Infrared Light Emitting Diodes

LN55
GaAs Infrared Light Emitting Diode

For optical control systems

- **Features**
  - High-power output, high-efficiency: \( P_O = 3.5 \text{ mW (typ.)} \)
  - Suited for use with silicon photodetectors
  - Infrared light emission close to monochromatic light: \( \lambda_P = 950 \text{ nm (typ.)} \)
  - High-speed modulation capability

- **Absolute Maximum Ratings (Ta = 25°C)**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Ratings</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power dissipation</td>
<td>( P_D )</td>
<td>75</td>
<td>mW</td>
</tr>
<tr>
<td>Forward current (DC)</td>
<td>( I_F )</td>
<td>50</td>
<td>mA</td>
</tr>
<tr>
<td>Pulse forward current</td>
<td>( I_{FP}^* )</td>
<td>1</td>
<td>A</td>
</tr>
<tr>
<td>Reverse voltage (DC)</td>
<td>( V_R )</td>
<td>3</td>
<td>V</td>
</tr>
<tr>
<td>Operating ambient temperature</td>
<td>( T_{opr} )</td>
<td>–25 to +85</td>
<td>°C</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>( T_{stg} )</td>
<td>–30 to +100</td>
<td>°C</td>
</tr>
</tbody>
</table>

* \( f = 100 \text{ Hz, Duty cycle = 0.1%} \)

- **Electro-Optical Characteristics (Ta = 25°C)**

<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>Radiant power</td>
<td>( P_O )</td>
<td>( I_F = 50 \text{mA} )</td>
<td>1.8</td>
<td>3.5</td>
<td></td>
<td>mW</td>
</tr>
<tr>
<td>Peak emission wavelength</td>
<td>( \lambda_P )</td>
<td>( I_F = 50 \text{mA} )</td>
<td></td>
<td>950</td>
<td></td>
<td>nm</td>
</tr>
<tr>
<td>Spectral half band width</td>
<td>( \Delta\lambda )</td>
<td>( I_F = 50 \text{mA} )</td>
<td></td>
<td>50</td>
<td></td>
<td>nm</td>
</tr>
<tr>
<td>Forward voltage (DC)</td>
<td>( V_F )</td>
<td>( I_F = 50 \text{mA} )</td>
<td>1.5</td>
<td></td>
<td></td>
<td>V</td>
</tr>
<tr>
<td>Reverse current (DC)</td>
<td>( I_R )</td>
<td>( V_R = 3 \text{V} )</td>
<td>10</td>
<td></td>
<td></td>
<td>( \mu \text{A} )</td>
</tr>
<tr>
<td>Capacitance between pins</td>
<td>( C_t )</td>
<td>( V_R = 0 \text{V, f = 1MHz} )</td>
<td>50</td>
<td></td>
<td></td>
<td>pF</td>
</tr>
<tr>
<td>Half-power angle</td>
<td>( \theta )</td>
<td>The angle in which radiant intensity is 50%</td>
<td>35</td>
<td></td>
<td></td>
<td>deg.</td>
</tr>
</tbody>
</table>

\( I_F — T_a \)  
\( I_{FP} — \text{Duty cycle} \)  
\( I_F — V_F \)
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