Features

- 850nm wavelength range
- Single mode transverse and longitudinal mode
- Low current operation available
- High reliability
- High resistance to ESD
- Other configurations available on request

Description

Applications

- Consumer electronics
- Laser mouse
- Laser printer
- Safety sensor
- Engine management system

Absolute Maximum Ratings

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Storage Temperature</td>
<td>-40 to 85 °C</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-10 to 70 °C</td>
</tr>
<tr>
<td>Continuous Forward Current</td>
<td>6mA</td>
</tr>
<tr>
<td>Continuous Reverse Voltage</td>
<td>5V (@10μA)</td>
</tr>
</tbody>
</table>

Dimensions

- Anode Bonding Pad (100x100)
- DIE Height: 200 ±15 μm
- Unit: μm
### Electro-Optics Characteristics (T_a=25°C unless otherwise stated)

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Symbol</th>
<th>Specified</th>
<th>Unit</th>
<th>Test Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Min.</td>
<td>Typ.</td>
<td>Max.</td>
</tr>
<tr>
<td>Threshold Current</td>
<td>I_th</td>
<td>2</td>
<td>3</td>
<td>mA</td>
</tr>
<tr>
<td>I_th Temperature Variation</td>
<td>ΔI_th</td>
<td></td>
<td></td>
<td>mA</td>
</tr>
<tr>
<td>Slope Efficiency</td>
<td>η</td>
<td>0.2</td>
<td>0.35</td>
<td>W/A</td>
</tr>
<tr>
<td>η Temperature Variation</td>
<td>Δη / ΔT</td>
<td>-0.5</td>
<td></td>
<td>% / °C</td>
</tr>
<tr>
<td>Optical Output Power</td>
<td>P_o</td>
<td>0.25</td>
<td>0.5</td>
<td>mW</td>
</tr>
<tr>
<td>Peak Wavelength</td>
<td>λ_P</td>
<td>840</td>
<td>850</td>
<td>860</td>
</tr>
<tr>
<td>Peak Wavelength Temperature Variation</td>
<td>Δλ / ΔT</td>
<td>0.06</td>
<td></td>
<td>nm/ °C</td>
</tr>
<tr>
<td>Beam Divergence</td>
<td>Θ</td>
<td>6</td>
<td>8</td>
<td>°</td>
</tr>
<tr>
<td>Operating Voltage</td>
<td>V_f</td>
<td>1.8</td>
<td>2.1</td>
<td>V</td>
</tr>
<tr>
<td>Breakdown Voltage</td>
<td>V_b</td>
<td>-10</td>
<td></td>
<td>V</td>
</tr>
<tr>
<td>Dynamic Resistance</td>
<td>R_d</td>
<td>70</td>
<td>90</td>
<td>Ohm</td>
</tr>
<tr>
<td>Side mode suppression ratio</td>
<td>SMSR</td>
<td>15</td>
<td>30</td>
<td>dB</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10</td>
<td></td>
<td>dB</td>
</tr>
</tbody>
</table>

### Notes

* These specifications are subject to change without notice.

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**DANGER**

The inherent design of this component causes it to be sensitive to electrostatic discharge (ESD). To prevent ESD-induced damage and/or degradation to equipment, take normal ESD precautions when handling this product.

**NOTICE**

The VCSEL is a class IIIb laser and should be treated as a potential eye hazard. Due to the size of the component, the applicable warning logotype, aperture label, and certification/identification label cannot be placed on the component itself.
Characteristics Curves

### LIV Curve

![LIV Curve Graph]

**0.0**  
**0.5**  
**1.0**  
**1.5**  
**2.0**  
**2.5**  
**3.0**  
**Current(mA)**  

**0.0**  
**1.0**  
**2.0**  
**3.0**  
**4.0**  
**5.0**  
**6.0**  
**Voltage(V)**

### LIV vs Temperature

![LIV vs Temperature Graph]

### EL Spectrum

![EL Spectrum Graph]

**845**  
**846**  
**847**  
**848**  
**849**  
**850**  
**851**  
**852**  
**853**  
**854**  
**855**  

**Intensity (arb. units)**  

**Wavelength (nm)**

### FFP

![FFP Graph]

**2D, 3.5mA**

### 3D, 3.5 mA