Temperature dependence of noise

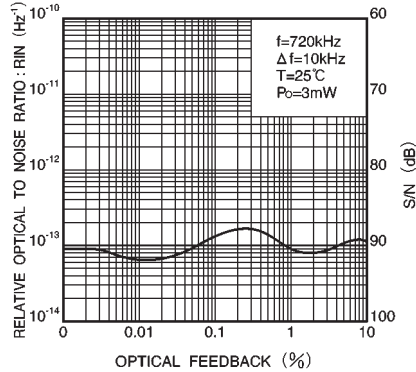


Fig. 8 Dependence of noise on optical feedback