## Description

The FPL785CM 785 nm Fabry-Perot Laser Diode is based on quantum well epitaxial layer growth and a highly reliable ridge waveguide structure. This diode features high optical output power and slope efficiency. The FPL785CM C-Mount laser diode is ideal for incorporation into OEM solutions.

## Specifications

### Absolute Maximum Rating

<table>
<thead>
<tr>
<th>FPL785CM</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>LD Reverse Voltage (Max)</td>
<td>2 V</td>
</tr>
<tr>
<td>Absolute Max Current</td>
<td>500 mA</td>
</tr>
<tr>
<td>Absolute Max Power</td>
<td>350 mW</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>20 to 50 °C</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>Non-condensing</td>
</tr>
</tbody>
</table>

$T_{\text{CHIP}} = 25 °C$

### Center Wavelength

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Min</th>
<th>Typical</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\lambda_C$</td>
<td>775 nm</td>
<td>785 nm</td>
<td>795 nm</td>
</tr>
</tbody>
</table>

### Spectral Bandwidth (RMS)

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Min</th>
<th>Typical</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\Delta \lambda$</td>
<td>-</td>
<td>0.5 nm</td>
<td>2 nm</td>
</tr>
</tbody>
</table>

### Output Power CW @ $I_{\text{CW}}$

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Min</th>
<th>Typical</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>$P_{\text{CW}}$</td>
<td>250 mW</td>
<td>300 mW</td>
<td>-</td>
</tr>
</tbody>
</table>

### Operating Current CW

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Min</th>
<th>Typical</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>$I_{\text{CW}}$</td>
<td>-</td>
<td>400 mA</td>
<td>450 mA</td>
</tr>
</tbody>
</table>

### Threshold Current

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Min</th>
<th>Typical</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>$I_{\text{TH}}$</td>
<td>-</td>
<td>90 mA</td>
<td>120 mA</td>
</tr>
</tbody>
</table>

### Forward Voltage

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Min</th>
<th>Typical</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>$V_F$</td>
<td>-</td>
<td>2.0 V</td>
<td>2.8 V</td>
</tr>
</tbody>
</table>

### Slope Efficiency

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Min</th>
<th>Typical</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\Delta P / \Delta I$</td>
<td>-</td>
<td>0.95 W/A</td>
<td></td>
</tr>
</tbody>
</table>

### Transverse Beam Divergence Angle (FWHM) [CW @ 400 mA]

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Min</th>
<th>Typical</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\theta_T$</td>
<td>-</td>
<td>18°</td>
<td>22°</td>
</tr>
</tbody>
</table>

### Lateral Beam Divergence Angle (FWHM) [CW @ 400 mA]

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Min</th>
<th>Typical</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\theta_L$</td>
<td>-</td>
<td>7°</td>
<td>10°</td>
</tr>
</tbody>
</table>
**Typical Performance Plots**

- **Light and Slope Efficiency vs. Current**
  - Optical Power
  - Slope Efficiency (W/A)
  - Current (mA)

- **Typical Optical Spectrum with Current**
  - Intensity (a.u.)
  - Wavelength (nm)
  - Current (mA)

- **Vertical Far Field**
  - Intensity (a.u.)
  - Angle (Degree)
  - Current (mA)

- **Lateral Far Field**
  - Intensity (a.u.)
  - Angle (Degree)
  - Current (mA)

**Drawing**

- **Front View**
  - 6.6 mm (0.26”)
  - 4.1 mm (0.16”)
  - Emission Height
  - 2.8 mm (0.11”)
  - 3.2 mm (0.13”)
  - 6.4 mm (0.25”)

- **Bottom View**
  - 3.0 mm (0.12”)
  - 10.0 mm (0.39”)
  - 0.7 mm (0.03”)

- **Case is Cathode (–)**
- **Anode Lead (+)**

- Ø 2.3 mm (0.17”)
- T 2.0

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