

PbS near-infrared detector

Line array bare chip thin-film encapsulated

trinamiX

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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

| Element temperature [°C] | Peak wave-length λ_P [μm] | 20% cut-off wavelength λ_C [μm] | Peak D* (620 Hz, 1 Hz) [$\text{cm}\cdot\text{Hz}^{1/2}/\text{W}$] | | Time constant [μs] | Dark resistance R_D [$\text{M}\Omega$] |
|--------------------------|--|--|---|---------------------|---------------------------------|--|
| | Typ. | Typ. | Typ. | Min. | Typ. | |
| 22 | 2.7 | 2.9 | $1 \cdot 10^{11}$ | $0.5 \cdot 10^{11}$ | 200 | 3 - 30* |

- Measured with 1550 nm LED, incident power $16 \mu\text{W}/\text{cm}^2$
- Measured in a voltage divider circuit with 50 V/mm
- Photo responsivity and detectivity are measured with constant load resistance ($R_L = 1 \text{ M}\Omega$) 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@pidtek.com

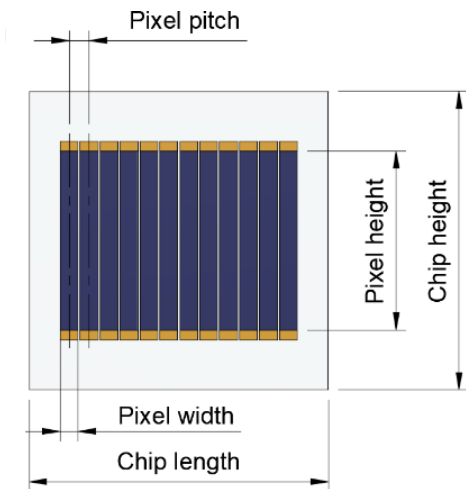
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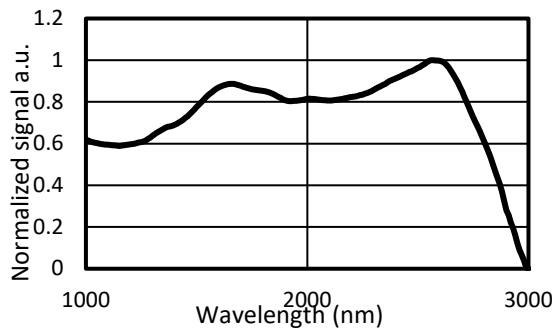
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Exemplary mechanical characteristics

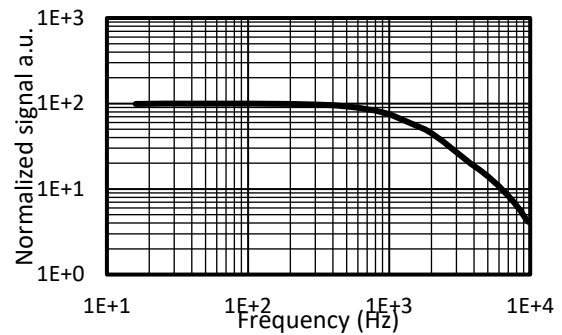
| Type No. | Number of Pixels | Pixel pitch [μm] | Pixel width [μm] | Pixel height [μm] | Operating temperature [°C] |
|----------------------------|------------------|------------------|------------------|-------------------|----------------------------|
| PbS_Arr_256_0050_0040x0380 | 256 | 50 | 40 x | 380 | -30 to +70 |



Typical spectral response per pixel



Typical frequency response per pixel



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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.