

# PbSe near-infrared detector

## Multi-Pixel thin-film encapsulated

### Features

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

### Applications

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

### Electrical and optical characteristics per pixel

Element temperature [°C]	Peak wavelength $\lambda_p$ [μm]	20% cut-off wavelength $\lambda_c$ [μm]	Peak D* (620 Hz, 1 Hz) [cm·Hz <sup>1/2</sup> /W]		Time constant [μs] <sup>a</sup>	Dark resistance R <sub>D</sub> [MΩ]
	Typ.	Typ.	Typ.	Min.	Typ.	
22	3.8	4.5	1.8 · 10 <sup>10</sup>	1 · 10 <sup>10</sup>	4	0.3 - 20 <sup>b</sup>

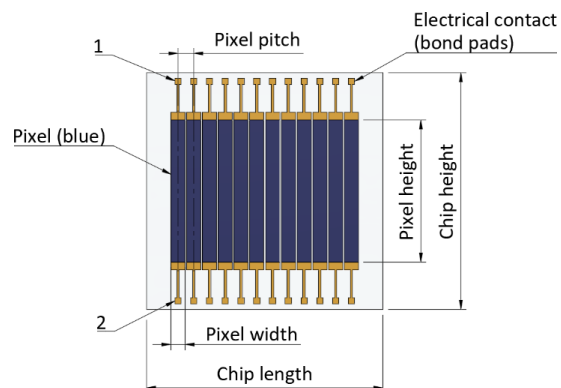
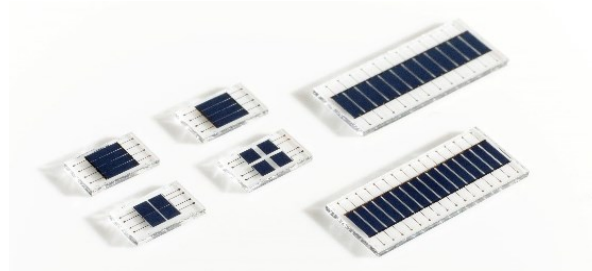
<sup>a</sup>literature value

<sup>b</sup>depends on pixel geometry

- Measured with 500K blackbody
- Measured in a voltage divider circuit with fixed load resistor
- Photo responsivity and detectivity calculated for a voltage divider circuit with matched resistance and 50 V/mm

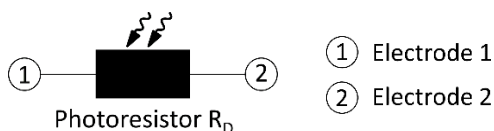
### Possible mechanical characteristics

- Number of lines 1 - 4
- Number of pixels 2 - 16
- Minimum pixel width 20 μm
- Minimum pixel height 20 μm
- Minimum pixel pitch 50 μm
- Minimal chip length 3000 μm
- Minimal chip height 3000 μm



Please contact us for an individual design:  
info@trinamix.de

### Schematic



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## Exemplary mechanical characteristics

Type No.	Number of lines	Number of pixels	Pixel pitch [μm]	Pixel width [μm]	Pixel height [μm]	Operating temperature [°C]
PbSe_MP_01x12_0200_0180x1800	1	12	200	180	x 1800	-30 to +90

### 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

### Storage

- Storage temperature: -55°C to +90°C
- Exposure to UV light results in permanent damage
- Prevent exposure to UV and visible light

### 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
- Bonding onto PCB
- Integrated optics
- Evaluation-Kit available

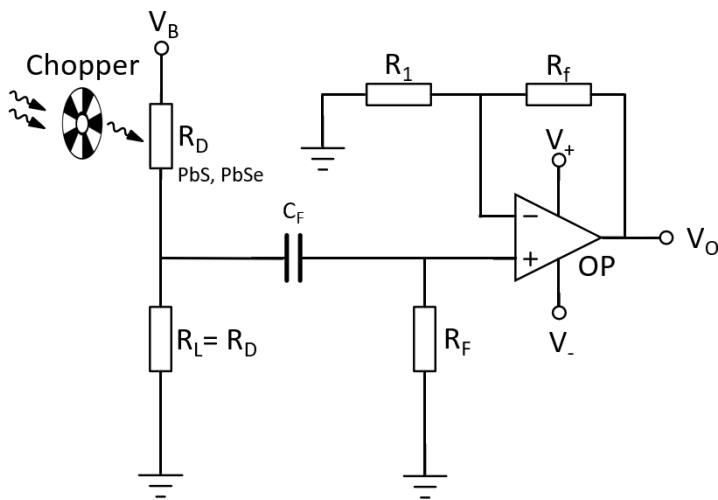
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### Exemplary circuit



- $V_B$ : 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.