PbS near-infrared detector
Line array bare chip thin-film encapsulated

Features

- Thin-film encapsulation
- Very high sensitivity
- Suitable for automated wire-bonding

Applications

- NIR spectroscopy
- Fire and spark detection
- Flame and moisture monitoring

Electrical and optical characteristics per pixel

<table>
<thead>
<tr>
<th>Element temperature [°C]</th>
<th>Peak wavelength λ₀ [µm]</th>
<th>20% cut-off wavelength λ₀ [µm]</th>
<th>Peak D* (620 Hz, 1 Hz) [cm·Hz⁰.⁵/W]</th>
<th>Time constant [µs]</th>
<th>Dark resistance R₀ [MΩ]</th>
</tr>
</thead>
<tbody>
<tr>
<td>22</td>
<td>Typ. 2.7</td>
<td>Typ. 2.9</td>
<td>Min. 1 · 10¹¹</td>
<td>Typ. 200</td>
<td>3 - 30*</td>
</tr>
</tbody>
</table>

- 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
*depends on pixel geometry

Possible mechanical characteristics

- Number of pixels 1 - 512
- Minimum pixel width 20 µm
- Minimum pixel height 20 µm
- Minimum pixel pitch 50 µm
- Minimal chip length 3000 µm
- Minimal chip height 3000 µm

Please contact us for an individual design: info@hertzstueck.de
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Exemplary mechanical characteristics

<table>
<thead>
<tr>
<th>Type No.</th>
<th>Number of Pixels</th>
<th>Pixel pitch [µm]</th>
<th>Pixel width [µm]</th>
<th>Pixel height [µm]</th>
<th>Operating temperature [°C]</th>
</tr>
</thead>
<tbody>
<tr>
<td>PbS_Arr_256_0050_0040x0380</td>
<td>256</td>
<td>50</td>
<td>40 x 380</td>
<td></td>
<td>-30 to +70</td>
</tr>
</tbody>
</table>

Typical spectral response per pixel

![Typical spectral response per pixel graph](image)

Typical frequency response per pixel

![Typical frequency response per pixel graph](image)
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Die attach

- Use clean, soft rubber tip for pick and place handling
- UV-curing is not suitable due to permanent damage by UV light exposure
- Element temperature should never exceed +70°C

Wire-bonding

- Electrodes are optimized for room temperature
  Al-wire-bonding
- Element temperature should never exceed +70°C

Options

- Individual housing
- Bonding onto PCB
- Integrated optics

Storage

- Storage temperature: -55°C to +70°C
- Exposure to UV light results in permanent damage
- Prevent exposure to UV and visible light

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

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.