First Sensor PIN PD Data Sheet
Part Description X100-7 SMD
International / US Order # 501401 / 01-163
Preliminary version 01-09-11

Features
- 100 mm² PIN detector
- Light blocking encapsulant
- Low dark current
- Low capacitance
- High shunt resistance
- High sensitivity

Description
Square active area PIN photodiode with 100 mm² active area. Ceramic carrier type LCC10 package with light blocking black epoxy encapsulant. Reflow solderable. Non-hermetic.

Application
- Ionizing radiation detector
- Medical equipment
- Personal dosimeter

RoHS
2002/95/EC

Absolute maximum ratings

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Parameter</th>
<th>Min</th>
<th>Max</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>TSTG</td>
<td>Storage temp</td>
<td>-40</td>
<td>100</td>
<td>°C</td>
</tr>
<tr>
<td>TOP</td>
<td>Operating temp</td>
<td>-20</td>
<td>70</td>
<td>°C</td>
</tr>
<tr>
<td>Vmax</td>
<td>Max reverse voltage</td>
<td>50</td>
<td></td>
<td>V</td>
</tr>
<tr>
<td>IPEAK</td>
<td>Peak DC current</td>
<td>10</td>
<td></td>
<td>mA</td>
</tr>
</tbody>
</table>

Absorption of gamma radiation (23 °C)

Schematic

Electro-optical characteristics @ 23 °C

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Characteristic</th>
<th>Test Condition</th>
<th>Min</th>
<th>Typ</th>
<th>Max</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Active area</td>
<td></td>
<td>10 x 10</td>
<td></td>
<td></td>
<td>mm</td>
</tr>
<tr>
<td></td>
<td>Energy range of detectable radiation</td>
<td>Gamma radiation</td>
<td>5</td>
<td></td>
<td>1000</td>
<td>keV</td>
</tr>
<tr>
<td>I0</td>
<td>Dark current</td>
<td>VBE = 12 V; change of dark current</td>
<td>5</td>
<td></td>
<td></td>
<td>nA</td>
</tr>
<tr>
<td>T(temp)</td>
<td>Temperature coefficient</td>
<td>VBE = 12 V; f = 10 kHz</td>
<td>13</td>
<td></td>
<td></td>
<td>%/K</td>
</tr>
<tr>
<td>C</td>
<td>Capacitance</td>
<td>VBE = 0 V; f = 10 kHz</td>
<td>500</td>
<td></td>
<td></td>
<td>pF</td>
</tr>
<tr>
<td></td>
<td></td>
<td>VBE = 12 V; f = 10 kHz</td>
<td>80</td>
<td></td>
<td></td>
<td>pF</td>
</tr>
<tr>
<td>tR</td>
<td>Rise time</td>
<td>VBE = 12 V; E = 10 keV; Rsh = 50 Ω</td>
<td>500</td>
<td></td>
<td></td>
<td>ns</td>
</tr>
<tr>
<td></td>
<td>Shunt Resistance</td>
<td>VBE = 10 mV</td>
<td>40</td>
<td></td>
<td></td>
<td>MO</td>
</tr>
<tr>
<td></td>
<td>Noise current</td>
<td>VBE = 12 V</td>
<td>6.1 x 10^-14</td>
<td></td>
<td></td>
<td>A/√Hz</td>
</tr>
<tr>
<td>VBR</td>
<td>Breakdown voltage</td>
<td>I0 = 2 µA</td>
<td>50</td>
<td></td>
<td>80</td>
<td>V</td>
</tr>
</tbody>
</table>

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Dark current (23 °C)

Capacitance as fct of reverse bias (23 °C)

Package dimension:
Small quantities: Foam pad, boxed (12 cm x 16.5 cm)

Handling:
Please refer to document "Instructions for handling and processing"

Disclaimer: Due to our strive for continuous improvement, specifications are subject to change within our PCN policy according to JESD46C.