Data Sheet

HL40085G

405nm / 1,000mW  Violet Laser Diode

Features

- Optical output power: 1,000mW (CW)
- Violet Lasing: 405nm Typ.
- Low operating current: 1,000mA Typ.
- Low operating voltage: 5.0V Max.
- Built-in Monitor PD
- Package: φ9.0mm
- Multiple transverse mode
- TE mode oscillation

Application

- Direct imaging for PCB
- Industry
- Display
- Bio & Medical
<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>1,100</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>Operating Temperature</td>
<td>Topr</td>
<td>0 ~ +30</td>
<td>°C</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>Tstg</td>
<td>-40 ~ +85</td>
<td>°C</td>
</tr>
</tbody>
</table>

<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>250</td>
<td>320</td>
<td>400</td>
<td>mA</td>
<td>-</td>
</tr>
<tr>
<td>Operating current</td>
<td>I_{op}</td>
<td>-</td>
<td>1,000</td>
<td>1,300</td>
<td>mA</td>
<td>Po=1,000mW</td>
</tr>
<tr>
<td>Operating voltage</td>
<td>V_{op}</td>
<td>-</td>
<td>-</td>
<td>5.0</td>
<td>V</td>
<td>Po=1,000mW</td>
</tr>
<tr>
<td>Beam divergence Parallel to the junction</td>
<td>( \theta_{//} )</td>
<td>5</td>
<td>13</td>
<td>25</td>
<td>°</td>
<td>Po=1,000mW, Full angle 1/e²</td>
</tr>
<tr>
<td>Beam divergence Perpendicular to the junction</td>
<td>( \theta_{\perp} )</td>
<td>30</td>
<td>42</td>
<td>50</td>
<td>°</td>
<td>Po=1,000mW, Full angle 1/e²</td>
</tr>
<tr>
<td>Lasing Wavelength</td>
<td>\lambda_p</td>
<td>400</td>
<td>405</td>
<td>410</td>
<td>nm</td>
<td>Po=1,000mW</td>
</tr>
<tr>
<td>Monitor Current (*1)</td>
<td>I_{s}</td>
<td>0.5</td>
<td>1.3</td>
<td>2.5</td>
<td>mA</td>
<td>Po=1,000mW, ( V_{R(PD)}=5V )</td>
</tr>
</tbody>
</table>

*1 for only initial checking
Typical Characteristic Curves

- **Optical output power vs. Forward current**
  - Forward current $I_F$ (mA)
  - Various temperatures: $10^\circ$C, $25^\circ$C, $30^\circ$C, $Tc=0^\circ$C
  - Optical output power $P_o$ (mW)

- **Monitor Current vs. Case Temperature**
  - Case temperature $Tc$ (°C)
  - Monitor current $I_s$ (mA)
  - $P_o=1,000$ mW
  - $V_{RPD}=5$ V

- **Threshold current vs. Case temperature**
  - Case temperature $Tc$ (°C)
  - Threshold current $I_{th}$ (mA)

- **Slope efficiency vs. Case temperature**
  - Case temperature $Tc$ (°C)
  - Slope efficiency $\eta_s$ (mW/mA)

- **Lasing wavelength vs. Case temperature**
  - Lasing wavelength $\lambda_p$ (nm)
  - Case temperature $Tc$ (°C)
  - $P_o=1,000$ mW

- **Far field pattern**
  - Relative intensity vs. Angle $\theta$ (°)
  - $P_o=1,000$ mW
  - $Tc=25^\circ$C
  - Parallel and perpendicular orientations
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