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

Features

- Bondable electrode for COB mounting
- High durability for rugged operation
- 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 λp [µm]</th>
<th>20% cut-off wavelength λc [µm]</th>
<th>Peak D* (620 Hz, 1 Hz) [cm·Hz^½/W]</th>
<th>Time constant [µs]^a</th>
<th>Dark resistance R₀ [MΩ]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Typ.</td>
<td>Typ.</td>
<td>Typ.</td>
<td>Min.</td>
<td>Typ.</td>
<td>0.3 - 20^b</td>
</tr>
<tr>
<td>22</td>
<td>3.8</td>
<td>4.5</td>
<td>1.8 · 10^10</td>
<td>1 · 10^10</td>
<td></td>
</tr>
</tbody>
</table>

^a literature value
^b depends on pixel geometry

- Measured with 500K blackbody
- 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

Schematic
PbSe near-infrared detector
Multi-Pixel thin-film encapsulated

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>PbSe_MP_01x12_0200_0180x1800</td>
<td>1</td>
<td>12</td>
<td>200</td>
<td>180</td>
<td>x 1800</td>
<td>-30 to +90</td>
</tr>
</tbody>
</table>

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 +90°C

Wire-bonding

- Electrodes are optimized for room temperature Al wire wedge bonding
- Element temperature should never exceed +90°C

Storage

- Storage temperature: -55°C to +90°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 +90°C

Options

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

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.
PbSe near-infrared detector
Multi-Pixel thin-film encapsulated

Exemplary circuit

![Exemplary circuit diagram]

- $V_B$: 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
- $R_1$: 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.