PbS near-infrared detector
Line array module in PS28 package

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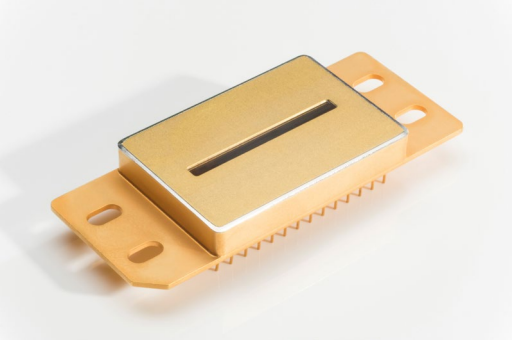
Features

- 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 wave-length λ_P [µm]	20% cut-off wavelength λ_C [µm]	Peak D* (620 Hz, 1 Hz) [cm·Hz^{½}/W]		Time constant [µs]	Dark resistance R_D [MΩ]
	Typ.	Typ.	Typ.	Min.	Typ.	
22	2.7	2.9	$1 \cdot 10^{11}$	$0.5 \cdot 10^{11}$	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

Release Date: February 17th, 2020
ver. 1.7

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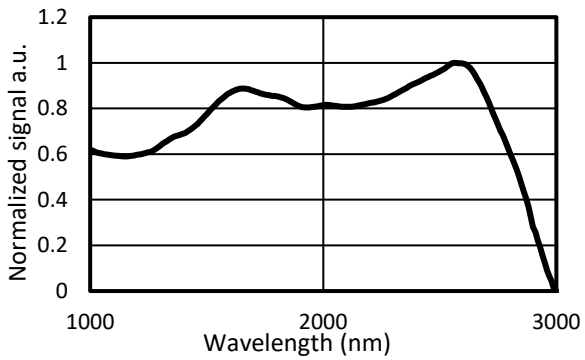
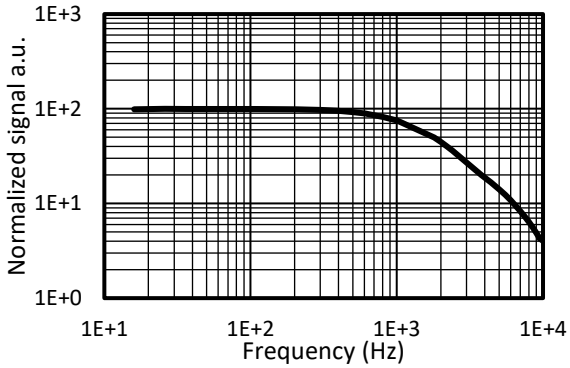
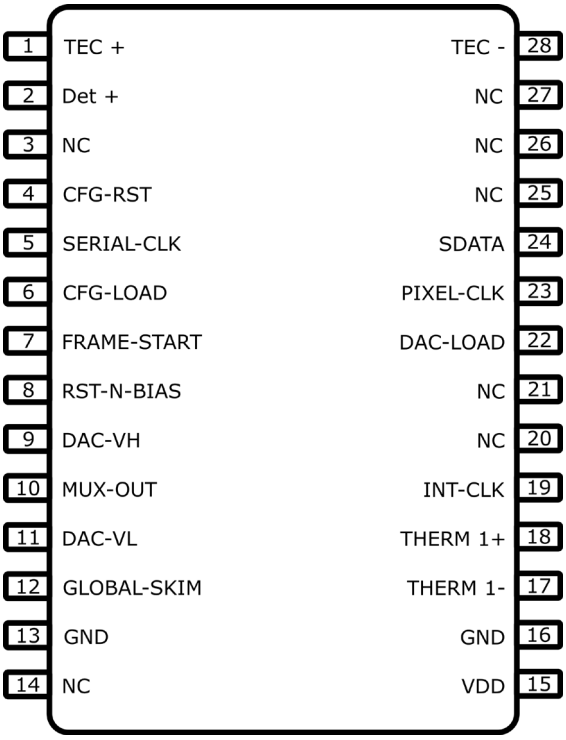
Typical spectral response per pixel



Typical frequency response per pixel



Pin connections



Other functionalities

- 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)

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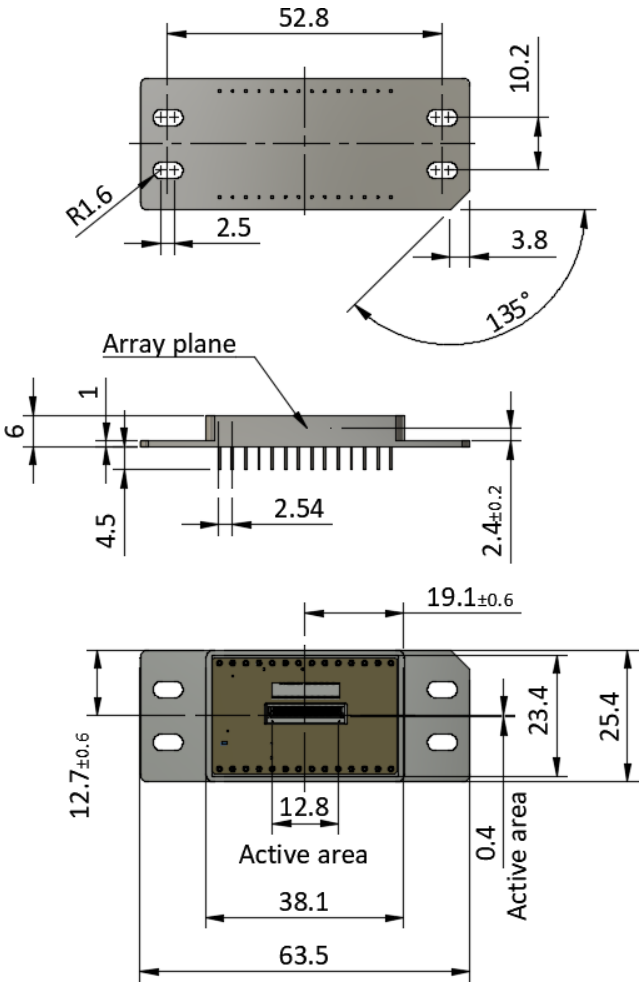
Mechanical outlines (dimensions in mm)



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 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.