The S13773 is a Si PIN photodiode with sensitivities in the visible to near infrared range and is compatible with lead-free solder reflow. It features high-speed response and is suitable for distance measurement laser monitoring.

**Features**

- High-speed response: 500 MHz (VR=10 V)
- Surface mount type
- High reliability (wide temperature range)

**Applications**

- Distance measurement laser monitor
- Light monitor (from visible to near infrared region)

**Structure**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Photosensitive area</td>
<td>-</td>
<td>$\phi 0.8$</td>
</tr>
<tr>
<td>Package</td>
<td>-</td>
<td>$3.1 \times 1.8 \times 1.0$</td>
</tr>
</tbody>
</table>

**Absolute maximum ratings**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reverse voltage</td>
<td>Vr max</td>
<td>20 V</td>
</tr>
<tr>
<td>Power dissipation</td>
<td>Pd</td>
<td>0.2 W</td>
</tr>
<tr>
<td>Operating temperature$^*$</td>
<td>Topr</td>
<td>-40 to +100 °C</td>
</tr>
<tr>
<td>Storage temperature$^*$</td>
<td>Tstg</td>
<td>-40 to +100 °C</td>
</tr>
<tr>
<td>Soldering conditions$^*$</td>
<td>-</td>
<td>Peak temperature: 260 °C (see P.4)</td>
</tr>
</tbody>
</table>

$^*$1: No dew condensation
When there is a temperature difference between a product and the surrounding area in high humidity environment, dew condensation may occur on the product surface. Dew condensation on the product may cause deterioration in characteristics and reliability.

$^*$2: JEDEC level 2a
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 (Ta=25 °C)**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Condition</th>
<th>Min.</th>
<th>Typ.</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spectral response range</td>
<td>$\lambda$</td>
<td>-</td>
<td>380 to 1000</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Peak sensitivity wavelength</td>
<td>$\lambda$</td>
<td>$\lambda=\lambda_p$</td>
<td>-</td>
<td>800</td>
<td>-</td>
</tr>
<tr>
<td>Photosensitivity</td>
<td>S</td>
<td>$\lambda=800$ nm, VR=0 V</td>
<td>0.5</td>
<td>0.54</td>
<td>-</td>
</tr>
<tr>
<td>Short circuit current</td>
<td>Isc</td>
<td>$\lambda=830$ nm, VR=10 V</td>
<td>0.35</td>
<td>0.43</td>
<td>-</td>
</tr>
<tr>
<td>Dark current</td>
<td>Io</td>
<td>VR=10 V</td>
<td>-</td>
<td>10</td>
<td>500</td>
</tr>
<tr>
<td>Dark current temperature coefficient</td>
<td>$\Delta TID$</td>
<td>$\lambda=830$ nm, VR=10 V</td>
<td>-</td>
<td>1.15</td>
<td>-</td>
</tr>
<tr>
<td>Cutoff frequency</td>
<td>fc</td>
<td>RL=50 $\Omega$, -3 dB</td>
<td>-</td>
<td>500</td>
<td>-</td>
</tr>
<tr>
<td>Terminal capacitance</td>
<td>Ct</td>
<td>VR=10 V, f=10 kHz</td>
<td>-</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

www.hamamatsu.com
Si PIN photodiode

Directivity

(Typ. light source: tungsten lamp)

Relative sensitivity (%)

Dimensional outline (unit: mm)

Photosensitive area

Photosensitive surface

Side A

Side B

Recommended land pattern

Anode Index

Tolerance: ±0.2 unless otherwise noted

Values in parentheses indicate reference values.

* Side of the element

* There is exposed wiring on side A and side B.

To prevent short circuits, do not allow any conductors to come in contact with the wiring.
Si PIN photodiode  |  S13773

**Standard packing specifications**

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Hub diameter</th>
<th>Tape width</th>
<th>Material</th>
<th>Electrostatic characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>180 mm</td>
<td>60 mm</td>
<td>8 mm</td>
<td>PS</td>
<td>Conductive</td>
</tr>
</tbody>
</table>

- Embossed tape (unit: mm, material: PS, conductive)

- Packing quantity
  1000 pcs/reel

- Packing type
  Reel and desiccant in moisture-proof packaging (vacuum-sealed)

**Measured example of temperature profile with our hot-air reflow oven for product testing**

- This product supports lead-free soldering. After unpacking, store it in an environment at a temperature of 30 °C or less and a humidity of 60% or less, and perform soldering within 4 weeks.
- The effect that the product receives during reflow soldering varies depending on the circuit board and reflow oven that are used. When you set reflow soldering conditions, check that problems do not occur in the product by testing out the conditions in advance.
Si PIN photodiode

S13773

Related products: Metal package, bare chip type

- Metal package S5972
- Bare chip type S5972-04

Similar products are available: the metal package S5972 and the bare chip type S5972-04.

Related information

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

- Precautions
  - Disclaimer
  - Surface mount type products

- Technical information
  - Si photodiodes / Application circuit examples

The content of this document is current as of April 2018.

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