Si PIN photodiode arrays

Surface mountable 16-element arrays

The S8558 and S15158 are 16-element Si PIN photodiode arrays in surface mountable chip carrier packages. They can be mounted using solder reflow and used in a wide variety of applications such as spectrophotometers and distance measurement.

Features
- Photosensitive area: 0.7 × 2.0 mm (× 16 elements)
- Surface mountable chip carrier package
- Compatible with lead-free solder reflow
- High sensitivity

Applications
- Spectrophotometers
- Distance measurement

Structure

<table>
<thead>
<tr>
<th>Parameter</th>
<th>S8558</th>
<th>NEW S15158</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of elements</td>
<td>16</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Element pitch</td>
<td>0.8 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Element size</td>
<td>0.7 × 2.0 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Package</td>
<td>Ceramic</td>
<td>Glass epoxy</td>
<td></td>
</tr>
<tr>
<td>Window material</td>
<td>Silicone resin</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Absolute maximum ratings (Ta=25 °C)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>S8558</th>
<th>NEW S15158</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reverse voltage</td>
<td>VR max</td>
<td>30 V</td>
<td></td>
<td>V</td>
</tr>
<tr>
<td>Operating temperature*1</td>
<td>T0p</td>
<td>-40 to +100 °C</td>
<td></td>
<td>°C</td>
</tr>
<tr>
<td>Storage temperature*1</td>
<td>Tstg</td>
<td>-40 to +125 °C</td>
<td></td>
<td>°C</td>
</tr>
<tr>
<td>Soldering conditions Peak temperature: 260 °C max., 3 times*2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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, per element, unless otherwise noted)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Condition</th>
<th>S8558</th>
<th>NEW S15158</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spectral response range</td>
<td>λ</td>
<td></td>
<td></td>
<td></td>
<td>nm</td>
</tr>
<tr>
<td>Peak sensitivity wavelength</td>
<td>λp</td>
<td></td>
<td></td>
<td></td>
<td>nm</td>
</tr>
<tr>
<td>Photosensitivity</td>
<td>S</td>
<td>λ=λp</td>
<td></td>
<td></td>
<td>A/W</td>
</tr>
<tr>
<td>Dark current</td>
<td>Id</td>
<td>VR=10 V, all 16 elements</td>
<td></td>
<td></td>
<td>nA</td>
</tr>
<tr>
<td>Temperature coefficient of Id</td>
<td>ΔTid</td>
<td>VR=10 V</td>
<td></td>
<td></td>
<td>times/°C</td>
</tr>
<tr>
<td>Cutoff frequency</td>
<td>fc</td>
<td>VR=10 V, RL=50 Ω, λ=830 nm, -3 dB</td>
<td></td>
<td></td>
<td>MHz</td>
</tr>
<tr>
<td>Noise equivalent power</td>
<td>NEP</td>
<td>VR=10 V, λ=λp</td>
<td></td>
<td></td>
<td>W/Hz 1/2</td>
</tr>
<tr>
<td>Terminal capacitance</td>
<td>Ct</td>
<td>VR=10 V, f=10 kHz, all 16 elements</td>
<td></td>
<td></td>
<td>pF</td>
</tr>
</tbody>
</table>
Si PIN photodiode arrays S8558, S15158

**Spectral response**

(Typ. Ta=25 °C)

- Photosensitivity (A/W) vs. Wavelength (nm)

**Dark current vs. reverse voltage (per element)**

(Typ. Ta=25 °C)

- Dark current vs. Reverse voltage (V)

**Terminal capacitance vs. reverse voltage (per element)**

(Typ. Ta=25 °C)

- Terminal capacitance vs. Reverse voltage (V)

**Cutoff frequency vs. reverse voltage (per element)**

(Typ. Ta=25 °C, λ=830 nm, RL=50 Ω)

- Cutoff frequency vs. Reverse voltage (V)
Si PIN photodiode arrays  |  S8558, S15158

Dimensional outline (unit: mm)

S8558

- Index mark ø0.4
- Photosensitive surface
- Silicone resin
- P 1.27 × 8 = 10.16 (R0.15) (R0.25)
- 0.7 × 2.0 (× 16 elements) Photosensitive area

S15158

- Index mark ø0.35
- Photosensitive area
- Silicone resin
- P 0.8 × 15 = 12.0

Recommended land pattern (unit: mm)

S8558

- x: 0.6 max.
- y: 3.0 min.
- Photosensitive surface
- Photodiode

S15158

- x: 1.0 min.
- y: 3.0 min.
- Photosensitive surface
- Photodiode

1. Solder all terminals.
2. Do not make the land area larger than necessary.
3. It is preferable that the land sizes be about equal.
4. Make land width x about the same as the terminal width.
5. Make land length y at least 1 mm longer than the terminal length, protruding outside the package.
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Standard packing specifications

**S8558**

- Packing quantity
  100 pcs max./tray

- Packing state
  Tray and desiccant in moisture-proof packaging (vacuum-sealed)

**S15158**

- Reel (conforms to JEITA ET-7200)

<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>330 mm</td>
<td>100 mm</td>
<td>24 mm</td>
<td>PS</td>
<td>Conductive</td>
</tr>
</tbody>
</table>

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

![Embossed tape diagram]

- Packing quantity
  1000 pcs/reel

- Packing state
  Reel and desiccant in moisture-proof packaging (vacuum-sealed)
Recommended reflow soldering conditions

- After unpacking, keep it in an environment at 5 to 30 °C and a humidity of 60% or less, and perform soldering within 168 hours.
- 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.

Related information

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

- Precautions
  - Disclaimer
  - Surface mount type products
- Technical information
  - Si photodiodes / Application circuit examples

Information described in this material is current as of February 2020. Product specifications are subject to change without prior notice due to improvements or other reasons. This document has been carefully prepared and the information contained is believed to be accurate. In rare cases, however, there may be inaccuracies such as text errors. Before using these products, always contact us for the delivery specification sheet to check the latest specifications.

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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