PbS near-infrared detector
Line array module in PS28 package

Features
- Double encapsulation (thin-film and PS28 housing with 1-stage TE-cooler)
- Very high sensitivity
- Sapphire window

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

Array module specifications

<table>
<thead>
<tr>
<th>Type No.</th>
<th>Package</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_Mod_256_0050_0040x0380</td>
<td>PS28</td>
<td>256</td>
<td>50</td>
<td>40 x 380</td>
<td>-30 to +70</td>
<td></td>
</tr>
</tbody>
</table>

- Pixel operability > 95%
- Array length: 12.8 mm (active area)
- Chip (Glass wafer) size: 15 x 2.5 mm

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·Hz½/W]</th>
<th>Time constant [µs]</th>
<th>Dark resistance R_D [MO]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Typ.</td>
<td>22</td>
<td>2.7</td>
<td>2.9</td>
<td>1 · 10¹¹</td>
<td>0.5 · 10¹¹</td>
</tr>
</tbody>
</table>

*depends on pixel geometry
- Measured with 1550 nm LED, incident power 16 µW/cm²
- Measured in a voltage divider circuit with 10 MO load resistor
- Photo responsivity and detectivity calculated for a voltage divider circuit with matched resistance and 50 V/mm

1-stage TE-cooler specifications

<table>
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<tr>
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</thead>
<tbody>
<tr>
<td>300</td>
<td>70</td>
<td>5.0</td>
<td>1.3</td>
<td>6.1</td>
<td>3.5</td>
</tr>
<tr>
<td>323</td>
<td>72</td>
<td>5.4</td>
<td>1.3</td>
<td>6.8</td>
<td>3.9</td>
</tr>
</tbody>
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Typical spectral response per pixel

![Typical spectral response per pixel graph]

Typical frequency response per pixel

![Typical frequency response per pixel graph]

Pin connections

- Integration time range: 4.025 µs - 210 ms (digitally selectable in 3.2 µs steps)
- Frame rate: sample rates up to 1,000 frames per second (maximum frame rate is achieved at the minimum integration time)

Other functionalities

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Mechanical outlines (dimensions in mm)

Storage
- Storage temperature: -30°C to +70°C
- Exposure to UV light results in permanent damage
- Prolonged exposure to visible light results in low dark resistance

Options
- Filter
- Variable pixel geometry
- Variable number of pixels
- Other packaging options

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.