HL40053MG
404nm / 500mW Violet Laser Diode

Features
- Optical output power: 400mW (CW)
- Violet Lasing: 398~410nm
- Low operating current: 370mA Typ.
- Low operating voltage: 4.9V Max.
- Package: φ5.6mm
- Multiple transverse mode
- TE mode oscillation

Application
- Bio & Medical
- Measurement
### 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>500</td>
<td>mW</td>
</tr>
<tr>
<td>LD Reverse Voltage</td>
<td>VR(LD)</td>
<td>5</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>-35 ~ +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>-</td>
<td>110</td>
<td>130</td>
<td>mA</td>
<td>-</td>
</tr>
<tr>
<td>Operating current</td>
<td>Iop</td>
<td>-</td>
<td>370</td>
<td>410</td>
<td>mA</td>
<td>Po=400mW</td>
</tr>
<tr>
<td>Operating voltage</td>
<td>Vop</td>
<td>-</td>
<td>-</td>
<td>4.9</td>
<td>V</td>
<td>Po=400mW</td>
</tr>
<tr>
<td>Beam divergence Parallel to the junction</td>
<td>θ//</td>
<td>5</td>
<td>13</td>
<td>25</td>
<td>°</td>
<td>Po=400mW, Full angle 1/e^2</td>
</tr>
<tr>
<td>Beam divergence Perpendicular to the junction</td>
<td>θ⊥</td>
<td>30</td>
<td>42</td>
<td>50</td>
<td>°</td>
<td>Po=400mW, Full angle 1/e^2</td>
</tr>
<tr>
<td>Lasing Wavelength</td>
<td>λ_p</td>
<td>398</td>
<td>404</td>
<td>410</td>
<td>nm</td>
<td>Po=400mW</td>
</tr>
</tbody>
</table>
Typical Characteristic Curves

- Optical output power vs. Forward current
  - Forward current (mA) vs. Optical output power (Pout(mW))
  - Temperature (°C): 0°C, 25°C, 30°C

- Forward voltage vs. Forward current
  - Forward current (mA) vs. Forward voltage (V)
  - Temperature (°C): 0°C, 25°C

- Threshold current vs. Case temperature
  - Case temperature (Tc(°C)) vs. Threshold current (Ith(mA))

- Slope efficiency vs. Case temperature
  - Case temperature (Tc(°C)) vs. Slope efficiency (η(mW/mA))

- Lasing wavelength vs. Case temperature
  - Case temperature (Tc(°C)) vs. Lasing wavelength (λ(nm))
  - Conditions: P0=400mW, Tc=25°C

- Far field pattern
  - Relative intensity vs. Angle (θ(°))
  - Conditions: P0=400mW, Tc=25°C
  - Relative intensity plotted for perpendicular and parallel orientations
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<th>Caution</th>
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<tr>
<td>1. The laser light is harmful to human body especially to eye no matter what directly or indirectly. The laser beam shall be observed or adjusted through infrared camera or equivalent.</td>
</tr>
<tr>
<td>2. This product (without violet laser diode) contains gallium arsenide (GaAs), which may seriously endanger your health even at very low doses. Please avoid treatment which may create GaAs powder or gas, such as disassembly or performing chemical experiments, when you handle the product. When disposing of the product, please follow the laws of your country and separate it from other waste such as industrial waste and household garbage.</td>
</tr>
</tbody>
</table>

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