Data Sheet

HL6321G/22G
638nm / 15mW  AlGaInP Laser Diode

Features
- Optical output power: 15mW(CW)
- Visible light output: 638nm Typ.
- Low operating current: 100mA Max.
- Low operating voltage: 2.7V Max.
- TM mode oscillation
- Single transverse mode

Application
- Laser lever
- Laser module
- Optical equipment for measurement

Outline

Internal Circuit

(unit: mm)
### Absolute Maximum Ratings (Tc=25°C)

<table>
<thead>
<tr>
<th>Item</th>
<th>Symbol</th>
<th>Ratings</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optical output power</td>
<td>Po</td>
<td>15</td>
<td>mW</td>
</tr>
<tr>
<td>LD Reverse Voltage</td>
<td>VR(LD)</td>
<td>2</td>
<td>V</td>
</tr>
<tr>
<td>PD Reverse Voltage</td>
<td>VR(PD)</td>
<td>30</td>
<td>V</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>Topr</td>
<td>-10 ~ +50</td>
<td>°C</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>Tstg</td>
<td>-40 ~ +85</td>
<td>°C</td>
</tr>
</tbody>
</table>

### Optical and Electrical Characteristics (Tc=25°C)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Min</th>
<th>Typ</th>
<th>Max</th>
<th>Unit</th>
<th>Test Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Threshold current</td>
<td>Ith</td>
<td>20</td>
<td>55</td>
<td>70</td>
<td>mA</td>
<td>-</td>
</tr>
<tr>
<td>Operating current</td>
<td>Iop</td>
<td>-</td>
<td>85</td>
<td>100</td>
<td>mA</td>
<td>Po=15mW</td>
</tr>
<tr>
<td>Operating voltage</td>
<td>Vop</td>
<td>-</td>
<td>-</td>
<td>2.7</td>
<td>V</td>
<td>Po=15mW</td>
</tr>
<tr>
<td>Slope efficiency</td>
<td>ηs</td>
<td>0.3</td>
<td>-</td>
<td>0.7</td>
<td>mW/mA</td>
<td>9(mW)/(I (12mW) -I (3mW) )</td>
</tr>
<tr>
<td>Monitor current</td>
<td>Is</td>
<td>0.1</td>
<td>0.2</td>
<td>0.4</td>
<td>mA</td>
<td>Po=15mW, VR(PD)=5V</td>
</tr>
<tr>
<td>Lasing Wavelength</td>
<td>λp</td>
<td>630</td>
<td>638</td>
<td>640</td>
<td>nm</td>
<td>Po=15mW</td>
</tr>
<tr>
<td>Beam divergence Parallel to the junction</td>
<td>θ//</td>
<td>6</td>
<td>8</td>
<td>11</td>
<td>°</td>
<td>Po=15mW FWHM</td>
</tr>
<tr>
<td>Beam divergence Perpendicular to the junction</td>
<td>θ⊥</td>
<td>25</td>
<td>30</td>
<td>36</td>
<td>°</td>
<td>Po=15mW FWHM</td>
</tr>
</tbody>
</table>
Typical Characteristic Curves

- **Optical Output Power vs. Forward Current**
  - $T_C = -10^\circ C$
  - $T_C = 10^\circ C$
  - $25^\circ C$
  - $50^\circ C$

- **Threshold Current vs. Case Temperature**

- **Slope Efficiency vs. Case Temperature**

- **Monitor Current vs. Case Temperature**
  - $P_O = 15 \text{ mW}$
  - $V_{R(PD)} = 5 \text{ V}$

- **Lasing Wavelength vs. Case Temperature**
  - $P_O = 15 \text{ mW}$

- **Far Field Pattern**
  - $P_O = 15 \text{ mW}$
  - $T_C = 25^\circ C$

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