Data Sheet

HL63391DG/92DG
639nm / 200mW / Built-in monitor PD
AlGaInP Laser Diode

Outline

Internal Circuit

Features
- Shorter wavelength: 639nm Typ.
- High optical output power: 200mW
- Built in monitor PD
- Operating temperature: +60°C
- Small package: Ø5.6mm
- Single transverse mode
- TE mode oscillation

Application
- Laser module
- Leveller
- Measurement
- Medical
- Light source of optical equipment

(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 (1) (Tc=25 °C) Note2</td>
<td>Po(1)</td>
<td>200</td>
<td>mW</td>
</tr>
<tr>
<td>Optical output power (2) (Tc=60 °C) Note2</td>
<td>Po(2)</td>
<td>120</td>
<td>mW</td>
</tr>
<tr>
<td>LD Reverse Voltage</td>
<td>V_{R(LD)}</td>
<td>2</td>
<td>V</td>
</tr>
<tr>
<td>PD Reverse Voltage</td>
<td>V_{R(PD)}</td>
<td>30</td>
<td>V</td>
</tr>
<tr>
<td>Operating Temperature Note1,2</td>
<td>T_{opr}</td>
<td>-10 ~ +60</td>
<td>°C</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>T_{stg}</td>
<td>-40 ~ +85</td>
<td>°C</td>
</tr>
</tbody>
</table>

**Note1** Operating temperature is defined by Case temperature “Tc”. High increase in temperature of LD chip itself is expected during operation due to high current density. Thus, without proper heat dissipation, it is observed that no specific output power is achieved or it results to LD degradation. It is advised that sufficient measure of heat dissipation should be taken so that LD’s maximum operating temperature is not exceeded during actual operation.

**Note2** The relation of optical output power vs operating temperature is based on the following figure.

![Optical output power vs operating temperature](image)

### 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>I_{th}</td>
<td>-</td>
<td>65</td>
<td>80</td>
<td>mA</td>
<td></td>
</tr>
<tr>
<td>Operating current</td>
<td>I_{op}</td>
<td>-</td>
<td>255</td>
<td>290</td>
<td>mA</td>
<td>Po=200mW</td>
</tr>
<tr>
<td>Operating voltage</td>
<td>V_{op}</td>
<td>-</td>
<td>2.8</td>
<td>3.3</td>
<td>V</td>
<td>Po=200mW</td>
</tr>
<tr>
<td>Beam divergence Parallel to the junction</td>
<td>\theta//</td>
<td>5</td>
<td>8.5</td>
<td>13</td>
<td>°</td>
<td>Po=200mW, FWHM</td>
</tr>
<tr>
<td>Beam divergence Perpendicular to the junction</td>
<td>\theta⊥</td>
<td>10</td>
<td>14</td>
<td>18</td>
<td>°</td>
<td>Po=200mW, FWHM</td>
</tr>
<tr>
<td>Lasing Wavelength</td>
<td>\lambda_p</td>
<td>633</td>
<td>639</td>
<td>643</td>
<td>nm</td>
<td>Po=200mW</td>
</tr>
<tr>
<td>Monitor Current</td>
<td>I_s</td>
<td>0.4</td>
<td>0.8</td>
<td>1.3</td>
<td>mA</td>
<td>Po=200mW, V_{R(PD)}=5V</td>
</tr>
</tbody>
</table>
**Typical Characteristic Curves**

**Optical Output Power vs. Forward Current**
- Tc=0°C
- Tc=10°C
- Tc=25°C
- Tc=40°C
- Tc=50°C
- Tc=60°C

**Threshold current vs. Case Temperature**
- Tc=0°C
- Tc=10°C
- Tc=25°C
- Tc=40°C
- Tc=50°C
- Tc=60°C

**Slope Efficiency vs. Case Temperature**

**Far Field Pattern**
- Tc=25°C
- Po=200mW

**Lasing Wavelength vs. Case Temperature**
- Po=200mW
- Po=120mW

**Monitor Current vs. Case Temperature**
- VR(PD)=5V
- Po=200mW
- Po=120mW
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