

Module No.: WLD-R5MG

1. General Description:

WLD-R5MG is a red laser diode typically powered at 5mW. This device contains a PIN photo diode to meet the designs of the automatic-feedback-power-control circuit and is encapsulated inside a small TO-18 package. Low power consumption enables customers to incorporate our laser diodes into their products easily.

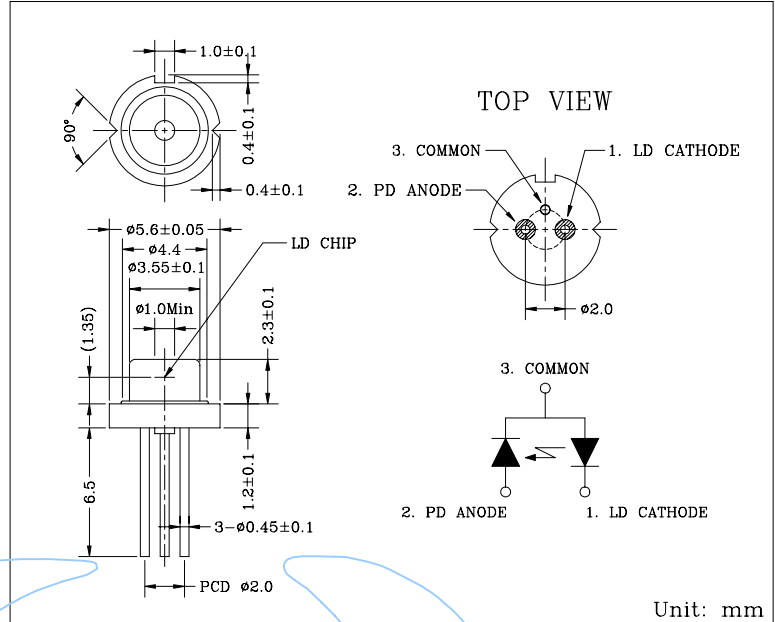
2. Features

- Visible Light (650nm)
- Optical Power (5mW)
- TO-18 Package
- Low Operating Current (65mA)
- Low Operating Voltage (2.4V)

3. Applications

- ▣ Laser Pointer
- ▣ Laser Module
- ▣ Bar Code Reader

Dimensions



4. Absolute Maximum Ratings

(Ta=25°C)

| Parameter | Symbol | Ratings | Unit |
|-----------------------------|--------|-----------|------|
| Optical Output Power | Po | 5 | mW |
| Laser Diode Reverse Voltage | VR(LD) | 2 | V |
| Photo Diode Reverse Voltage | VR(PD) | 10 | V |
| Operating Temperature | Topr | -10 ~ +40 | °C |
| Storage Temperature | Tstg | -40 ~ +80 | °C |
| Soldering Temperature *1 | Tsol | 260 | °C |

*1 At the position of 2mm from the bottom of the package within 3 seconds.

5. Electro-optical Characteristics

(Ta=25°C)

| Parameter | Symbol | Testing Conditions | Min. | Typ. | Max. | Unit |
|--------------------------|---------------|-------------------------------------|------|------|------|---------|
| Threshold Current | ITH | | | 40 | | mA |
| Operating Current | Iop | Po=5mW | | 65 | 80 | mA |
| Operating Voltage | Vop | Po=5mW | | 2.4 | 2.8 | V |
| Peak Emission Wavelength | λ_p | Po=5mW | 640 | 650 | 660 | nm |
| Beam Divergence | Perpendicular | θ_{\perp} | | 31 | | deg. |
| | Parallel | θ_{\parallel} | | 10 | | deg. |
| Slope Efficiency | η | $\frac{2mW}{I_F(@5mW) - I_F(@3mW)}$ | 0.2 | 0.7 | | mW/mA |
| Monitor Current | Im | Po=5mW | | 50 | | μA |

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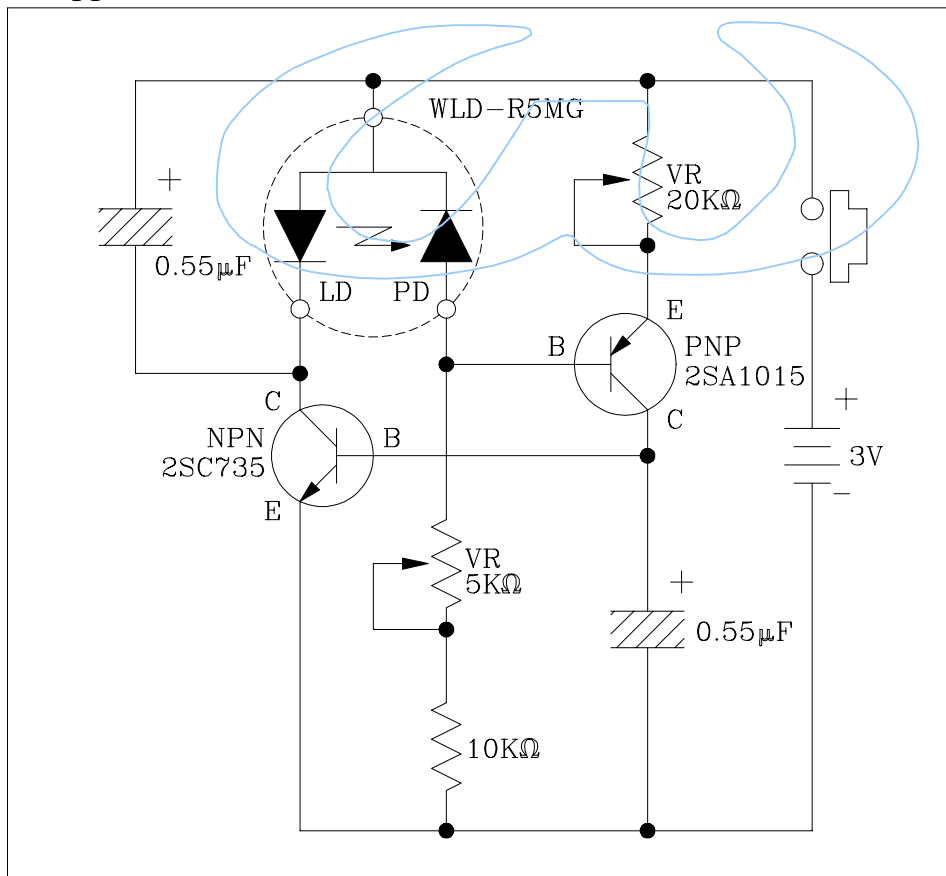
6. Structure

- ♦ Gain-guided Structure
- ♦ AlGaInP Quantum Well Structure
- ♦ Integrated PIN Photo Diode for Optical Power Monitor
- ♦ Molecular Beam Epitaxial (MBE) Technology

7. Handling and Safety Precautions

- 📖 Anti-static protection, such as ionized air blowers or grounded wrist straps with a $1\text{M}\Omega$ series resistor, should be used at all times when handling laser diodes. In addition, soldering irons should be well grounded.
- 📖 Overheating caused by soldering of the leads of a laser diode must be prevented. Recommend soldering iron temperature and maximum exposure times are below 260°C and within 3 seconds.

8. Application Circuit – Laser Pointer Driver



9. Caution

The light emitted by laser diodes can cause serious hurt to human eye if viewed directly into the laser beam or through any lenses or fibers when the system is activated. For optical axis alignment or other operations, we strongly recommend you to use an infrared sensitive camera (ITV) or to wear protection goggles.

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10. Laser Lens

