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>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Typ.</td>
</tr>
<tr>
<td>PbS010010BC</td>
<td>1 x 1</td>
<td>$8 \cdot 10^5$</td>
</tr>
<tr>
<td>PbS020020BC</td>
<td>2 x 2</td>
<td>$4 \cdot 10^5$</td>
</tr>
<tr>
<td>PbS030030BC</td>
<td>3 x 3</td>
<td>$3 \cdot 10^5$</td>
</tr>
<tr>
<td>PbS060060BC</td>
<td>6 x 6</td>
<td>$1.4 \cdot 10^5$</td>
</tr>
<tr>
<td>PbS010050BC*</td>
<td>1 x 5</td>
<td>$3.5 \cdot 10^5$</td>
</tr>
</tbody>
</table>

* Dark resistance $R_D$ [MΩ] = 0.05 - 1

- Measured with 1550 nm LED, incident power 16 µW/cm²
- Measured in a voltage divider circuit with 1 MΩ load resistor
- Photo responsivity and detectivity calculated for a voltage divider circuit with matched resistance and 50 V/mm

<table>
<thead>
<tr>
<th>Element temperature [°C]</th>
<th>Peak wavelength λ_P [µm]</th>
<th>20% cut-off wavelength λ_C [µm]</th>
<th>Peak D* (620 Hz, 1 Hz) [cm·Hz½/W]</th>
<th>Time constant [µs]</th>
<th>Dark resistance $R_D$ [MΩ]</th>
</tr>
</thead>
<tbody>
<tr>
<td>22</td>
<td>2.7</td>
<td>2.9</td>
<td>$1 \cdot 10^{11}$</td>
<td>0.8 $\cdot 10^{11}$</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@trinamix.de
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Typical spectral response per pixel

Typical frequency response per pixel

Typical resistance change over temperature

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

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Options

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

Exemplary circuit

V_B: Bias voltage
V_O: Output voltage
R_D: Dark resistance of the detector
R_L: Load resistor
C_F: Filter capacitor
R_F: Filter resistor
R_I: Feedback resistor
R_G: Gain resistor

Regulatory

For the use of trinamiX PbS and PbSe infrared photodetectors in medical devices, monitoring and control instruments and consumer applications RoHS exemptions apply.

For automotive applications trinamiX PbS and PbSe infrared photodetectors fall under ELV exemption.