

PbSe near-infrared detector

Single-Pixel double encapsulated TO-package

trinamiX

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Features

- Double encapsulation (thin-film + TO package)
- High durability for rugged operation
- Room temperature operation
- Sapphire window

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.
PbSe010010T05	1 x 1	$4.5 \cdot 10^4$	$2.3 \cdot 10^4$
PbSe020020T05	2 x 2	$4 \cdot 10^4$	$2 \cdot 10^4$
PbSe030030T05	3 x 3	$1.5 \cdot 10^4$	$8 \cdot 10^3$
PbSe060060T08	6 x 6	$8 \cdot 10^3$	$4 \cdot 10^3$



- Measured with 500K 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.		
22	3.8	4.5	$1.8 \cdot 10^{10}$	$1.2 \cdot 10^{10}$	4	0.1 - 3

^aliterature value

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

- Ensure dust-free environment for device handling
- Operating temperature: -30°C to +90°C

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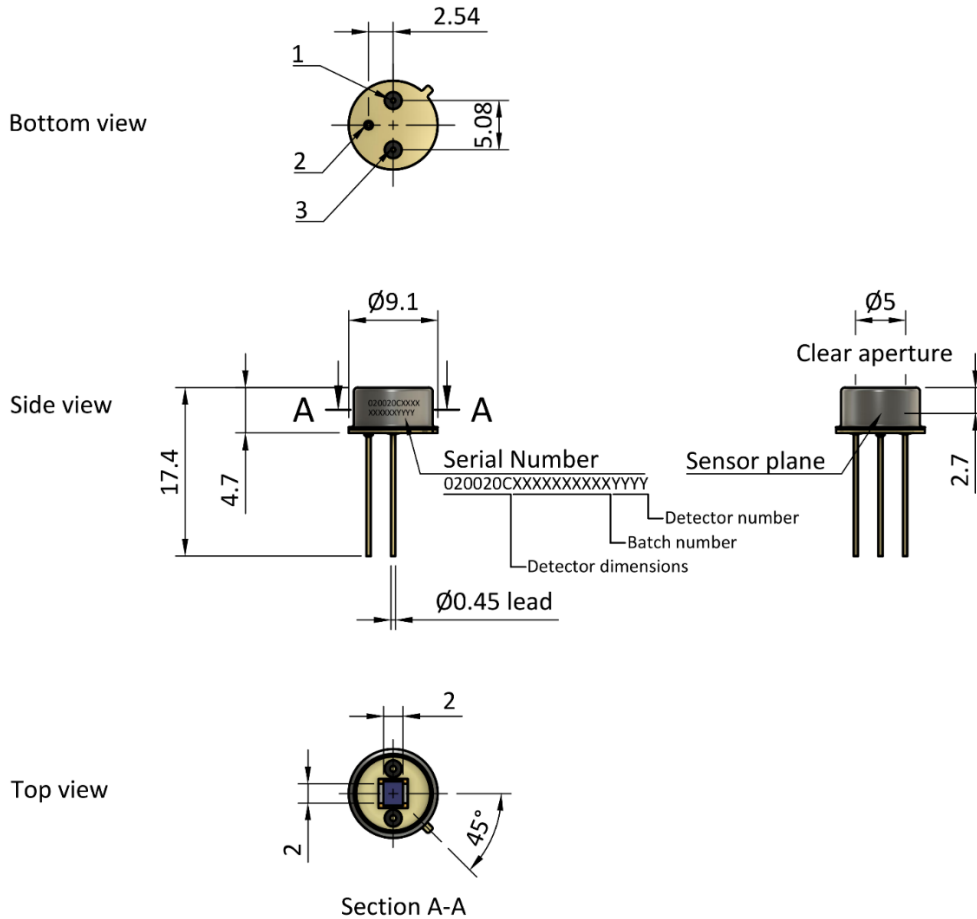
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Options

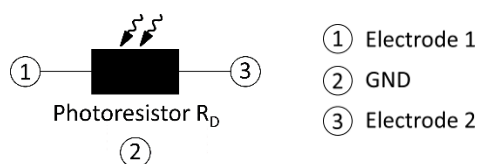
- Custom windows and filters
- 1-stage or 2-stage Thermoelectric cooler (TEC) including thermistor
- Built-in internal LED for illumination and detection
- Custom packages upon request
- Evaluation Kit available

TO5 exemplary package outlines (dimensions in mm)

PbSe020020T05



Schematic



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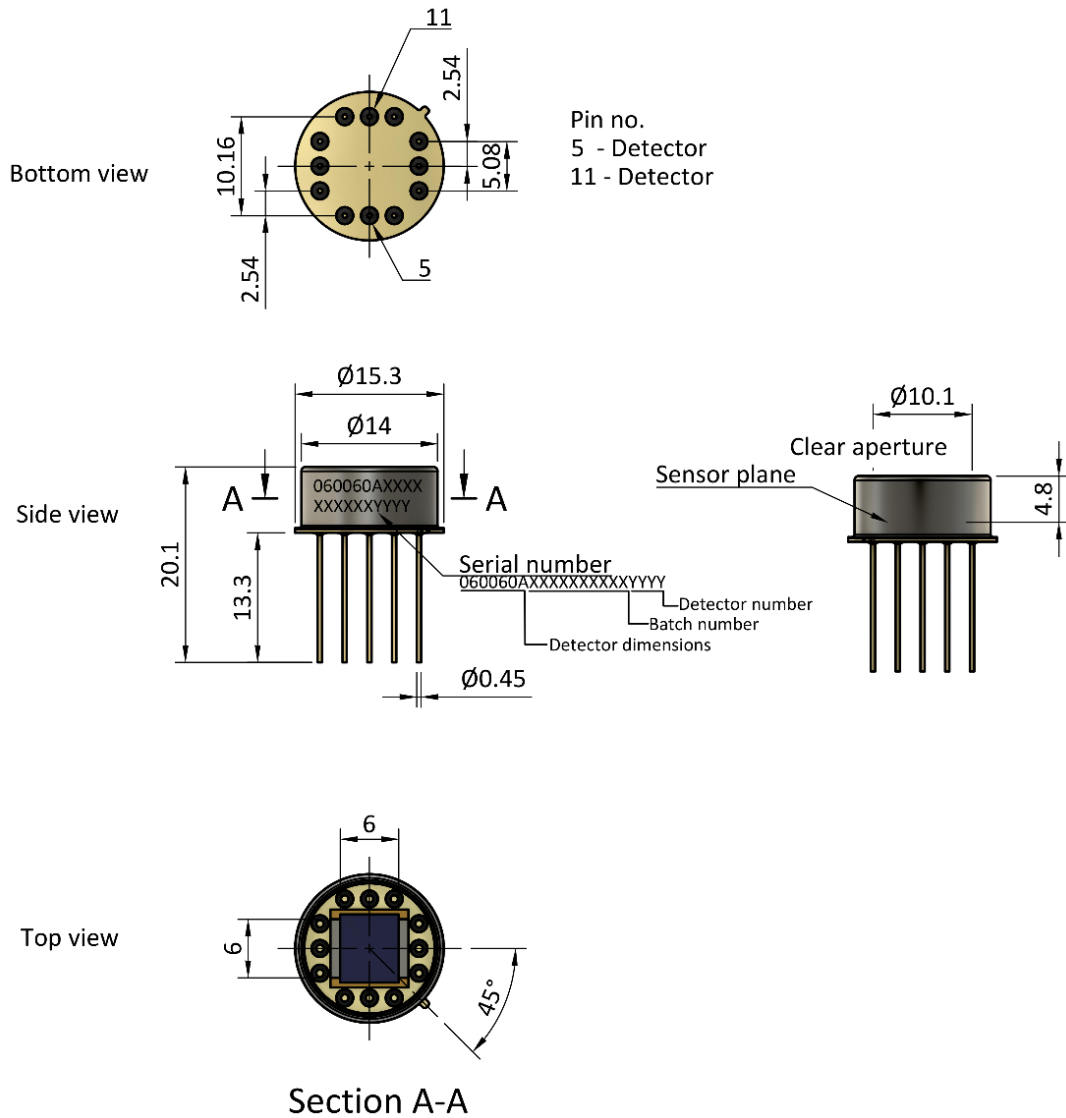
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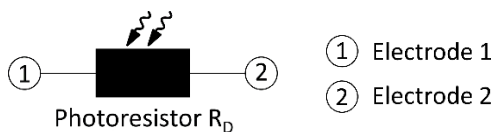
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TO8 exemplary package outlines (dimensions in mm)

PbSe060060TO8



Schematic



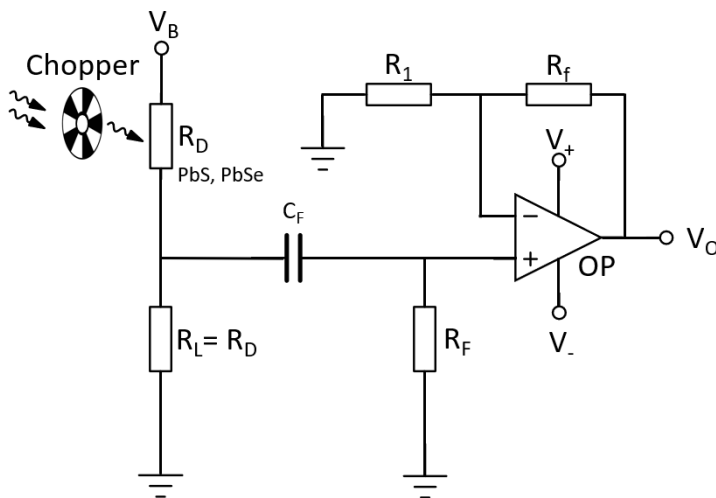
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Exemplary circuit



- 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.