Photodiode

Prototype

15.12.2010 rev. 01

<table>
<thead>
<tr>
<th>Wavelength range</th>
<th>Type</th>
<th>Technology</th>
<th>Case</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infrared</td>
<td>Planar</td>
<td>InGaAs/InP</td>
<td>TO-18</td>
</tr>
</tbody>
</table>

**Description**

InGaAs-Photodiode mounted in TO-18 standard package. High spectral sensitivity in the infrared range (NIR, SWIR).

**Applications**

Optical communications, safety equipment, light barriers

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**Miscellaneous Parameters**

$T_{\text{amb}} = 25^{\circ} \text{C}$, unless otherwise specified

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Test conditions</th>
<th>Symbol</th>
<th>Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active area</td>
<td></td>
<td>A</td>
<td>0.78</td>
<td>mm$^2$</td>
</tr>
<tr>
<td>Operating temperature range</td>
<td></td>
<td>$T_{\text{amb}}$</td>
<td>-40 to +85</td>
<td>°C</td>
</tr>
<tr>
<td>Storage temperature range</td>
<td></td>
<td>$T_{\text{stg}}$</td>
<td>-40 to +100</td>
<td>°C</td>
</tr>
<tr>
<td>Temperature coefficient of $I_D$</td>
<td>$T = -40...85^{\circ} \text{C}$</td>
<td>$T_{C(I_D)}$</td>
<td>7.4</td>
<td>%/K</td>
</tr>
</tbody>
</table>

**Optical and Electrical Characteristics**

$T_{\text{amb}} = 25^{\circ} \text{C}$, unless otherwise specified

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Test conditions</th>
<th>Symbol</th>
<th>Min</th>
<th>Typ</th>
<th>Max</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forward voltage</td>
<td>$I_F = 10 \text{ mA}$</td>
<td>$V_F$</td>
<td>0.6</td>
<td></td>
<td></td>
<td>V</td>
</tr>
<tr>
<td>Breakdown voltage$^2$</td>
<td>$I_q = 10 \mu\text{A}$</td>
<td>$V_R$</td>
<td>5</td>
<td>1710</td>
<td></td>
<td>V</td>
</tr>
<tr>
<td>Sensitivity range at 10%</td>
<td>$V_R = 0 \text{ V}$</td>
<td>$\lambda$</td>
<td>440</td>
<td></td>
<td></td>
<td>nm</td>
</tr>
<tr>
<td>Spectral bandwidth at 50%</td>
<td>$V_R = 0 \text{ V}$</td>
<td>$\Delta\lambda_{0.5}$</td>
<td>680</td>
<td></td>
<td></td>
<td>nm</td>
</tr>
<tr>
<td>Responsivity at 1300 nm$^1$</td>
<td>$V_R = 0 \text{ V}$</td>
<td>$S_\lambda$</td>
<td>0.9</td>
<td></td>
<td>10</td>
<td>A/W</td>
</tr>
<tr>
<td>Dark current</td>
<td>$V_R = 5 \text{ V}$</td>
<td>$I_D$</td>
<td>0.5</td>
<td>10</td>
<td></td>
<td>nA</td>
</tr>
<tr>
<td>Shunt resistance</td>
<td>$V_R = 10 \text{ mV}$</td>
<td>$R_{SH}$</td>
<td>15</td>
<td>30</td>
<td></td>
<td>MΩ</td>
</tr>
<tr>
<td>Noise equivalent power</td>
<td>$\lambda = 1300 \text{ nm}$</td>
<td>NEP</td>
<td>$3.0 \times 10^{-14}$</td>
<td></td>
<td></td>
<td>W/√Hz</td>
</tr>
<tr>
<td>Specific detectivity</td>
<td>$\lambda = 1300 \text{ nm}$</td>
<td>$D^*$</td>
<td>$2.9 \times 10^{12}$</td>
<td></td>
<td></td>
<td>cm$^2$·√Hz·W$^{-1}$</td>
</tr>
<tr>
<td>Junction capacitance</td>
<td>$V_R = 0 \text{ V}$</td>
<td>$C_J$</td>
<td>130</td>
<td></td>
<td></td>
<td>pF</td>
</tr>
</tbody>
</table>

$^1$measured on bare chip on TO-18 header
$^2$for information only

*Note: All measurements carried out with JENOPTIK Polymer Systems equipment*
We reserve the right to make changes to improve technical design and may do so without further notice. Parameters can vary in different applications. All operating parameters must be validated for each application by the customers themselves.

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