## **PbSe near-infrared detector** Multi-Single-Pixel thin-film encapsulated



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#### **Features**

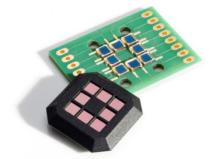
- Wire-bonded on PCB
- High durability for rugged operation •
- Room temperature operation •

### **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]	
		Тур.	Min.
PbSe010010BC	1 x 1	$4.5 \cdot 10^{4}$	$2.3 \cdot 10^{4}$
PbSe020020BC	2 x 2	$4 \cdot 10^{4}$	2 · 10 <sup>4</sup>
PbSe030030BC	3 x 3	$1.5 \cdot 10^{4}$	8 · 10 <sup>3</sup>
PbSe060060BC	6 x 6	8 · 10 <sup>3</sup>	4 · 10 <sup>3</sup>



Measured with 500K blackbody •

- Measured in a voltage divider circuit with 50 V/mm •
- Photo responsivity and detectivity are measured with constant load resistance (RL =  $1 \text{ M}\Omega$ ) and calculated for • matched resistance

Element	Peak wave-	20% cut-off	Peak D*		Time	Dark
temperature	length λ <sub>P</sub>	wavelength $\lambda_{C}$	(620 Hz, 1 Hz)		constant [µs]	resistance R <sub>D</sub>
[°C]	[µm]	[µm]	[cm·Hz <sup>½</sup> /W]			[MΩ]
	Тур.	Тур.	Тур.	Min.	Тур.	
22	3.8	4.5	1.8 · 10 <sup>10</sup>	1.2 · 10 <sup>10</sup>	4	0.1 - 3

### **Mechanical characteristics**

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

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#### Storage

- Storage temperature: -55°C to +90°C
- Exposure to UV light results in permanent damage
- Prolonged exposure to visible light results in temporary low dark resistance

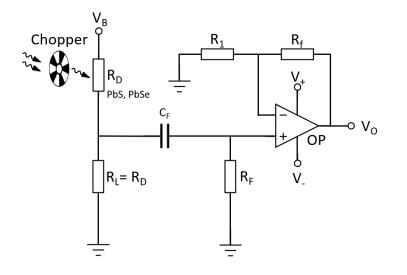
# Handling

- Active area is scratch sensitive, protect top surface from any mechanical contact
- Ensure dust-free environment for device handling
- Operating temperature: -30°C to +90°C

## **Options**

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

# **Exemplary circuit**



- V<sub>B</sub>: Bias voltage
- V<sub>o</sub>: Output voltage
- R<sub>D</sub>: Dark resistance of the detector
- R<sub>1</sub>: Load resistor
- C<sub>F</sub>: Filter capacitor
- R<sub>F</sub>: Filter resistor
- R<sub>f</sub>: Feedback resistor
- R<sub>1</sub>: Gain resistor

### Regulatory

For the use of Hertzstück<sup>™</sup> PbS and PbSe infrared photodetectors in medical devices, monitoring and control instruments and consumer applications RoHS exemptions apply. For automotive applications Hertzstück<sup>™</sup> PbS and PbSe infrared photodetectors fall under ELV exemption.

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