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

Features

- Bondable electrode for COB mounting
- High durability for rugged operation
- Very high sensitivity
- Suitable for automated wire-bonding
- Room temperature operation

Applications

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

Electrical and optical characteristics per pixel

<table>
<thead>
<tr>
<th>Element temperature [°C]</th>
<th>Peak wavelength $\lambda_p$ [µm]</th>
<th>20% cut-off wavelength $\lambda_C$ [µm]</th>
<th>Peak D* (620 Hz, 1 Hz) [cm·Hz$^{1/2}$/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>0.5 $\cdot 10^{11}$</td>
<td>200</td>
</tr>
</tbody>
</table>

$^a$depends on pixel geometry

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

Possible mechanical characteristics

- Number of lines 1 - 4
- Number of pixels 2 - 16
- 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@trinamix.de
Exemplary mechanical characteristics

<table>
<thead>
<tr>
<th>Type No.</th>
<th>Number of lines</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_MP_01x12_0200_0180x1800</td>
<td>1</td>
<td>12</td>
<td>200</td>
<td>180</td>
<td>1800</td>
<td>-30 to +70</td>
</tr>
</tbody>
</table>

Typical spectral response per pixel

Typical frequency response per pixel

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 wedge bonding
- Element temperature should never exceed +70°C

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
- Bonding onto PCB
- Integrated optics
- Evaluation-Kit available

Exemplary circuit

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.