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#### PbS near-infrared detector

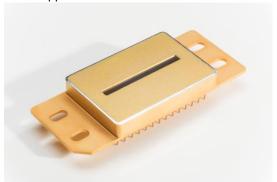
# Line array module in PS28 package



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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	Pixel	Pixel	Pixel	Operating
		of pixels	pitch	width	height	temperature
			[µm]	[µm]	[µm]	[°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	Peak wave-	20% cut-off	Peak D*		Time	Dark resistance R <sub>D</sub>
temperature	length λ <sub>P</sub>	wavelength $\lambda_{\text{C}}$	(620 Hz, 1 Hz)		constant [µs]	[MΩ]
[°C]	[µm]	[µm]	[cm·Hz <sup>½</sup> /W]			
	Тур.	Тур.	Тур.	Min.	Тур.	
22	2.7	2.9	1 · 10 <sup>11</sup>	$0.5 \cdot 10^{11}$	200	3 - 30

- Measured with 1550 nm LED, incident power 16 μW/cm<sup>2</sup>
- 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

## **1-stage TE-cooler specifications**

Ambient temperature [K]	dT <sub>max</sub> [K]	Q <sub>max</sub> [K]	I <sub>max</sub> [A]	U <sub>max</sub> [V]	ACR [Ohm]
300	70	5.0	1.3	6.1	3.5
323	72	5.4	1.3	6.8	3.9

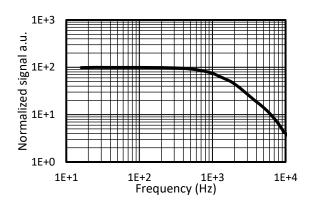


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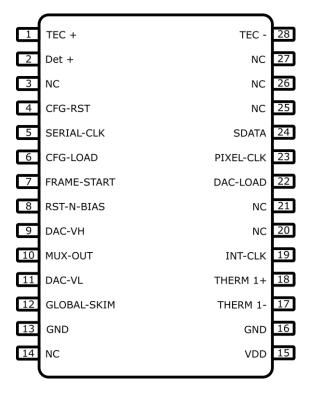
## Typical spectral response per pixel

# 

### Typical frequency response per pixel



#### Pin connections



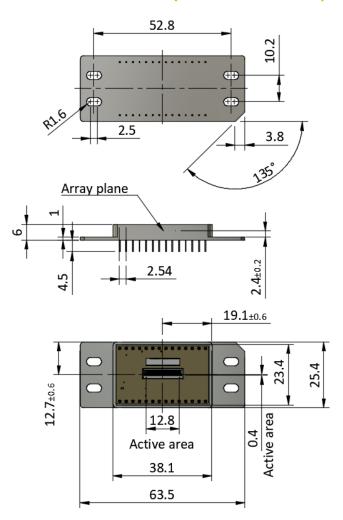
#### Other functionalities

- 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)

### Line array module in PS28 package



## 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.

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