

# CD players, CD-ROM laser diode

## RLD78MYA1

Though it is an open type package, by using a metal cap, pressing structure correspondence and protection of a laser element are enabled, and reliability is secured.

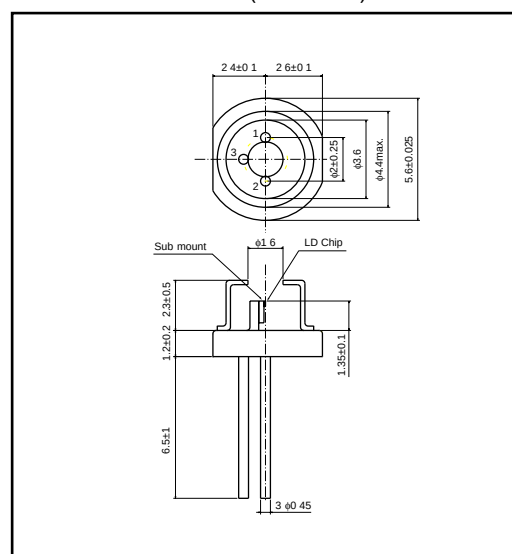
### ●Applications

Compact disc players  
CD-ROM

### ●Features

- 1)  $\phi 5.6$  metal shell type open package.
- 2) A laser element is protected by using a metal cap.
- 3) Interchangeability reservation with  $\phi 5.6$  metal package of an industry standard.

### ●External dimensions (Units : mm)



### ●Absolute maximum ratings (Tc=25°C)

| Parameter             |                | Symbol               | Limits     | Unit |
|-----------------------|----------------|----------------------|------------|------|
| Output                |                | P <sub>O</sub>       | 5          | 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 to +70 | °C   |
| Storage temperature   |                | T <sub>stg</sub>     | -40 to +85 | °C   |

## Laser diodes

●Electrical and optical characteristics (T<sub>c</sub>=25°C)

| Parameter                      | Symbol           | Min. | Typ. | Max. | Unit  | Conditions                                       |
|--------------------------------|------------------|------|------|------|-------|--------------------------------------------------|
| Threshold current              | I <sub>th</sub>  | —    | 35   | 60   | mA    | —                                                |
| Operating current              | I <sub>op</sub>  | —    | 45   | 70   | mA    | P <sub>o</sub> =3mW                              |
| Operating voltage              | V <sub>op</sub>  | —    | 1.9  | 2.3  | V     | P <sub>o</sub> =3mW                              |
| Differential efficiency        | η                | 0.1  | 0.25 | 0.6  | mW/mA | $\frac{2\text{mW}}{I(3\text{mW})-I(1\text{mW})}$ |
| Monitor current                | I <sub>m</sub>   | 0.05 | 0.15 | 0.3  | mA    | P <sub>o</sub> =3mW, V <sub>R(PIN)</sub> =15V    |
| Parallel divergence angle      | θ <sub>∥</sub> * | 8    | 11   | 15   | deg   | P <sub>o</sub> =3mW                              |
| Perpendicular divergence angle | θ <sub>⊥</sub> * | 20   | 37   | 45   | deg   |                                                  |
| Parallel deviation angle       | Δφ <sub>∥</sub>  | —    | —    | ±2   | deg   |                                                  |
| Perpendicular deviation angle  | Δφ <sub>⊥</sub>  | —    | —    | ±3   | deg   |                                                  |
| Emission point accuracy        | ΔX               | —    | —    | ±100 | μm    | —                                                |
|                                | ΔY               |      |      |      |       |                                                  |
|                                | ΔZ               |      |      |      |       |                                                  |
| Peak emission wavelength       | λ                | 770  | 785  | 810  | nm    | P <sub>o</sub> =3mW                              |
| Signal-to-noise ratio          | S / N            | 60   | —    | —    | dB    | f=720kHz, Δf=10kHz                               |

\*θ<sub>∥</sub> and θ<sub>⊥</sub> are defined as the angle within which the intensity is 50% of the peak value.

## ●Electrical and optical characteristic curves

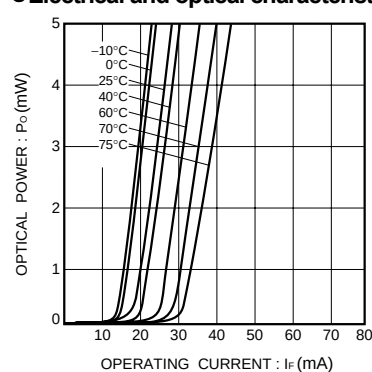


Fig.1 Optical output vs. operating current

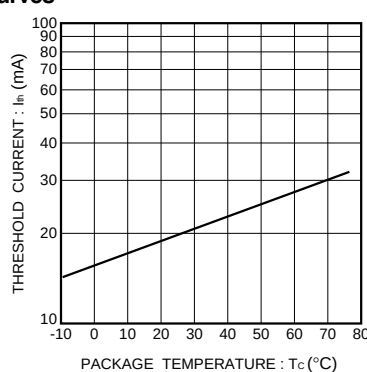


Fig.2 Dependence of threshold current on temperature

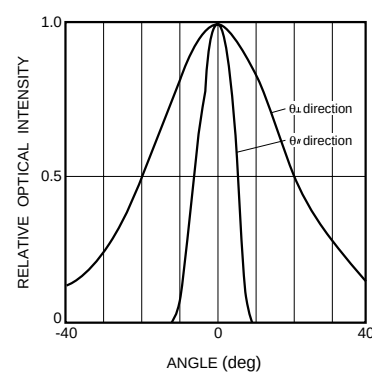


Fig.3 Far field pattern

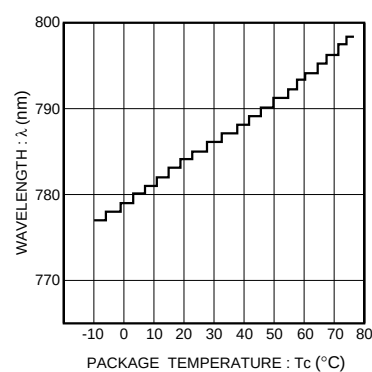


Fig.4 Dependence of wavelength on temperature

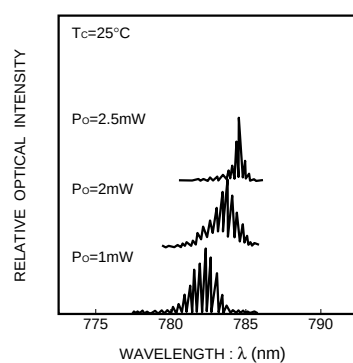


Fig.5 Dependence of emission spectrum on optical output

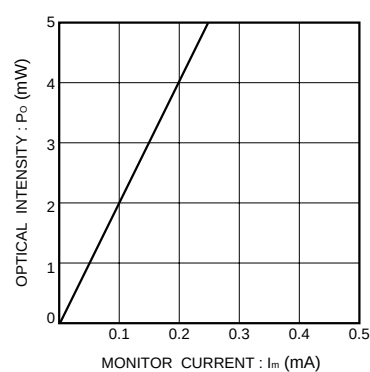


Fig.6 Monitor current vs. optical output

# Laser diodes

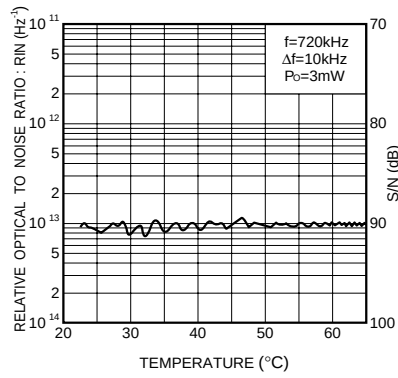


Fig.7 Temperature dependence of noise

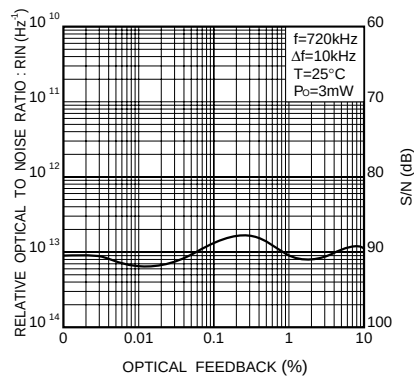


Fig.8 Dependence of noise on optical feedback