The S12497 and S12498 are Si photodiodes suitable for non-destructive inspection of baggage and the like and general industrial measurement. As they are back-illuminated photodiodes, photosensitive area does not have wires, and therefore a scintillator can be mounted directly on the photodiode.

### Features
- **Spectral response range**: 400 to 1100 nm
- **Photosensitive area**
  - S12497: 9.5 × 9.5 mm, S12498: 6.0 × 6.0 mm
- **Easy scintillator mounting**

### Applications
- **Non-destructive X-ray inspection**
- **General industrial measurement and the like**

### Structure

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>S12497</th>
<th>S12498</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Photosensitive area</td>
<td>-</td>
<td>9.5 × 9.5</td>
<td>6.0 × 6.0</td>
<td>mm</td>
</tr>
<tr>
<td>Package</td>
<td>-</td>
<td>PWB with pins</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Window material</td>
<td>-</td>
<td>None</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

### Absolute maximum ratings

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Condition</th>
<th>Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reverse voltage</td>
<td>$V_{R\text{max}}$</td>
<td>$Ta=25 , ^\circ\text{C}$</td>
<td>10</td>
<td>V</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>$T_{op}$</td>
<td>No dew condensation*</td>
<td>-20 to +60</td>
<td>°C</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>$T_{stg}$</td>
<td>No dew condensation*</td>
<td>-20 to +80</td>
<td>°C</td>
</tr>
</tbody>
</table>

* 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. 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 ($Ta=25 \, ^\circ\text{C}$)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Condition</th>
<th>S12497</th>
<th>S12498</th>
<th>S12498</th>
<th>S12498</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spectral response</td>
<td>$\lambda$</td>
<td></td>
<td>400</td>
<td>920</td>
<td>-</td>
<td>920</td>
<td>nm</td>
</tr>
<tr>
<td>Peak sensitivity wavelength</td>
<td>$\phi_p$</td>
<td>$\lambda=540 , \text{nm}$</td>
<td>0.32</td>
<td>0.36</td>
<td>0.32</td>
<td>0.36</td>
<td>A/W</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$\lambda=920 , \text{nm}$</td>
<td>0.52</td>
<td>0.57</td>
<td>0.52</td>
<td>0.57</td>
<td>A/W</td>
</tr>
<tr>
<td>Photosensitivity</td>
<td>$S$</td>
<td></td>
<td>60</td>
<td>75</td>
<td>15</td>
<td>30</td>
<td>µA</td>
</tr>
<tr>
<td>Short circuit current</td>
<td>$I_{sc}$</td>
<td>100 $\mu\text{A}$, 2856 K</td>
<td>50</td>
<td>200</td>
<td>10</td>
<td>150</td>
<td>pA</td>
</tr>
<tr>
<td>Dark current</td>
<td>$I_D$</td>
<td>$V_r=10 , \text{mV}$</td>
<td>-</td>
<td>15</td>
<td>-</td>
<td>-</td>
<td>µA</td>
</tr>
<tr>
<td>Rise time</td>
<td>$t_r$</td>
<td>$V_r=0 , V$, $R_L=1 , \text{kΩ}$ 10 to 90%, $\lambda=658 , \text{nm}$</td>
<td>-</td>
<td>15</td>
<td>-</td>
<td>-</td>
<td>µs</td>
</tr>
<tr>
<td>Terminal capacitance</td>
<td>$C_t$</td>
<td>$V_r=0 , V$, $f=10 , \text{kHz}$</td>
<td>750</td>
<td>950</td>
<td>330</td>
<td>380</td>
<td>430</td>
</tr>
</tbody>
</table>

Note: These products are also available as scintillator-mounted products (custom order products) such as CsI (TI), phosphor sheet, GOS, and CWO. Consult with your nearest Hamamatsu sales office.
**Si photodiodes | S12497, S12498**

**Spectral response**

(Typ. Ta=25 °C)

![Spectral response graph](image)

**Dimensional outlines (unit: mm)**

<table>
<thead>
<tr>
<th>S12497</th>
<th>S12498</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Dimensional outlines S12497" /></td>
<td><img src="image" alt="Dimensional outlines S12498" /></td>
</tr>
</tbody>
</table>

- Photosensitive area: 9.5 × 9.5
- Photosensitive surface:
  - S12497: 16.0 × 12.0
  - S12498: 10.0 × 8.5
- (2 ×) ø0.45 Lead:
  - S12497: (0.2) 1.6 (5.0)
  - S12498: (0.2) 1.6 (5.0)

Tolerance unless otherwise noted: ±0.2

QE=100%

- V_{	ext{out}} = 0.8 
- V_{	ext{in}} = 0.7

Photosensitivity (A/W) (Typ. Ta=25 °C)

<table>
<thead>
<tr>
<th>Wavelength (nm)</th>
<th>Photosensitivity (A/W)</th>
</tr>
</thead>
<tbody>
<tr>
<td>200</td>
<td>0.6</td>
</tr>
<tr>
<td>300</td>
<td>0.5</td>
</tr>
<tr>
<td>400</td>
<td>0.4</td>
</tr>
<tr>
<td>500</td>
<td>0.3</td>
</tr>
<tr>
<td>600</td>
<td>0.2</td>
</tr>
<tr>
<td>700</td>
<td>0.1</td>
</tr>
<tr>
<td>800</td>
<td>0.1</td>
</tr>
<tr>
<td>900</td>
<td>0.1</td>
</tr>
<tr>
<td>1000</td>
<td>0.1</td>
</tr>
<tr>
<td>1100</td>
<td>0.1</td>
</tr>
<tr>
<td>1200</td>
<td>0.1</td>
</tr>
</tbody>
</table>

- (2 ×) ø0.45 Lead:
  - S12497: (0.2) 1.6 (5.0)
  - S12498: (0.2) 1.6 (5.0)

- Photosensitive area:
  - S12497: 9.5 × 9.5
  - S12498: 6.0 × 6.0

- Index mark:
  - S12497: 16.0
  - S12498: 10.0

- Tolerance unless otherwise noted: ±0.2

- Photosensitive surface:
  - S12497: 16.0 × 12.0
  - S12498: 10.0 × 8.5

- (2 ×) ø0.45 Lead:
  - S12497: (0.2) 1.6 (5.0)
  - S12498: (0.2) 1.6 (5.0)

- Photosensitive area:
  - S12497: 9.5 × 9.5
  - S12498: 6.0 × 6.0

- Index mark:
  - S12497: 16.0
  - S12498: 10.0

- Tolerance unless otherwise noted: ±0.2

- Photosensitive surface:
  - S12497: 16.0 × 12.0
  - S12498: 10.0 × 8.5

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  - S12498: (0.2) 1.6 (5.0)
Si photodiodes

S12497, S12498

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

- Precautions
- Disclaimer
- Unsealed products
- Technical information
- Si photodiode/Application circuit examples

Information described in this material is current as of June, 2016.

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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