7mm Spot Diameter LED
OP207CL

Features:
- SMD Configuration
- Emission Spot Size is 7 mm diameter
- High Power Output with Parallel Rays
- Uniform Distribution
- Emitter Source for Encoder Applications

Description:
The OP207CL is a high power IR LED designed for encoder applications. The LED features a small footprint, low profile for a 7 mm beam diameter. Radiance is a collimated, narrow beam emission pattern provides on-axis intensity for excellent coupling efficiency for encoder applications.

Applications:
- Linear & Rotary Encoder
- Optical Sensors Switches
- Long Range Light Barriers
- Optical Scanning and Edge Sensing
- Automatic Control Systems

Package Dimensions

RoHS
ESD (Human Body Model)
## Electrical Specification

### Absolute Maximum Ratings ($T_A = 25^\circ C$ unless otherwise noted)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Min</th>
<th>Typ</th>
<th>Max</th>
<th>Units</th>
<th>Test Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Storage Temperature Range</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating Temperature Range</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reverse Voltage</td>
<td></td>
<td></td>
<td>10</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td>Continuous Forward Current</td>
<td></td>
<td></td>
<td>100</td>
<td>mA</td>
<td></td>
</tr>
<tr>
<td>Power Dissipation (1)</td>
<td></td>
<td></td>
<td>190</td>
<td>mW</td>
<td></td>
</tr>
<tr>
<td>Peak Package Body Temperature ($T_p$) (2)</td>
<td></td>
<td></td>
<td>200</td>
<td>°C</td>
<td></td>
</tr>
</tbody>
</table>

### Electrical Characteristics ($T_A = 25^\circ C$ unless otherwise noted)

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Parameter</th>
<th>Min</th>
<th>Typ</th>
<th>Max</th>
<th>Units</th>
<th>Test Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>$P_0$</td>
<td>Total Output Radiant Power</td>
<td>10.0</td>
<td></td>
<td></td>
<td>mW</td>
<td>$I_F = 50\ mA$</td>
</tr>
<tr>
<td>$S_d$</td>
<td>Spot Light Diameter</td>
<td></td>
<td>7.0</td>
<td></td>
<td>mm</td>
<td>$I_F = 50\ mA$, measured at 1.5mm from lens tip</td>
</tr>
<tr>
<td>$\frac{1}{2}\theta_{HP}$</td>
<td>Half Intensity Beam Angle</td>
<td></td>
<td>2.25</td>
<td></td>
<td>Degree</td>
<td>$I_F = 50\ mA$</td>
</tr>
<tr>
<td>$\lambda_P$</td>
<td>Wavelength at Peak Emission</td>
<td>840</td>
<td>855</td>
<td>870</td>
<td>nm</td>
<td>$I_F = 100\ mA$</td>
</tr>
<tr>
<td>$V_F$</td>
<td>Forward Voltage</td>
<td>1.5</td>
<td>1.9</td>
<td></td>
<td>V</td>
<td>$I_F = 50\ mA$</td>
</tr>
<tr>
<td>$I_R$</td>
<td>Reverse Leakage Current</td>
<td></td>
<td>10</td>
<td></td>
<td>$\mu A$</td>
<td>$V_R = 5.0\ V$</td>
</tr>
<tr>
<td>$t_r, t_f$</td>
<td>Rise Time, Fall Time</td>
<td>22</td>
<td></td>
<td></td>
<td>ns</td>
<td>$I_{F(PEAK)} = 50\ mA$, $PW = 10\mu s$, 10% D.C.</td>
</tr>
</tbody>
</table>

**Notes:**
1. Derate linearly at 3.42 mW/°C above 60°C.
2. For hand soldering use SAC solder. No clean flux recommended.

## Recommended Land Pattern

Tolerance ± .005 inches
Characteristics Curves (typical)

- **Relative Radiant Intensity vs. Forward Current**
  - Graph showing relative radiant intensity vs forward current.

- **Forward Voltage vs Forward Current**
  - Graph showing forward voltage vs forward current.

- **Relative Intensity vs Temperature**
  - Graph showing relative intensity vs temperature.

- **Forward Voltage vs Temperature IF=100mA**
  - Graph showing forward voltage vs temperature for a fixed forward current of 100mA.

- **Relative Output vs Angular Displacement**
  - Graph showing relative output vs angular displacement.

- **Maximum Forward Current vs Ambient Temperature**
  - Graph showing maximum forward current vs ambient temperature.

General Note
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Characteristic Curves (typical)

Beam Profile

IR Camera Image of Emission Spot

Emission Spot Diameter vs. Distance from Lens Tip