Infrared light emitting diode, side-view type
SIM-22ST

The SIM-22ST is a GaAs infrared light emitting diode housed in side emission.
High output with \( \phi 1.5 \) lens.

- **Applications**
  - Light source for sensors

- **Features**
  1) Compact package (4.7x4.6mm) with lens.
  2) High efficiency, high output.
  3) Emission spectrum well suited to silicon detectors (\( \lambda_p = 950 \text{ nm} \)).
  4) Good current-optical output linearity.
  5) Long life, high reliability.

- **Dimensions** (Unit : mm)

- **Absolute maximum ratings** (\( T_a = 25^\circ \text{C} \))

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forward current</td>
<td>( I_F )</td>
<td>50</td>
<td>mA</td>
</tr>
<tr>
<td>Reverse voltage</td>
<td>( V_R )</td>
<td>5</td>
<td>V</td>
</tr>
<tr>
<td>Power dissipation</td>
<td>( P_D )</td>
<td>80</td>
<td>mW</td>
</tr>
<tr>
<td>Pulse forward current</td>
<td>( I_{FP}^* )</td>
<td>500</td>
<td>mA</td>
</tr>
<tr>
<td>Operating temperature</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>

\*Pulse width = 0.1 ms, duty ratio 1%
### Electrical and optical characteristics (Ta = 25°C)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Conditions</th>
<th>Values</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emitting strength I</td>
<td>$I_E$</td>
<td>$I_F = 10,mA$</td>
<td>- 0.8 -</td>
<td>mW/sr</td>
</tr>
<tr>
<td>Emitting strength II</td>
<td>$I_E$</td>
<td>$I_F = 10,mA^{*}$</td>
<td>0.48 1.3 1.94</td>
<td>mA</td>
</tr>
<tr>
<td>Forward voltage</td>
<td>$V_F$</td>
<td>$I_F = 50,mA$</td>
<td>- 1.3 1.6</td>
<td>V</td>
</tr>
<tr>
<td>Reverse current</td>
<td>$I_R$</td>
<td>$V_R = 5,V$</td>
<td>- - 10</td>
<td>μA</td>
</tr>
<tr>
<td>Peak light emitting wavelength</td>
<td>$\lambda_p$</td>
<td>$I_F = 10,mA$</td>
<td>- 950 -</td>
<td>nm</td>
</tr>
<tr>
<td>Spectral line half width</td>
<td>$\Delta\lambda$</td>
<td>$I_F = 20,mA$</td>
<td>- 40 -</td>
<td>nm</td>
</tr>
<tr>
<td>Half-viewing angle</td>
<td>$\theta_{1/2}$</td>
<td>$I_F = 50,mA$</td>
<td>- ±30 -</td>
<td>deg</td>
</tr>
<tr>
<td>Response time</td>
<td>$tr\cdot tf$</td>
<td>$I_F = 50,mA$</td>
<td>- 1.0 -</td>
<td>μs</td>
</tr>
<tr>
<td>Cut-off frequency</td>
<td>$f_C$</td>
<td>$I_F = 50,mA$</td>
<td>- 1.0 -</td>
<td>MHz</td>
</tr>
</tbody>
</table>

*According to our measurement procedures.*
Electrical and optical characteristics curves

Fig.1 Forward Current Falloff

Fig.2 Forward Current vs. Forward Voltage

Fig.3 Emitter Strength vs. Forward Current

Fig.4 Relative Emitter Strength vs. Ambient Temperature
Electrical and optical characteristics curves

Fig.5 Wavelength

![Wavelength Graph]

Fig.6 Directional Pattern

![Directional Pattern Graph]
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