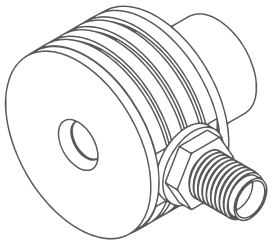
PEM-10.6-1×1-PEM-SMA-wZnSeAR-48



HgCdTe room temperature photoelectromagnetic infrared detector

FEATURES

- Spectral range: 2.0 to 12.0 µm
- Back-side illuminated
- No minimum order quantity required

RELATED PRODUCTS

- **LabM-I-10.6** detection module (p. 107)
- **UM-I-10.6** detection module (p. 113)
- **microM-10.6** detection module (p. 110)
- **PVIA-10.6-1×1-TO39-NW-36** RoHS-compliant detector (p. 22)
- **PVIA-4TE-10.6-1×1-TO8-wZnSeAR-36** RoHS-compliant detector (p. 22)

APPLICATIONS

- Gas detection, monitoring and analysis: SO_2, NH_3, SF_6
- CBRN threats detection
- CO_2 laser measurements: power monitoring and control, beam profiling and positioning, calibration
- Free-space optical communication
- FTIR spectroscopy
- Medical bacteria identification
- Dentistry
- Glucose sensing

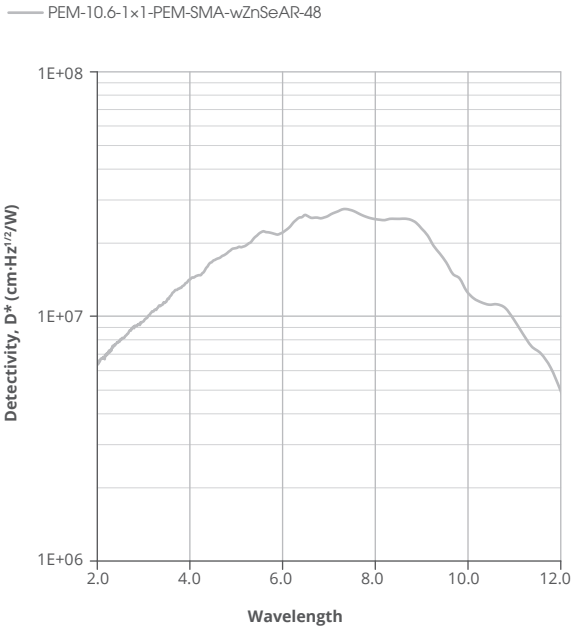
DETECTOR CONFIGURATION

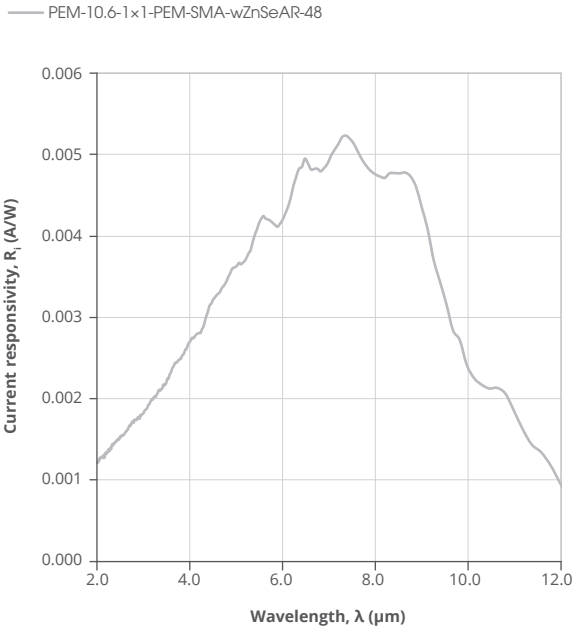
Detector symbol	Cooling	Temperature sensor	Active area, A, mm×mm	Optical immersion	Package	Acceptance angle, Φ, deg.	Window (p. 193)
PEM-10.6-1×1-PEM-SMA-wZnSeAR-48	no	n/a	1×1	no	PEM-SMA	~48	wZnSeAR (3 deg. zinc selenide, anti-reflection coating)

SPECIFICATION (T_{amb} = 293 K, V_b = 0 V)

Detector symbol	Cut-on wavelength (10%)	Peak wavelength	Specific wavelength	Cut-off wavelength (10%)	Detectivity		Current responsivity			Time constant	Dynamic resistance	
	$\lambda_{cut\text{-}on}$	λ_{peak}	λ_{spec}	$\lambda_{cut\text{-}off}$	$D^*(\lambda_{peak}, 20kHz)$	$D^*(\lambda_{spec}, 20kHz)$	$R_i(\lambda_{peak})$	$R_i(\lambda_{spec})$		τ	R_d	
	µm	µm	µm	µm	cm·Hz$^{1/2}$/W	cm·Hz$^{1/2}$/W	A/W	A/W		ns	Ω	
	Typ.	Typ.	Typ.	Typ.	Typ.	Min.	Typ.	Min.	Typ.	Typ.	Min.	Typ.
PEM-10.6-1×1-PEM-SMA-wZnSeAR-48	2.0	8.5±1.0	10.6	12.0	2.0×10^7	1.0×10^7	0.004	0.002	0.0025	1.2	40	50

SPECTRAL RESPONSE (Typ., T_{amb} = 293 K)





MECHANICAL LAYOUT AND PINOUT

- PEM-SMA package – Technical drawing (p. 202)

ABSOLUTE MAXIMUM RATINGS

Parameter	Test conditions/remarks	Value	Unit
Ambient operating temperature, T_{amb}	Operation at T_{amb} >30°C may increase the active element temperature and reduce the performance of the detector below specified parameters	-20 to 30	°C
Storage temperature, T_{stg}		-20 to 50	°C
Soldering temperature	Within 5 s or less	≤300	°C
Storage humidity	No dew condensation	10 to 90	%
Maximum incident optical power density	Continuous wave (CW) or single pulses >1 µs duration	100	W/cm^2
	Single pulses <1 µs duration	1	MW/cm^2
Maximum bias voltage, $V_{b\,max}$	No bias voltage needed	-	-

Stresses beyond those listed under absolute maximum ratings may cause permanent damage to the device. Constant or repeated exposure to absolute maximum rating conditions may affect the quality and reliability of the device.