Index-Guided High Power AlGaInP Laser Diode

Description
The SLD1239JL-54 is an index-guided AlGaInP 650nm laser diode.

Feature
- High power output
- Low power consumption
- Small astigmatism
- Small package (Φ 5.6mm)
- Cavity length 1450 μm

Applications
- Optical pickup for DVD recording and playback

Structure
- AlGaInP quantum well structured laser diode

Absolute Maximum Ratings
- Radiant power output $P_{\text{omax}}$ 100 mW(CW)
  180 mW(Pulse)
- Pulse width 30ns or less
- Duty 40% or less
- Reverse voltage $V_R$ LD 2 V
- Operating temperature $T_{\text{opr}}$ -10 to +70 °C (CW)
  -10 to +75 °C (pulse)
- Storage temperature $T_{\text{stg}}$ -40 to +85 °C

Connection Diagram

Pin Configuration

1. LD anode
2. N.C.
3. Common
### Electrical and Optical Characteristics (Tc=25°C)

<table>
<thead>
<tr>
<th>Item</th>
<th>Symbol</th>
<th>Conditions</th>
<th>Min.</th>
<th>Typ.</th>
<th>Max.</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Threshold current</td>
<td>( I_{th} )</td>
<td>CW</td>
<td>–</td>
<td>50</td>
<td>60</td>
<td>mA</td>
</tr>
<tr>
<td>Operating current</td>
<td>( I_{op} )</td>
<td>CW, ( P_o = 100\text{mW} )</td>
<td>–</td>
<td>150</td>
<td>170</td>
<td>mA</td>
</tr>
<tr>
<td>Operating voltage</td>
<td>( V_{op} )</td>
<td>CW, ( P_o = 100\text{mW} )</td>
<td>–</td>
<td>2.5</td>
<td>3.0</td>
<td>V</td>
</tr>
<tr>
<td>Wavelength</td>
<td>( \lambda )</td>
<td>CW, ( P_o = 100\text{mW} )</td>
<td>653</td>
<td>658</td>
<td>663</td>
<td>nm</td>
</tr>
<tr>
<td>Differential efficiency</td>
<td>( \eta^0 )</td>
<td>CW, ( P_o = 100\text{mW} )</td>
<td>0.75</td>
<td>1.0</td>
<td>1.25</td>
<td>mW/mA</td>
</tr>
<tr>
<td>Radiation angle</td>
<td>Parallel</td>
<td>( \theta</td>
<td></td>
<td>)</td>
<td>CW, ( P_o = 100\text{mW} )</td>
<td>7.5</td>
</tr>
<tr>
<td>Radiation angle</td>
<td>Perpendicular</td>
<td>( \theta \perp )</td>
<td>CW, ( P_o = 100\text{mW} )</td>
<td>15.0</td>
<td>17.0</td>
<td>19.5</td>
</tr>
<tr>
<td>Sum of radiation angles</td>
<td>( 1.2 \theta</td>
<td></td>
<td>+ \theta \perp )</td>
<td>CW, ( P_o = 100\text{mW} )</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Astigmatism</td>
<td>( A_s )</td>
<td>CW, ( P_o = 100\text{mW} )</td>
<td>–7</td>
<td>–</td>
<td>0</td>
<td>μm</td>
</tr>
<tr>
<td>Positional accuracy</td>
<td>Angle</td>
<td>( \Delta \phi</td>
<td></td>
<td>)</td>
<td>CW, ( P_o = 100\text{mW} )</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>( \Delta \phi \perp )</td>
<td>CW, ( P_o = 100\text{mW} )</td>
<td>–</td>
<td>–</td>
<td>±2.5</td>
<td>degree</td>
</tr>
<tr>
<td></td>
<td>Position</td>
<td>( \Delta X, \Delta Y, \Delta Z )</td>
<td>–</td>
<td>–</td>
<td>±80</td>
<td>μm</td>
</tr>
</tbody>
</table>

### Radiation angle (CW, \( P_o = 100\text{mW} \))

![Radiation angle diagram]

### Marking

![Marking diagram]

**Life target**

- \( P_o = 180\text{mW} \) (pulse width 30ns Duty 40%)
- More than MTTF 2000hr at \( T_c = 75\text{°C} \)
- 0.5% or less Cumulative failure rate after 100 hour drive
Notes on Operation

Care should be taken for the following points when using this product.

(1) This product corresponds to a Class 3B product under IEC 60825-1.

(2) Eye protection against laser beams
   Take care not to allow laser beams to enter your eyes under any circumstances.
   For observing laser beams ALWAYS use safety goggles that block laser beams. Usage of IR scopes, IR
   cameras and fluorescent plates is also recommended for monitoring laser beams safely.

(3) Gallium Arsenide
   This product uses gallium arsenide (GaAs). This is not a problem for normal use, but GaAs vapors may be
   potentially hazardous to the human body. Therefore, never crush, heat to the maximum storage
   temperature or higher, or place the product in your mouth.
   In addition, the following disposal methods are recommended when disposing of this product.
   1. Engaging the services of a contractor certified in the collection, transport and intermediate treatment
      of items containing arsenic.
   2. Managing the product through to final disposal as specially managed industrial waste which is
      handled separately from general industrial waste and household waste.

(4) Prevention of surge current and electrostatic discharge
   Laser diodes are most sensitive to electrostatic discharge among semiconductors. When a large current is
   passed through the laser diode for even an extremely short time, the strong light emitted from the laser
   diode promotes deterioration and then destruction of the laser diode. Therefore, note that surge current
   should not flow to the laser diode driving circuit from switches and others. Also, if the laser diode is
   handled carelessly, it may be destroyed instantly because electrostatic discharge is easily applied by a
   human body. Therefore, be extremely careful about overcurrent and electrostatic discharge.
   Also, use the power supply that was designed not to exceed the optical power output specified at the
   absolute maximum ratings.

(5) Use for special applications
   This product is not designed or manufactured for use in equipment used under circumstances where
   failure may pose a risk to life and limb, or result in significant material damage, etc.
   Consult your Sony sales representative when investigating use for medical, vehicle, nuclear power control
   or other special applications.
### 品名
**PRODUCT NAME**

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>トレー</td>
<td>収納数</td>
<td>100pcs.</td>
</tr>
<tr>
<td>TRAY</td>
<td>NO. OF PCS.</td>
<td></td>
</tr>
<tr>
<td>内箱</td>
<td>収納数</td>
<td>5trays</td>
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<tr>
<td>INTERNAL CARTON</td>
<td>NO. OF PCS.</td>
<td></td>
</tr>
<tr>
<td>外箱</td>
<td>収納数</td>
<td>10 internal cartons</td>
</tr>
<tr>
<td>EXTERNAL CARTON</td>
<td>NO. OF PCS.</td>
<td></td>
</tr>
</tbody>
</table>

#### Diagram
- **Tray**
  - LD 100pcs.
- **Thermal seal**
- **Vacuum packing**
- **Nylon bag**
- **Label for internal carton**
- **5 trays in the internal carton**
- **Shipment package**
  - Label for external carton
  - Sealing tape