SONY

# SLD1133VS

## 650nm Index-Guided Red Laser Diode

### Description

The SLD1133VS is an index-guided red laser diode for BCS. The wavelength is 20nm shorter than that of the current diodes.

### Features

- Small astigmatism (7µm typ.)
- Low operating current (60mA typ.)
- Small package (ϕ5.6mm)
- Single longitudinal mode

### Applications

Bar code scanner

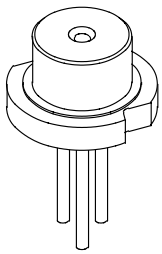
### Structure

- AlGaInP MQW laser diode
- PIN photodiode to monitor laser beam output

### Recommend Optical Power Output

5mW

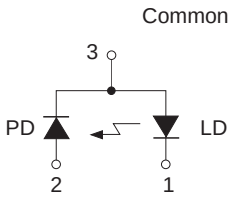
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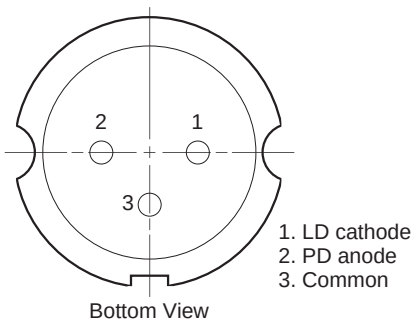
### Absolute Maximum Ratings (Tc = 25°C)

| | | | | |
|---|---|---|---|---|
| • Optical power output | Po | | 7 | mW |
| • Reverse voltage | $V_R$ | LD | 2 | V |
| | | PD | 15 | V |
| • Operating temperature | Topr | | –10 to +70 | °C |
| • Storage temperature | Tstg | | –40 to +85 | °C |

### Connection Diagram




### Pin Configuration




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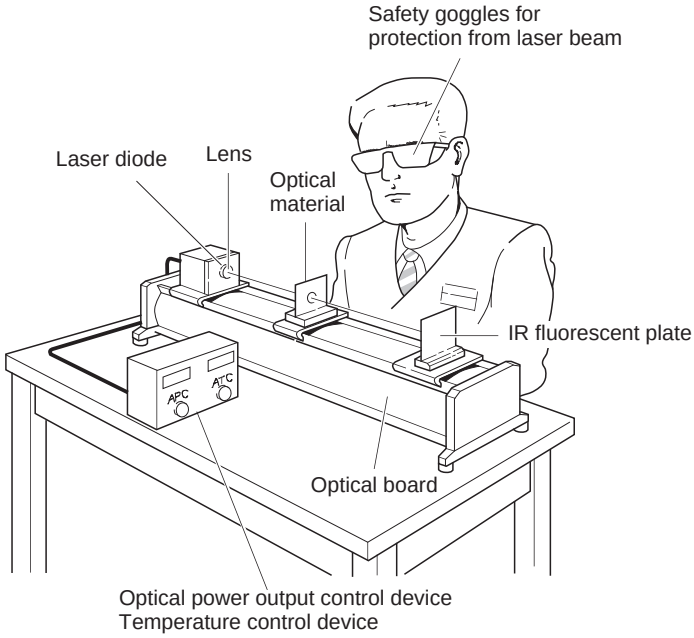
**Electrical and Optical Characteristics** (Tc = 25°C) Tc: Case temperature

| Item | | Symbol | Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|---|
| Threshold current | | Ith | | | 50 | 65 | mA |
| Operating current | | Iop | Po = 5mW | | 60 | 70 | mA |
| Operating voltage | | Vop | Po = 5mW | | 2.3 | 2.8 | V |
| Wavelength | | λp | Po = 5mW | | 650 | 660 | nm |
| Radiation angle | Perpendicular | θ⊥ | Po = 5mW | 24 | 30 | 40 | degree |
| | Parallel | θ// | | 6 | 8 | 12 | degree |
| Positional accuracy | Position | ΔX, ΔY, ΔZ | Po = 5mW | | | ±80 | µm |
| | Angle | Δϕ// | | | | ±3 | degree |
| | | Δϕ⊥ | | | | ±3 | degree |
| Differential efficiency | | ηD | Po = 5mW | 0.15 | 0.4 | 0.7 | mW/mA |
| Astigmatism | | As | Po = 5mW | 0 | 7 | 15 | µm |
| Monitor current | | Imon | Po = 5mW, $V_R$ = 5V | 0.05 | 0.1 | 0.3 | mA |

**Handling Precautions**

(1) Eye protection against laser beams

The optical output of laser diodes ranges from several mW to 4W. However the optical power density of the laser beam at the diode chip reaches 1MW/cm$^2$. Unlike gas lasers, since laser diode beams are divergent, uncollimated laser diode beams are fairly safe at a laser diode. For observing laser beams, ALWAYS use safety goggles that block infrared rays. Usage of IR scopes, IR cameras and fluorescent plates is also recommended for monitoring laser beams safely.

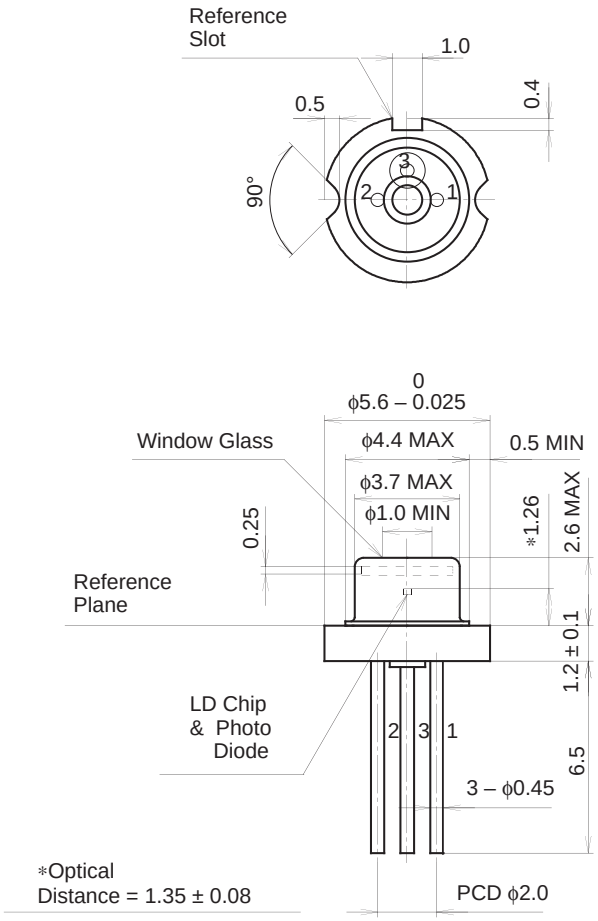



(2) Prevention of surge current and electrostatic discharge

Laser diode is most sensitive to electrostatic discharge among semiconductors. When a large current is passed through the laser diode even for an extremely short time (in the order of nanosecond), the strong light emitted from the laser diode promotes deterioration and then laser diodes are destroyed. Therefore, note that the surge current should not flow the laser diode driving circuit from switches and others. Also, if the laser diode is handled carelessly, it may be destructed instantly because electrostatic discharge is easily applied by a human body. Be great careful about excess current and electrostatic discharge.

**Package Outline** Unit: mm

M-274




| | |
|---|---|
| SONY CODE | M-274 |
| EIAJ CODE | ———— |
| JEDEC CODE | ———— |

| | |
|---|---|
| PACKAGE WEIGHT | 0.3g |