**Features**
- Visible light output: 638nm Typ.
- Optical output power: 700mW (CW)
- Multi transverse mode
- Small package: φ5.6mm
- TM mode oscillation

**Application**
- Laser projector
- Show Laser
- Light source of optical equipments

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**HL63193MG**

**638nm / 700mW**  
**AlGaInP Laser Diode**

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**Outline**

**Internal Circuit**

- **HL63193MG**
  1. LD
  2. (flange)

---

[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) (-10 to +30 °C)</td>
<td>Po (1)</td>
<td>700</td>
<td>mW</td>
</tr>
<tr>
<td>Optical output power(2) (+30 to +40 °C)</td>
<td>Po (2)</td>
<td>550</td>
<td>mW</td>
</tr>
<tr>
<td>Pulse optical output power</td>
<td>Po(Pulse)</td>
<td>1000</td>
<td>mW</td>
</tr>
<tr>
<td>LD Reverse Voltage</td>
<td>VR(LD)</td>
<td>2</td>
<td>V</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>Topr</td>
<td>-10 ~ +40</td>
<td>°C</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>Tstg</td>
<td>-40 ~ +85</td>
<td>°C</td>
</tr>
</tbody>
</table>

Note1) These values should not be exceeded under any conditions.  
Note2) Operating temperature “Topr” is defined by Case temperature “Tc”. LD chip temperature is getting higher during operation due to its high current density and small package. Thus, without proper heat dissipation less optical output power than specified one could be observed or it results to LD degradation. It is advised that sufficient heat dissipation should be taken not to exceed the maximum operating temperature during actual operation.  
Note3) Pulse condition: Pulse frequency ≥ 50Hz, duty ≤ 33%  
Note4) The long term reliability such as lifetime is not guaranteed.

### 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>-</td>
<td>200</td>
<td>250</td>
<td>mA</td>
<td>-</td>
</tr>
<tr>
<td>Operating current</td>
<td>Iop</td>
<td>-</td>
<td>820</td>
<td>1000</td>
<td>mA</td>
<td>Po=700mW</td>
</tr>
<tr>
<td>Operating voltage</td>
<td>Vop</td>
<td>-</td>
<td>2.2</td>
<td>2.6</td>
<td>V</td>
<td>Po=700mW</td>
</tr>
<tr>
<td>Beam divergence Parallel to the junction</td>
<td>θ//</td>
<td>1</td>
<td>9</td>
<td>20</td>
<td>°</td>
<td>Po=700mW, FWHM</td>
</tr>
<tr>
<td>Beam divergence Perpendicular to the junction</td>
<td>θ⊥</td>
<td>25</td>
<td>35</td>
<td>45</td>
<td>°</td>
<td>Po=700mW, FWHM</td>
</tr>
<tr>
<td>Lasing Wavelength</td>
<td>λp</td>
<td>632</td>
<td>638</td>
<td>643</td>
<td>nm</td>
<td>Po=700mW</td>
</tr>
</tbody>
</table>
Typical Characteristic Curves

Optical output power vs. Forward current

Threshold current vs. Case temperature

Slope efficiency vs. Case temperature

Lasing wavelength vs. Case temperature

Far field pattern

Pulse optical output power vs. Forward current
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