Large active area Si PIN photodiodes

Features

- Sensitivity matching with BGO and CsI (TI) scintillators
- High quantum efficiency (Unsealed type): QE=85 % (λ=540 nm)
- Low capacitance
- High-speed response
- High stability
- Good energy resolution

Applications

- Scintillation detectors
- Hodoscopes
- TOF counters

Structure / Absolute maximum ratings

<table>
<thead>
<tr>
<th>Type No.</th>
<th>Window material</th>
<th>Active area (mm)</th>
<th>Depletion layer thickness (mm)</th>
<th>Reverse voltage $VR_{max}$</th>
<th>Power dissipation $P$ (mW)</th>
<th>Operating temperature $T_{op}$ (°C)</th>
<th>Storage temperature $T_{stg}$ (°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>S2744-08</td>
<td>Epoxy resin</td>
<td>$10 \times 20$</td>
<td>0.3</td>
<td>100</td>
<td>100</td>
<td>-20 to +60</td>
<td>-20 to +80</td>
</tr>
<tr>
<td>S2744-09</td>
<td>Unsealed</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S3588-08</td>
<td>Epoxy resin</td>
<td>$3 \times 30$</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
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<td></td>
</tr>
</tbody>
</table>

Note: Absolute maximum ratings are the values that must not be exceeded at any time. If even one of the absolute maximum ratings is exceeded even for a moment, the product quality may be impaired. Always be sure to use the product within the absolute maximum ratings.

Electrical and optical characteristics (Typ. $Ta=25$ °C, unless otherwise noted)

<table>
<thead>
<tr>
<th>Type No.</th>
<th>Spectral response range $\lambda_s$ (nm)</th>
<th>Peak sensitivity wavelength $\lambda_p$ (nm)</th>
<th>Photo sensitivity $S$ (A/W)</th>
<th>Short circuit current $I_{sc}$ (A) at $VR=70$ V, $T=25$ °C</th>
<th>Temp. coefficient of $I_{sc}$ (times/°C)</th>
<th>Temp. coefficient of $TC_{id}$ (times/°C)</th>
<th>NEP $VR=70$ V (W/Hz$^{1/2}$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>S2744-08</td>
<td>340 to 1100</td>
<td>960</td>
<td>0.66</td>
<td>0.20 0.30 0.36</td>
<td>3 10</td>
<td>1.12</td>
<td>$4.7 \times 10^{-14}$</td>
</tr>
<tr>
<td>S2744-09</td>
<td>340 to 1100</td>
<td>960</td>
<td>0.66</td>
<td>0.22 0.33 0.41</td>
<td>3 10</td>
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Spectral response

Photo sensitivity vs. wavelength

Wavelength (nm)

Spectral response of S2744/S3588-08 and S2744/S3588-09 photodiodes.

Temperature coefficient of sensitivity vs. wavelength

Temperature coefficient (%/°C)

Wavelength (nm)

Temperature coefficient of sensitivity at 25 °C for S2744/S3588-08 and S2744/S3588-09.

Dark current vs. reverse voltage

Reverse voltage (V)

Dark current (nA)

Dark current at 25 °C for S2744/S3588-08 and S2744/S3588-09.

Terminal capacitance vs. reverse voltage

Reverse voltage (V)

Terminal capacitance (pF)

Terminal capacitance at 25 °C, f=1 MHz for S2744/S3588-08 and S3588-08/09.
The potting resin may extend a maximum of 0.1 mm beyond the upper surface of the package.
Information described in this material is current as of October, 2011. Product specifications are subject to change without prior notice due to improvements or other reasons. Before assembly into final products, please contact us for the delivery specification sheet to check the latest information.

The product warranty is valid for one year after delivery and is limited to product repair or replacement for defects discovered and reported to us within that one year period. However, even if within the warranty period we accept absolutely no liability for any loss caused by natural disasters or improper product use.

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