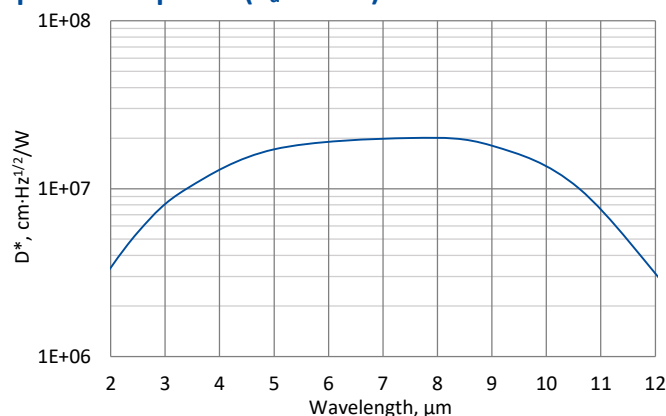


## PEM-10.6-2x2-PEM-SMA-wZnSeAR-48

### 2.0 – 12.0 $\mu\text{m}$ HgCdTe ambient temperature photoelectromagnetic detector

**PEM-10.6-2x2-PEM-SMA-wZnSeAR-48** is uncooled IR photovoltaic multiple junction HgCdTe detector based on photoelectromagnetic effect in the semiconductor – spatial separation of optically generated electrons and holes in the magnetic field. This device is designed for the maximum performance at 10.6  $\mu\text{m}$  and especially useful as a large active area detector to detect CW and low frequency modulated radiation. This device is mounted in specialized package with incorporated magnetic circuit inside and SMA signal output connector. 3° wedged zinc selenide anti-reflection coated window prevents unwanted interference effects and protects against pollution.

#### Spectral response ( $T_a = 20^\circ\text{C}$ )



Exemplary spectral detectivity, the spectral response of delivered devices may differ.

#### Specification ( $T_a = 20^\circ\text{C}$ )

Parameter	Detector type
	PEM-10.6-2x2-PEM-SMA-wZnSeAR-48
Active element material	epitaxial HgCdTe heterostructure
Cut-on wavelength $\lambda_{\text{cut-on}}$ (10%), $\mu\text{m}$	$\leq 2.0$
Peak wavelength $\lambda_{\text{peak}}$ , $\mu\text{m}$	$8.5 \pm 1.5$
Optimum wavelength $\lambda_{\text{opt}}$ , $\mu\text{m}$	10.6
Cut-off wavelength $\lambda_{\text{cut-off}}$ (10%), $\mu\text{m}$	$\geq 12.0$
Detectivity $D^*(\lambda_{\text{peak}})$ , $\text{cm}\cdot\text{Hz}^{1/2}/\text{W}$	$\geq 2.0 \times 10^7$
Detectivity $D^*(\lambda_{\text{opt}})$ , $\text{cm}\cdot\text{Hz}^{1/2}/\text{W}$	$\geq 1.0 \times 10^7$
Current responsivity $R_i(\lambda_{\text{peak}})$ , A/W	$\geq 0.002$
Current responsivity $R_i(\lambda_{\text{opt}})$ , A/W	$\geq 0.001$
Time constant $\tau$ , ns	$\leq 1.2$
Resistance $R$ , $\Omega$	$\geq 40$
Active area $A$ , mm $\times$ mm	2 $\times$ 2
Package	PEM-SMA
Acceptance angle $\Phi$	$\sim 48^\circ$
Window	wZnSeAR

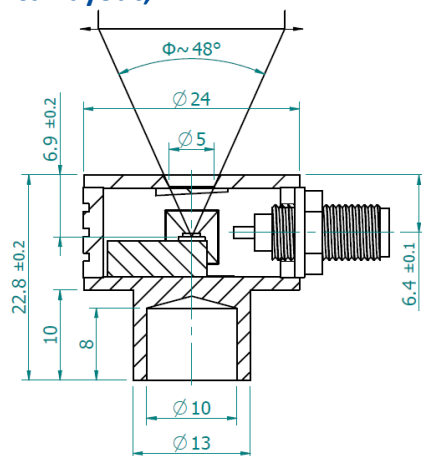
#### Features

- Wide spectral range from 2.0 to 12.0  $\mu\text{m}$
- Large active area 2 $\times$ 2 mm<sup>2</sup>
- Wide dynamic range
- No bias required
- No flicker noise
- Short time constant  $\leq 1.2$  ns
- Sensitive to IR radiation polarisation
- Convenient to use
- Quantity discounted price
- Fast delivery

#### Applications

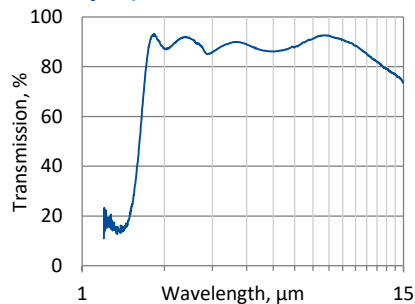
- CO<sub>2</sub> laser (10.6  $\mu\text{m}$ ) measurements
- Laser power monitoring and control
- Laser beam profiling and positioning
- Laser calibration

### Mechanical layout, mm

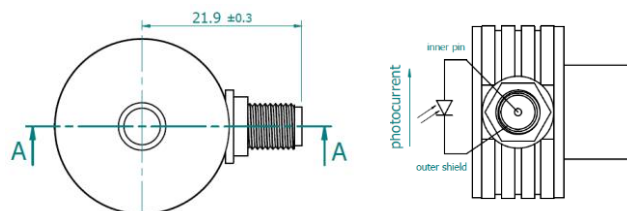


$\Phi$  – acceptance angle

### Spectral transmission of wZnSeAR window (typical example)



Top view



### Included accessories

- SMA-BNC cable

### Precautions for use and storage

- Operation in 10% to 80% humidity and -20°C to 30°C ambient temperature.
- Beam power limitations:
  - irradiance with CW or single pulse longer than 1  $\mu$ s irradiance on the apparent optical active area must not exceed 100 W/cm<sup>2</sup>,
  - irradiance of the pulse shorter than 1  $\mu$ s must not exceed 1 MW/cm<sup>2</sup>.
- Storage in dark place with 10% to 90% humidity and -20°C to 50°C ambient temperature.

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