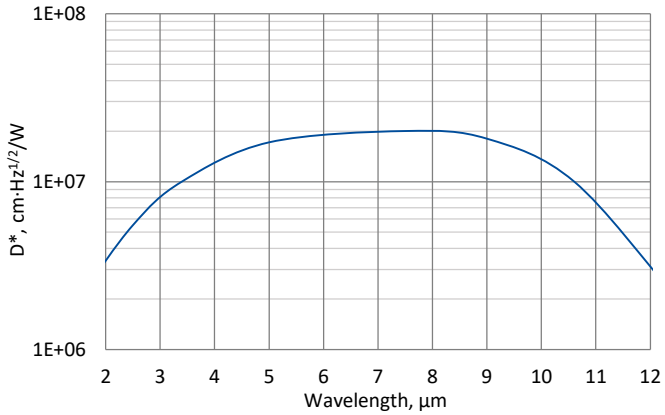
PEM-10.6-2×2-PEM-SMA-wZnSeAR-48

2.0 – 12.0 µm HgCdTe ambient temperature photoelectromagnetic detector

PEM-10.6-2×2-PEM-SMA-wZnSeAR-48 is uncooled IR photovoltaic multiple junction HgCdTe detector based on photelectromagnetic 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 µm 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°C)



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

Specification (T_a = 20°C)

Parameter	Detector type
	PEM-10.6-2×2-PEM-SMA-wZnSeAR-48
Active element material	epitaxial HgCdTe heterostructure
Cut-on wavelength $\lambda_{cut\text{-}on}$ (10%), µm	≤2.0
Peak wavelength λ_{peak}, µm	8.5±1.5
Optimum wavelength λ_{opt}, µm	10.6
Cut-off wavelength $\lambda_{cut\text{-}off}$ (10%), µm	≥12.0
Detectivity D*(λ_{peak}), cm·Hz$^{1/2}$/W	≥2.0×10^7
Detectivity D*(λ_{opt}), cm·Hz$^{1/2}$/W	≥1.0×10^7
Current responsivity R_i(λ_{peak}), A/W	≥0.002
Current responsivity R_i(λ_{opt}), A/W	≥0.001
Time constant τ, ns	≤1.2
Resistance R, Ω	≥40
Active area A, mm×mm	2×2
Package	PEM-SMA
Acceptance angle Φ	~48°
Window	wZnSeAR

Features

- Wide spectral range from 2.0 to 12.0 µm
- Large active area 2×2 mm^2
- Wide dynamic range
- No bias required
- No flicker noise
- Short time constant ≤ 1.2 ns
- Sensitive to IR radiation polarisation
- Convenient to use
- Quantity discounted price
- Fast delivery

Applications

- CO_2 laser (10.6 µm) measurements
- Laser power monitoring and control
- Laser beam profiling and positioning
- Laser calibration

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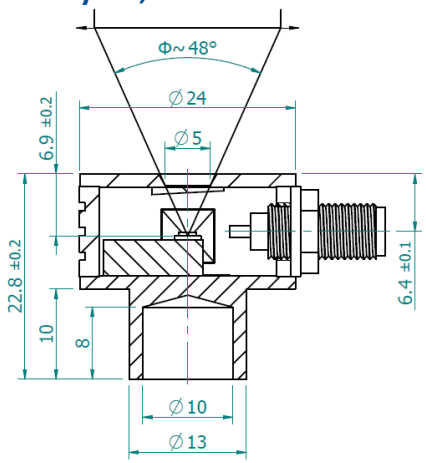
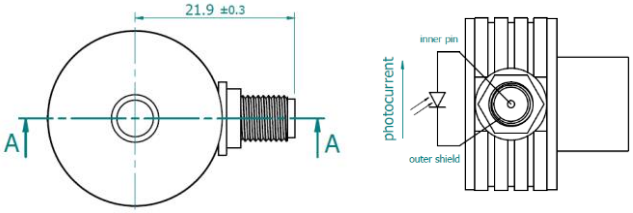
Mechanical layout, mm

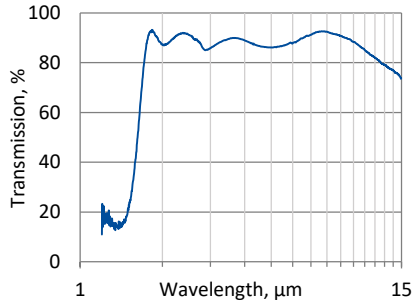


Φ – acceptance angle

Top view



Spectral transmission of wZnSeAR window (typical example)



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 µs irradiance on the apparent optical active area must not exceed 100 W/cm^2,
  - irradiance of the pulse shorter than 1 µs must not exceed 1 MW/cm^2.
- Storage in dark place with 10% to 90% humidity and -20°C to 50°C ambient temperature.

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