

PbSe near-infrared detector

Single-Pixel thin-film encapsulated

trinamiX

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Features

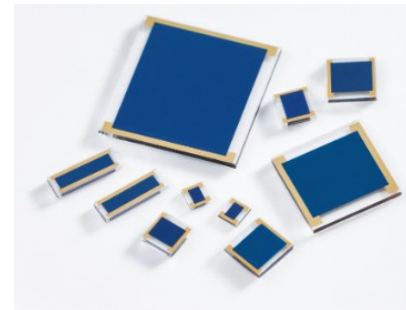
- Bondable electrode for COB mounting
- High durability for rugged operation
- Suitable for automated wire-bonding
- Room temperature operation

Applications

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

Electrical and optical characteristics

Type No.	Active area [mm x mm]	Peak responsivity S [V/W]	
		Typ.	Min.
PbSe010010BC	1 x 1	$4.5 \cdot 10^4$	$2.3 \cdot 10^4$
PbSe020020BC	2 x 2	$4 \cdot 10^4$	$2 \cdot 10^4$
PbSe030030BC	3 x 3	$1.5 \cdot 10^4$	$8 \cdot 10^3$
PbSe060060BC	6 x 6	$8 \cdot 10^3$	$4 \cdot 10^3$



- Measured with 500 K blackbody
- Measured in a voltage divider circuit with 1 MΩ 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] ^a	Dark resistance R _D [MΩ]
	Typ.	Typ.	Typ.	Min.	Typ.	
22	3.8	4.5	$1.8 \cdot 10^{10}$	$1.2 \cdot 10^{10}$	4	0.1 - 3

^aliterature value

Die attach

- Use clean, soft rubber tip for pick and place handling
- UV-curing is not suitable due to permanent damage by UV light exposure
- Element temperature should never exceed +90°C

Wire-bonding

- Electrodes are optimized for room temperature Al wire wedge bonding
- Element temperature should never exceed +90°C

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Storage

- Storage temperature: -55°C to $+90^{\circ}\text{C}$
- Exposure to UV light results in permanent damage
- Prolonged exposure to visible light results in temporary low dark resistance

Handling

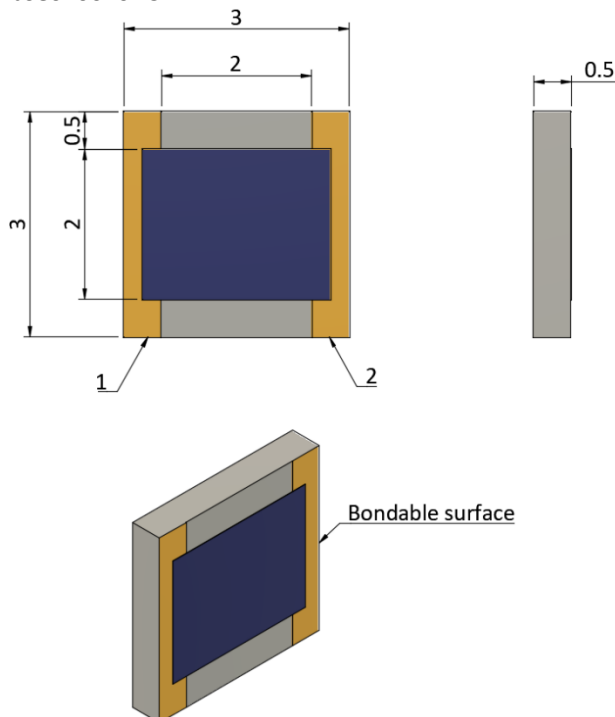
- Active area is scratch sensitive, protect top surface from any mechanical contact
- Ensure dust-free environment for device handling
- Operating temperature: -30°C to $+90^{\circ}\text{C}$

Options

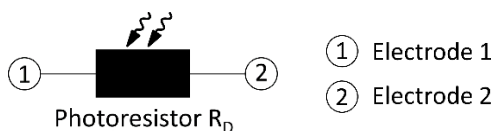
- Custom filters
- Custom packages upon request
- Evaluation Kit available

Exemplary mechanical outlines (dimensions in mm)

PbSe020020BC



Schematic



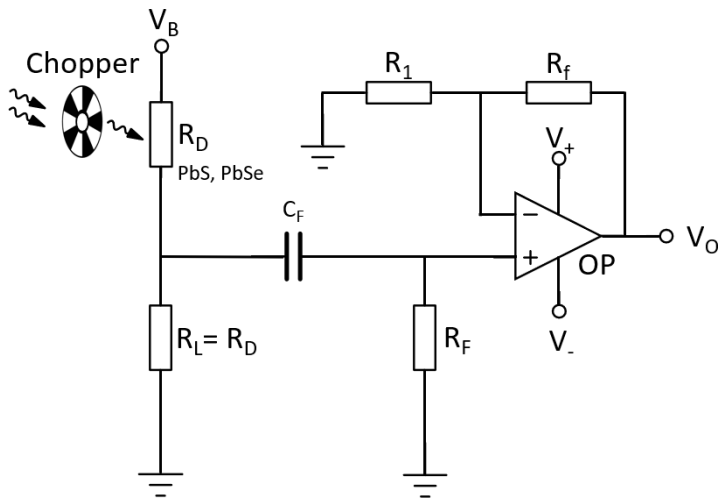
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Exemplary circuit



- 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.