Infrared Light Emitting Diodes

LN54

GaAs Infrared Light Emitting Diode

For optical control systems

- **Features**
  - High-power output, high-efficiency: \( P_0 = 4.6 \text{ mW} \) (typ.)
  - Emitted light spectrum suited for silicon photodetectors
  - Infrared light emission close to monochromatic light: \( \lambda_P = 950 \text{ nm} \) (typ.)
  - Small size, thin side-view type package

- **Absolute Maximum Ratings** \( T_a = 25^\circ \text{C} \)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Rating</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</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</td>
<td>( V_R )</td>
<td>3</td>
<td>V</td>
</tr>
<tr>
<td>Operating ambient temp</td>
<td>( T_{opr} )</td>
<td>-25 to +85</td>
<td>( \circ \text{C} )</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>( T_{stg} )</td>
<td>-30 to +100</td>
<td>( \circ \text{C} )</td>
</tr>
</tbody>
</table>

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

- **Electro-Optical Characteristics** \( T_a = 25^\circ \text{C} \pm 3^\circ \text{C} \)

<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>2.5</td>
<td>4.6</td>
<td></td>
<td>mW</td>
</tr>
<tr>
<td>Reverse current</td>
<td>( I_R )</td>
<td>( V_R = 3 \text{ V} )</td>
<td></td>
<td></td>
<td>10</td>
<td>( \mu \text{A} )</td>
</tr>
<tr>
<td>Forward voltage</td>
<td>( V_F )</td>
<td>( I_F = 50 \text{ mA} )</td>
<td></td>
<td></td>
<td>1.5</td>
<td>V</td>
</tr>
<tr>
<td>Terminal capacitance</td>
<td>( C_t )</td>
<td>( V_R = 0 \text{ V}, f = 1 \text{ MHz} )</td>
<td>35</td>
<td></td>
<td></td>
<td>pF</td>
</tr>
<tr>
<td>Peak emission wavelength</td>
<td>( \lambda_P )</td>
<td>( I_F = 50 \text{ mA} )</td>
<td></td>
<td></td>
<td>950</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></td>
<td>50</td>
<td>nm</td>
</tr>
<tr>
<td>Half-power angle</td>
<td>( \theta )</td>
<td>The angle when the radiant power is halved.</td>
<td></td>
<td></td>
<td>17</td>
<td>( \circ )</td>
</tr>
</tbody>
</table>

Note) 1. Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7031 measuring methods for diodes.

2. Cutoff frequency: 1 MHz

\[
 f_C : 10 \times \log \frac{P_O \text{ at } f = f_C}{P_O \text{ at } f = 50 \text{ kHz}} = -3
\]

3. \( * \): A light detection element uses a silicon diode have proofread a load with a standard device.
This product complies with the RoHS Directive (EU 2002/95/EC).

Maintenance/Discontinued includes four Product lifecycle stages: planned maintenance type, maintenance type, planned discontinued type, and discontinued type.
This product complies with the RoHS Directive (EU 2002/95/EC).

**Relative luminous intensity — λ**

![Graph showing relative luminous intensity vs. wavelength (nm)]

**Directive characteristics**

![Graph showing directional luminous intensity (%)]

**Modulation output — f**

![Graph showing modulation output vs. frequency (kHz)]

Maintenance/Discontinued includes following four Product lifecycle stage.

(Planed maintenance type, maintenance type, planed discontinued type, discontinued type)
This product complies with the RoHS Directive (EU 2002/95/EC).

### Package (Unit: mm)

**LETLSN2S0001**

- **Pin name**
  1: Cathode
  2: Anode
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