PbS near-infrared detector
Multi-Single-Pixel thin-film encapsulated

Features
- Wire-bonded on PCB
- High durability for rugged operation
- Very high sensitivity
- Room temperature operation

Applications
- Spectroscopy
- Gas detection and analysis
- Flame monitoring
- Flame and spark detection
- Temperature measurement
- Moisture measurement
- Rapid prototyping

Electrical and optical characteristics per pixel

<table>
<thead>
<tr>
<th>Type No.</th>
<th>Active area [mm x mm]</th>
<th>Peak responsivity S [V/W]</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Typ.</td>
<td>Min.</td>
</tr>
<tr>
<td>PbS005005BC</td>
<td>0.5 x 0.5</td>
<td>16 x 10^5</td>
<td>10 x 10^5</td>
</tr>
<tr>
<td>PbS010010BC</td>
<td>1 x 1</td>
<td>8 x 10^5</td>
<td>5.6 x 10^5</td>
</tr>
<tr>
<td>PbS020020BC</td>
<td>2 x 2</td>
<td>4 x 10^5</td>
<td>2.8 x 10^5</td>
</tr>
<tr>
<td>PbS030030BC</td>
<td>3 x 3</td>
<td>3 x 10^5</td>
<td>1.8 x 10^5</td>
</tr>
<tr>
<td>PbS060060BC</td>
<td>6 x 6</td>
<td>1.4 x 10^5</td>
<td>0.9 x 10^5</td>
</tr>
<tr>
<td>PbS100100BC</td>
<td>10 x 10</td>
<td>0.6 x 10^5</td>
<td>0.4 x 10^5</td>
</tr>
<tr>
<td>PbS010050BC*</td>
<td>1 x 5</td>
<td>3.5 x 10^5</td>
<td>2 x 10^5</td>
</tr>
</tbody>
</table>

* Dark resistance R_0 [MΩ] = 0.05 - 1
- Measured with 1550 nm LED, incident power 16 µW/cm²
- Measured in a voltage divider circuit with 50 V/mm
- Photo responsivity and detectivity are measured with constant load resistance (R_L = 1 MΩ) and calculated for matched resistance

<table>
<thead>
<tr>
<th>Element temperature [°C]</th>
<th>Peak wave-</th>
<th>20% cut-off wavelength λ_C</th>
<th>Peak D* (620 Hz, 1 Hz)</th>
<th>Time constant [µs]</th>
<th>Dark resistance R_0 [MΩ]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>length λ_P</td>
<td>[µm]</td>
<td>[µm]</td>
<td>[cm·Hz^{1/2}/W]</td>
<td>Typ.</td>
</tr>
<tr>
<td>22</td>
<td>2.7</td>
<td>2.9</td>
<td>1 x 10^{11}</td>
<td>0.8 x 10^{11}</td>
<td>200</td>
</tr>
</tbody>
</table>

Mechanical characteristics
- Number of lines: 1 - 3
- Number of pixels: 2 - 8
- Minimum pixel width: 1000 µm
- Minimum pixel height: 1000 µm

Please contact us for an individual design:
info@hertzstueck.de
PbS near-infrared detector
Multi-Single-Pixel thin-film encapsulated

Typical spectral response per pixel

![Graph showing typical spectral response](image)

Typical frequency response per pixel

![Graph showing typical frequency response](image)

Typical resistance change over temperature

![Graph showing typical resistance change over temperature](image)

Storage
- Storage temperature: -55°C to +70°C
- Exposure to UV light results in permanent damage
- Prolonged exposure to visible light results in temporary low dark resistance

Handling
- Active area is scratch sensitive, protect top surface from any mechanical contact
- Ensure dust-free environment for device handling
- Operating temperature: -30°C to +70°C

This document, or any answers or information provided herein by trinamiX GmbH does not constitute a legally binding obligation of trinamiX GmbH. While the descriptions, designs, data and information contained herein are presented in good faith and believed to be accurate, it is provided for your guidance only. Because many factors may affect processing or application/use, we recommend that you make tests to determine the suitability of a product for your particular purpose prior to use. It does not relieve our customers from the obligation to perform a full inspection of the products upon delivery or any other obligation. No warranties of any kind, either express or implied, including warranties of merchantability or fitness for a particular purpose, are made regarding products described or designs, data or information set forth, or that the products, designs, data or information may be used without infringing the intellectual property rights of others. In no case shall the descriptions, information, data or designs provided be considered a part of our terms and conditions of sale.
PbS near-infrared detector
Multi-Single-Pixel thin-film encapsulated

Options

- Individual housing
- Integrated filters
- Individual PCB
- Evaluation Kit available

Exemplary circuit

Regulatory

For the use of Hertzstück™ PbS and PbSe infrared photodetectors in medical devices, monitoring and control instruments and consumer applications RoHS exemptions apply.
For automotive applications Hertzstück™ PbS and PbSe infrared photodetectors fall under ELV exemption.