Si PIN photodiodes

S5821 series

High performance, high reliability Si PIN photodiodes

The SS821 series is a high-speed Si PIN photodiode having high sensitivity over a wide spectral range from visible to near infrared light. The SS821 series provides high performance and reliability at a low cost.

Features

- High-speed response
- Wide spectral response range
- Low dark current
- Low terminal capacitance

Applications

- Optical switches
- Automobile optical sensors
- General photometry

Structure / Absolute maximum ratings

<table>
<thead>
<tr>
<th>Type no.</th>
<th>Dimensional outline/Window material</th>
<th>Package</th>
<th>Photosensitive area size</th>
<th>Effective photosensitive area</th>
<th>Absolute maximum ratings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>(mm)</td>
<td>(mm²)</td>
<td>Reverse voltage Vr max</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Power dissipation P (mW)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Operating temperature Tøp (°C)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Storage temperature Tstg (°C)</td>
</tr>
<tr>
<td>S5821</td>
<td>①/K</td>
<td>TO-18</td>
<td>1.2</td>
<td>1.1</td>
<td>20</td>
</tr>
<tr>
<td>S5821-01</td>
<td>②/L</td>
<td></td>
<td></td>
<td></td>
<td>50</td>
</tr>
<tr>
<td>S5821-02</td>
<td>③/K</td>
<td></td>
<td></td>
<td></td>
<td>-40 to +100</td>
</tr>
<tr>
<td>S5821-03</td>
<td>④/L</td>
<td></td>
<td></td>
<td></td>
<td>-55 to +125</td>
</tr>
</tbody>
</table>

* Window material K: borosilicate glass, L: lens type borosilicate glass

Note: Exceeding the absolute maximum ratings even momentarily may cause a drop in product quality. 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 λ (nm)</th>
<th>Peak sensitivity wavelength λp (nm)</th>
<th>Photosensitivity S (A/W)</th>
<th>Short circuit current Isc 100 / λ (μA)</th>
<th>Dark current Id (nA)</th>
<th>Temp. coefficient of Id T cid (times/°C)</th>
<th>Cutoff frequency fc (MHz)</th>
<th>Terminal capacitance Ct (pF)</th>
<th>NEP (W/Hz1/2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>S5821</td>
<td>320 to 1100</td>
<td>960</td>
<td>0.6</td>
<td>0.45</td>
<td>0.52</td>
<td>0.55</td>
<td>0.05</td>
<td>2</td>
<td>1.15</td>
</tr>
<tr>
<td>S5821-01</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>25</td>
</tr>
<tr>
<td>S5821-02</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>S5821-03</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6.7 × 10⁻¹⁵</td>
</tr>
</tbody>
</table>

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**Spectral response**

(Typ. Ta=25 °C)

![Spectral response graph](image1)

**Directivity**

(Typ. Ta=25 °C)

![Directivity graph](image2)

**Photosensitivity temperature characteristics**

(Typ.)

![Photosensitivity temperature characteristics graph](image3)

**Frequency response**

(Typ. Ta=25 °C, λ=830 nm, RL=50 Ω, VR=10 V)

![Frequency response graph](image4)
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**Cutoff frequency vs. reverse voltage**
(Typ. Ta=25 °C, λ=830 nm, RL=50 Ω)

**Dark current vs. reverse voltage**
(Typ. Ta=25 °C)

**Terminal capacitance vs. reverse voltage**
(Typ. Ta=25 °C, f=1 MHz)
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Dimensional outlines (unit: mm)

<table>
<thead>
<tr>
<th>S5821</th>
<th>S5821-01</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensional outlines (unit: mm)</td>
<td>Dimensional outlines (unit: mm)</td>
</tr>
<tr>
<td>![Diagram of S5821 photodiode]</td>
<td>![Diagram of S5821-01 photodiode]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>S5821-02</th>
<th>S5821-03</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensional outlines (unit: mm)</td>
<td>Dimensional outlines (unit: mm)</td>
</tr>
<tr>
<td>![Diagram of S5821-02 photodiode]</td>
<td>![Diagram of S5821-03 photodiode]</td>
</tr>
</tbody>
</table>

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**KPINA0074EC**

**KPINA0075EB**

**KPINA0022EC**

**KPINA0046EB**

**KPINA00EC**

**KPINA04EC**

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S5821 series

Related information
www.hamamatsu.com/sp/ssd/doc_en.html

Precautions

Disclaimer

Metal, ceramic, plastic package products

Technical information

Si photodiode/Application circuit examples

Information described in this material is current as of September 2017.

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