

# 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.

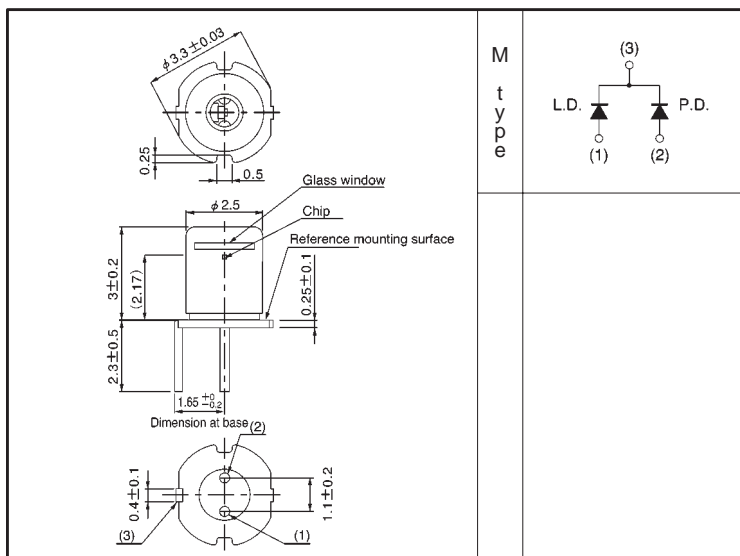
### ●Applications

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 <sub>O</sub>	4	mW
Reverse voltage	Laser	V <sub>R</sub>	2	V
	PIN photodiode	V <sub>R</sub> (PIN)	30	V
Operating temperature		T <sub>opr</sub>	-10~+75	°C
Storage temperature		T <sub>stg</sub>	-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	$\eta$	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	$\Delta \theta_{//}$	—	—	$\pm 3$	deg	
Perpendicular deviation angle	$\Delta \theta_{\perp}$	—	—	$\pm 3$	deg	
Emission point accuracy	$\Delta X$ $\Delta Y$ $\Delta Z$	—	—	$\pm 80$	$\mu m$	—
Peak emission wavelength	$\lambda$	770	785	810	nm	Po=2.5mW
Signal-to-noise ratio	S / N	60	—	—	dB	f=720kHz, $\Delta f=10kHz$

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

●Electrical and optical characteristic curves

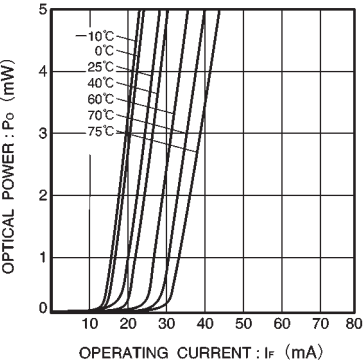


Fig. 1 Optical output vs. operating current

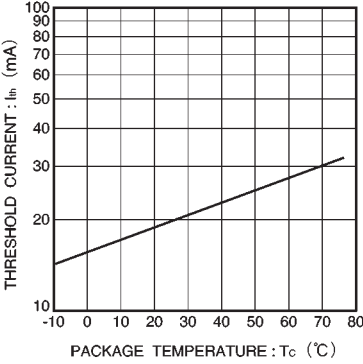


Fig. 2 Dependence of threshold current on temperature

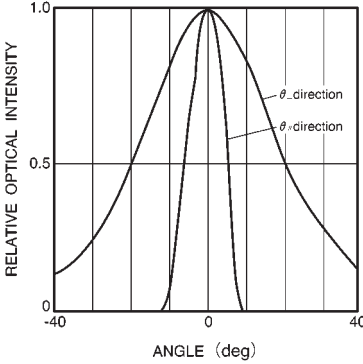


Fig. 3 Far field pattern

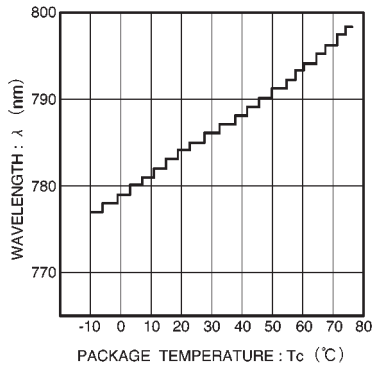


Fig. 4 Dependence of wavelength on temperature

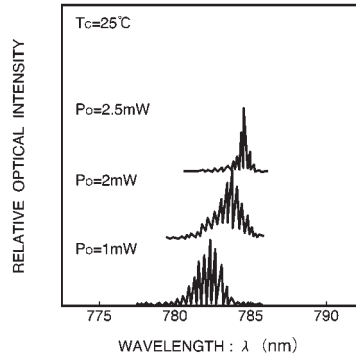


Fig. 5 Dependence of emission spectrum on optical output

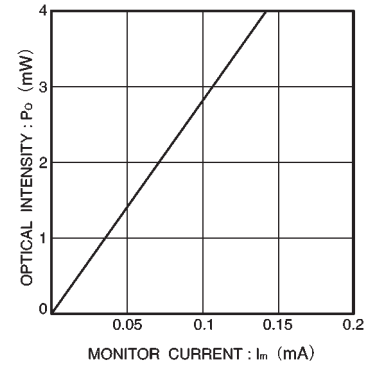


Fig. 6 Monitor current vs. optical output

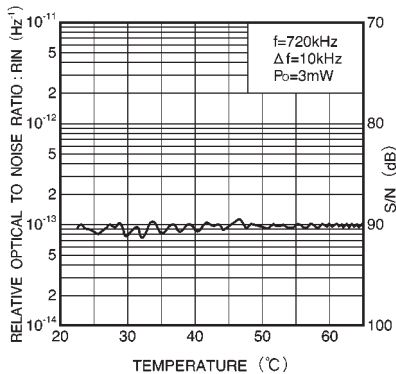


Fig. 7 Temperature dependence of noise

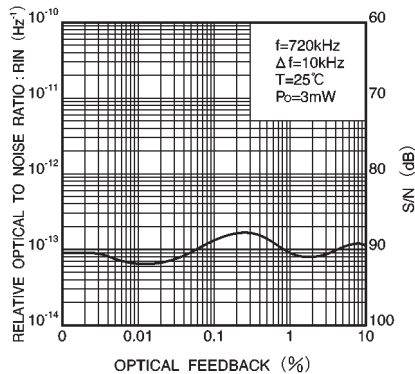


Fig. 8 Dependence of noise on optical feedback