

PbS near-infrared detector

Multi-Single-Pixel thin-film encapsulated

trinamiX

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Features

- Wire-bonded on PCB
- High durability for rugged operation
- Very high sensitivity
- Room temperature operation

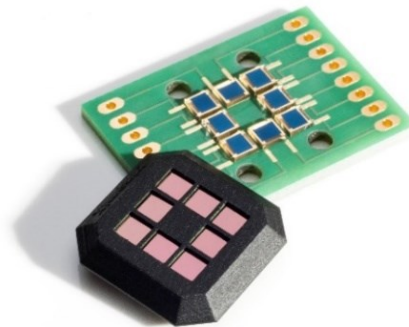
Applications

- Spectroscopy
- Gas detection and analysis
- Flame monitoring
- Flame and spark detection
- Temperature measurement
- Moisture measurement
- Rapid prototyping

Electrical and optical characteristics per pixel

Type No.	Active area [mm x mm]	Peak responsivity S [V/W]	
		Typ.	Min.
PbS010010BC	1 x 1	$8 \cdot 10^5$	$5.6 \cdot 10^5$
PbS020020BC	2 x 2	$4 \cdot 10^5$	$2.8 \cdot 10^5$
PbS030030BC	3 x 3	$3 \cdot 10^5$	$1.8 \cdot 10^5$
PbS060060BC	6 x 6	$1.4 \cdot 10^5$	$0.9 \cdot 10^5$
PbS010050BC*	1 x 5	$3.5 \cdot 10^5$	$2 \cdot 10^5$

* Dark resistance R_D [MΩ] = 0.05 - 1



- Measured with 1550 nm LED, incident power $16 \mu\text{W}/\text{cm}^2$
- Measured in a voltage divider circuit with $1 \text{ M}\Omega$ load resistor
- Photo responsivity and detectivity calculated for a voltage divider circuit with matched resistance and 50 V/mm

Element temperature [°C]	Peak wave-length 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	$1 \cdot 10^{11}$	$0.8 \cdot 10^{11}$	200	0.3 - 3

Mechanical characteristics

- Number of lines 1 - 3
- Number of pixels 2 - 8
- Minimum pixel width 1000 μm
- Minimum pixel height 1000 μm

Please contact us for an individual design:
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ver. 1.8

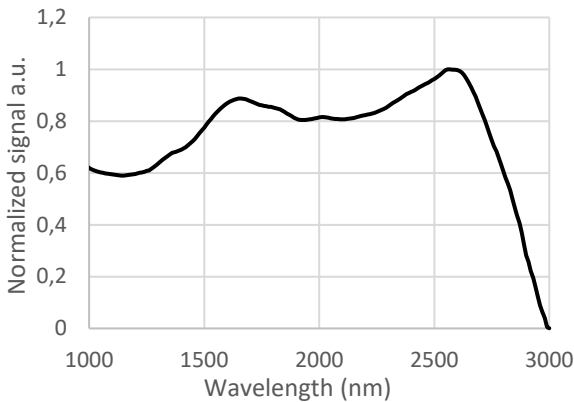
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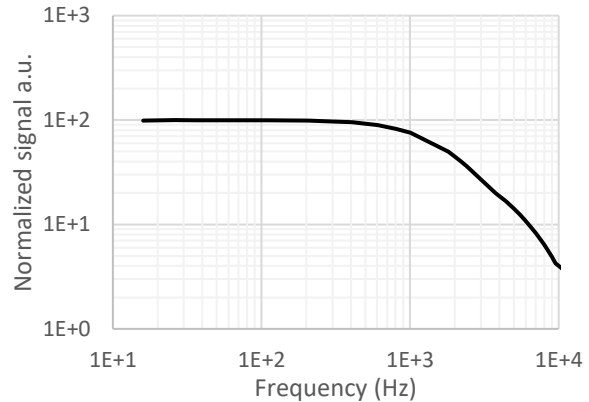
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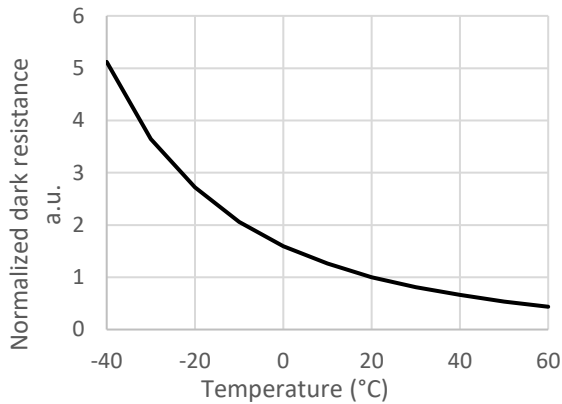
Typical spectral response per pixel



Typical frequency response per pixel



Typical resistance change over temperature



Storage

- Storage temperature: -55°C to +70°C
- Exposure to UV light results in permanent damage
- Prolonged exposure to visible light results in temporary low dark resistance

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

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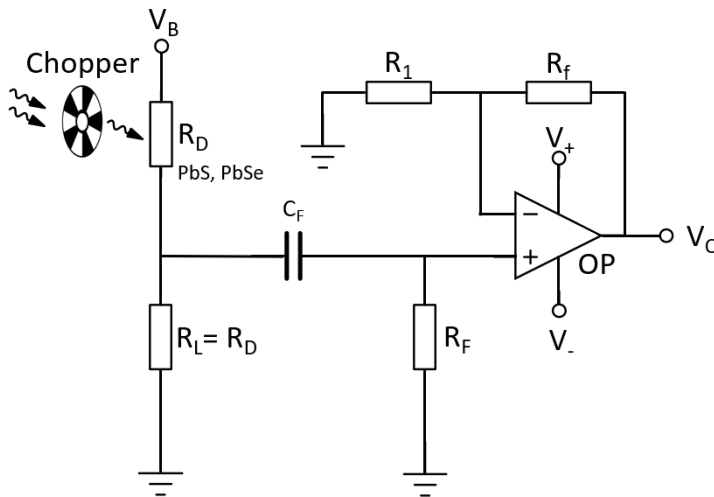
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Options

- Individual housing
- Integrated filters
- Individual PCB
- Evaluation Kit available

Exemplary circuit



- V_B : Bias voltage
- V_O : Output voltage
- R_D : Dark resistance of the detector
- R_L : Load resistor
- C_F : Filter capacitor
- R_F : Filter resistor
- R_f : Feedback resistor
- R_1 : Gain resistor

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.