LD-13XX-YY-150_250_300
Fiber Coupled High Power Fabry-Pérot Laser Diode

Features:
- 150 / 250 / 300mW output power ex-single mode fiber
- Available wavelength range 1280-1330nm
- Proprietary mirror coating technology enabling high reliability
- PM980 or HI1060 fiber
- Individual burn-in and thermal cycling screening
- Optional monitor photodiode
- RoHS compliance

AVAILABLE POWER OPTIONS
Test conditions: CW operation, chip temperature 25°C, the case is mounted on room temperature heatsink

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Output power (mW)</th>
<th>Operating current (mA)</th>
<th>Forward voltage (V)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD-13XX-YY-150</td>
<td>150</td>
<td>650</td>
<td>900</td>
</tr>
<tr>
<td>LD-13XX-YY-250</td>
<td>250</td>
<td>1000</td>
<td>1200</td>
</tr>
<tr>
<td>LD-13XX-YY-300</td>
<td>300</td>
<td>1100</td>
<td>1400</td>
</tr>
</tbody>
</table>

SPECIFICATIONS
Test conditions: CW operation, chip temperature 25°C, the case is mounted on room temperature heatsink

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Symb.</th>
<th>Min.</th>
<th>Typ.</th>
<th>Max.</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kink-free* output power</td>
<td>1.1×Pout</td>
<td>1.3×Pout</td>
<td></td>
<td></td>
<td>mW</td>
</tr>
<tr>
<td>Range of available wavelength</td>
<td></td>
<td>1280</td>
<td></td>
<td>1330</td>
<td>nm</td>
</tr>
<tr>
<td>Mean wavelength tolerance</td>
<td></td>
<td></td>
<td>5</td>
<td></td>
<td>nm</td>
</tr>
<tr>
<td>Spectral width @ -3dB level at Pout</td>
<td>Δλ</td>
<td></td>
<td>6</td>
<td>12</td>
<td>nm</td>
</tr>
<tr>
<td>Threshold current</td>
<td>Ith</td>
<td>150</td>
<td>200</td>
<td></td>
<td>mA</td>
</tr>
<tr>
<td>Wavelength temperature tunability</td>
<td>Δλ/ΔT</td>
<td>0.55</td>
<td>0.68</td>
<td></td>
<td>nm/°C</td>
</tr>
<tr>
<td>Polarization Extinction Ratio</td>
<td>PER</td>
<td>15</td>
<td></td>
<td></td>
<td>dB</td>
</tr>
</tbody>
</table>

TYPICAL PERFORMANCE for reference only*
Test conditions: CW operation, chip temperature 25°C, the case is mounted on room temperature heatsink

Light-Current-Voltage Characteristics

Spectral Characteristics

* Performance is given for the 1310nm device. Similar performance is expected for the other wavelengths in the 1280-1330nm range.
### ABSOLUTE MAXIMUM RATINGS

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Min.</th>
<th>Max.</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laser Diode reverse voltage</td>
<td>-</td>
<td>2</td>
<td>V</td>
</tr>
<tr>
<td>Laser Diode CW forward current</td>
<td>-</td>
<td>Iop+300</td>
<td>mA</td>
</tr>
<tr>
<td>Thermo Electric Cooler current</td>
<td>-</td>
<td>3</td>
<td>A</td>
</tr>
<tr>
<td>Thermo Electric Cooler voltage</td>
<td>-</td>
<td>4</td>
<td>V</td>
</tr>
<tr>
<td>Fiber bend radius</td>
<td>3</td>
<td>-</td>
<td>cm</td>
</tr>
<tr>
<td>Chip operating temperature range</td>
<td>5</td>
<td>40</td>
<td>°C</td>
</tr>
<tr>
<td>Case operating temperature range</td>
<td>0</td>
<td>70</td>
<td>°C</td>
</tr>
<tr>
<td>Storage temperature range</td>
<td>-40</td>
<td>85</td>
<td>°C</td>
</tr>
</tbody>
</table>

### THERMISTOR SPECIFICATION

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thermistor type</td>
<td>NTC</td>
<td>-</td>
</tr>
<tr>
<td>Resistance @25°C</td>
<td>10 ± 0.1</td>
<td>kOhm</td>
</tr>
<tr>
<td>Beta 0-50°C</td>
<td>3375±1%</td>
<td>K</td>
</tr>
</tbody>
</table>

### FIBER SPECIFICATION

<table>
<thead>
<tr>
<th>Parameters</th>
<th>HI1060</th>
<th>PM980</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numerical aperture (Typical)</td>
<td>0.14</td>
<td>0.12</td>
<td>nm</td>
</tr>
<tr>
<td>Cutoff wavelength</td>
<td>920±50</td>
<td>900±70</td>
<td>nm</td>
</tr>
<tr>
<td>Mode-field diameter (@1060nm)</td>
<td>6.2±0.3</td>
<td>6.6±0.3</td>
<td>μm</td>
</tr>
<tr>
<td>Cladding diameter</td>
<td>125±1</td>
<td>125±1</td>
<td>μm</td>
</tr>
<tr>
<td>Coating diameter</td>
<td>245±15</td>
<td>245±15</td>
<td>μm</td>
</tr>
<tr>
<td>Length</td>
<td>1.0 ± 0.1</td>
<td>1.0 ± 0.1</td>
<td>m</td>
</tr>
<tr>
<td>Connector</td>
<td>FC/APC (narrow key)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The output light is polarized along the slow axis of PM fiber.

### DIMENSIONS (in mm)

**Connector alignment to the PANDA fiber**

**Pin identification:**

1. TEC "+"
2. Thermistor
3. Monitor PD anode (optional)
4. Monitor PD cathode (optional)
5. Thermistor
6. 
7. 
8. 
9. 
10. Laser Diode anode "+"
11. Laser Diode cathode "+"-"-
12. 
13. Case
14. TEC "+"
SAFETY AND OPERATING INSTRUCTIONS

The light emitted from this device is invisible and can be harmful to the human eye. Avoid looking directly into the fiber connector when the device is in operation. Proper laser safety eyewear must be worn during operation with open connector.

Absolute Maximum Ratings may be applied to the Laser Diode for short period of time only. Exposure to maximum ratings for extended period of time or exposure to more than one maximum rating may cause damage or affect the reliability of the device. Operating the Laser Diode outside of its maximum ratings may cause device failure or a safety hazard. Power supplies used with the component must be employed such that the maximum forward current cannot be exceeded.

A proper heatsink for the Laser Diode on thermal radiator is required. The Laser Diode must be mounted on radiator with 4 screws (bolt down in X-style fashion with initial torque set to 0.075Nm and final X-style bolt down at 0.15Nm) or with clamps. The deviation from flatness of radiator surface must be less than 0.05mm. It's recommended using of Indium foil or thermal conductive and soft material between bottom of the case and heatsink for thermal interface. It's undesirable to use thermal grease for this.

Avoid back reflection to the Laser Diode. It may give impact on the device performance in aspects of spectrum and power stability. It also may cause fatal laser diode facet damage. Using of optical isolators is highly recommended to block back reflection.

Do not pull the fiber. Do not bend a fiber with a radius smaller than 3 cm. Operate the laser module with clean fiber connector only. Periodically check and clean the connector if necessary. To clean the connector use a clean-room compatible tissue only, put some Isopropyl alcohol onto it and carefully clean the facet of the connector, or use special fiber cleaning tools. Perform cleaning only with the laser current switched off.

Electrostatic discharge can lead to device failure. Take necessary precautions to prevent ESD.

Example of Part Number Identification

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD-1290-HI-150</td>
<td>150mW output power at mean wavelength 1290nm, HI-1060 fiber</td>
</tr>
<tr>
<td>LD-1310-PM-250</td>
<td>250mW output power at mean wavelength 1310nm, PM-980 fiber</td>
</tr>
<tr>
<td>LD-1310-PM-300</td>
<td>300mW output power at mean wavelength 1310nm, PM-980 fiber</td>
</tr>
</tbody>
</table>

NOTE: Innolume product specifications are subject to change without notice