High Power Blue violet Laser Diode

- **Features**
  1. Wavelength: 406 nm (Typ.)
  2. Optical power output:
     - CW: 105 mW (Max)
     - Pulse: 210 mW (Max)
  3. 5.6mm CAN package

- **Applications**
  1. Blu-ray Disc/HD DVD drive
  2. Other new applications

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### Absolute Maximum Ratings

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Ratings</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optical power output(CW)</td>
<td>$P_o$</td>
<td>105</td>
<td>mW</td>
</tr>
<tr>
<td>Optical power output(Pulse)</td>
<td>$P_p$</td>
<td>210</td>
<td>mW</td>
</tr>
<tr>
<td>Reverse voltage</td>
<td>$V_r$</td>
<td>2</td>
<td>V</td>
</tr>
<tr>
<td>Operating temperature(CW)</td>
<td>$T_{op(CW)}$</td>
<td>-10°C to +70°C</td>
<td></td>
</tr>
<tr>
<td>Operating temperature(Pulse)</td>
<td>$T_{op(Pulse)}$</td>
<td>-10°C to +70°C</td>
<td></td>
</tr>
<tr>
<td>Storage temperature</td>
<td>$T_{stg}$</td>
<td>-40°C to +85°C</td>
<td></td>
</tr>
<tr>
<td>Soldering temperature</td>
<td>$T_{sld}$</td>
<td>350</td>
<td>°C</td>
</tr>
</tbody>
</table>

- $T_c$: Case temperature
- CW: Continuous Wave Operation
- Pulse: Pulse Operation (Pulse Width: 50ns Duty: 50%)
- Soldering position is 1.6mm apart from bottom edge of the case.
  (Immersion time: 3s)

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## Specifications

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Conditions</th>
<th>MIN.</th>
<th>TYP.</th>
<th>MAX.</th>
<th>unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Threshold current</td>
<td>Ith</td>
<td></td>
<td>-</td>
<td>-</td>
<td>40</td>
<td>60</td>
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<tr>
<td>Operating current</td>
<td>Iop</td>
<td></td>
<td>-</td>
<td>-</td>
<td>120</td>
<td>150</td>
</tr>
<tr>
<td>Operating voltage</td>
<td>Vop</td>
<td></td>
<td>-</td>
<td>-</td>
<td>5.4</td>
<td>6.5</td>
</tr>
<tr>
<td>Wavelength</td>
<td>λ</td>
<td>Po=105mW</td>
<td>400</td>
<td>406</td>
<td>413</td>
<td>nm</td>
</tr>
<tr>
<td>Half intensity angle</td>
<td></td>
<td></td>
<td>6</td>
<td>9</td>
<td>12</td>
<td>°</td>
</tr>
<tr>
<td>Parallel</td>
<td>0</td>
<td></td>
<td></td>
<td>16</td>
<td>19</td>
<td>22</td>
</tr>
<tr>
<td>Perpendicular</td>
<td>0 ⊥</td>
<td></td>
<td>5.5</td>
<td>8.5</td>
<td>11.5</td>
<td>°</td>
</tr>
<tr>
<td>Half intensity angle</td>
<td></td>
<td>Po=5mW</td>
<td>16</td>
<td>19</td>
<td>22</td>
<td>°</td>
</tr>
<tr>
<td>Parallel</td>
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<td></td>
<td></td>
<td>-2.5</td>
<td>-</td>
<td>2.5</td>
</tr>
<tr>
<td>Perpendicular</td>
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<td></td>
<td>-3.0</td>
<td>-</td>
<td>3.0</td>
<td>°</td>
</tr>
<tr>
<td>Misalignment angle</td>
<td></td>
<td>Parallel</td>
<td>95mW</td>
<td>l(105mW)-l(10mW)</td>
<td>0.9</td>
<td>1.3</td>
</tr>
<tr>
<td>Perpendicular</td>
<td>Δθ ⊥</td>
<td></td>
<td>-10</td>
<td>-</td>
<td>10</td>
<td>%</td>
</tr>
</tbody>
</table>

\(^1\) Tc: Case temperature

\(^2\) Initial value, Continuous Wave Operation.

\(^3\) Definition of Kink

\(^4\) Angle of 50% peak intensity.(Full angle at half-maximum)

\(^5\) Parallel to the junction plane.(X-Z plane)

\(^6\) Perpendicular to the junction plane.(Y-Z plane)

\(^7\) Pulse : Pulse Operation(Pulse Width 50ns Duty:50%)

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**Case temperature dependence of threshold current**

- Relative threshold current
  - vs. Case temperature $T_c$ ($^\circ$C)

**Forward voltage – Forward current**

- Forward voltage $V_F$ (V)
  - vs. Forward current $I_F$ (mA)

**Optical power output – Forward current**

- Optical power output $P_o$ (mW)
  - vs. Forward current $I_F$ (mA)

**Far field pattern (FFP)**

- Relative optical power output
  - vs. Angle $\theta$ ($^\circ$)

**Case temperature dependence of wavelength**

- Wavelength $\lambda_p$ (nm)
  - vs. Case temperature ($^\circ$C)

**Optical power dependence of Lasing spectrum**

- Relative optical power output
  - vs. Wavelength $\lambda_p$ (nm)

Note: Characteristics shown in diagrams are typical values. (not assurance value)

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       * Other safety equipment

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