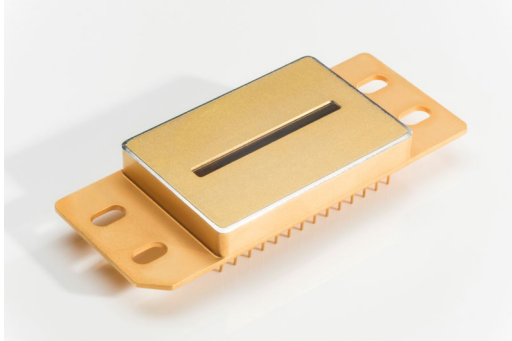


PbS near-infrared detector

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

| Type No. | Package | Number of pixels | Pixel pitch [μm] | Pixel width [μm] | Pixel height [μm] | Operating temperature [°C] |
|----------------------------|---------|------------------|------------------|------------------|-------------------|----------------------------|
| PbS_Mod_256_0050_0040x0380 | PS28 | 256 | 50 | 40 x | 380 | -30 to +70 |

- 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

| Element temperature [°C] | Peak wavelength λ_P [μm] | 20% cut-off wavelength λ_C [μm] | Peak D* (620 Hz, 1 Hz) [cm·Hz ^{1/2} /W] | | Time constant [μs] | Dark resistance R _D [MΩ] |
|--------------------------|----------------------------------|---|--|------------------------|--------------------|-------------------------------------|
| | Typ. | Typ. | Typ. | Min. | Typ. | |
| 22 | 2.7 | 2.9 | 1 · 10 ¹¹ | 0.5 · 10 ¹¹ | 200 | 3 - 30* |

*depends on pixel geometry

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

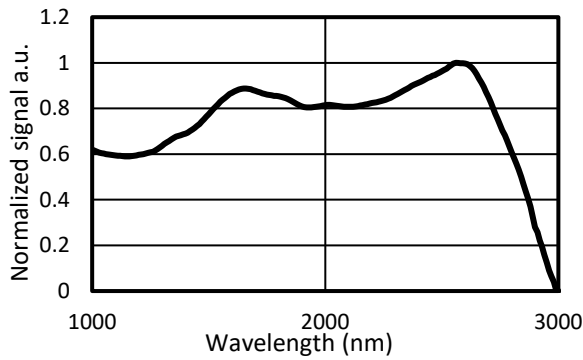
1-stage TE-cooler specifications

| Ambient temperature [K] | dT _{max} [K] | Q _{max} [K] | I _{max} [A] | U _{max} [V] | ACR [Ohm] |
|-------------------------|-----------------------|----------------------|----------------------|----------------------|-----------|
| 300 | 70 | 5.0 | 1.3 | 6.1 | 3.5 |
| 323 | 72 | 5.4 | 1.3 | 6.8 | 3.9 |

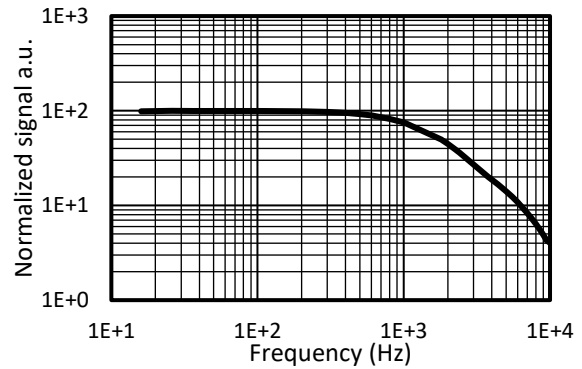
PbS near-infrared detector

Line array module in PS28 package

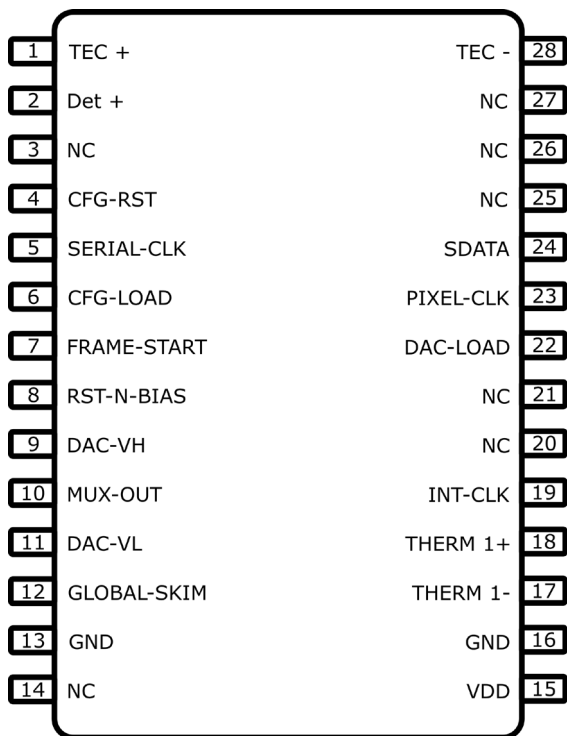
Typical spectral response per pixel



Typical frequency response per pixel



Pin connections



Other functionalities

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

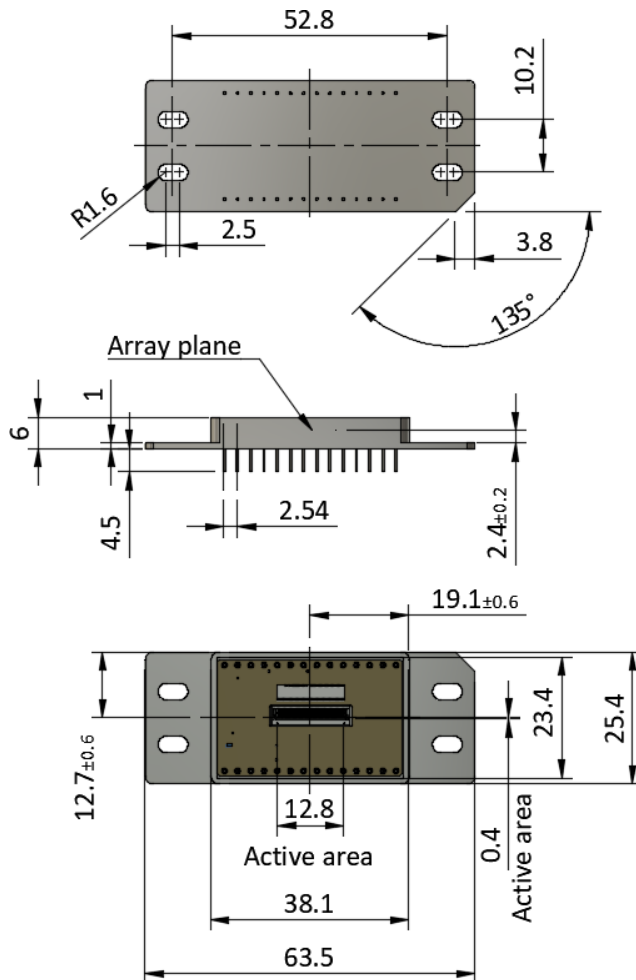
PbS near-infrared detector

Line array module in PS28 package

trinamiX

A brand of
BASF – We create chemistry

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 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.