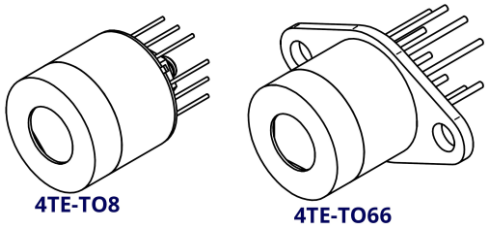
PC-10.6 DETECTOR SERIES

DATASHEET

HgCdTe thermoelectrically cooled photoconductive infrared detectors



FEATURES

- Spectral range: over 13.0 µm
- Front-side illuminated
- No minimum order quantity required

RELATED PRODUCTS

- LabM-I-10.6 detection module
- UM-I-10.6 detection module
- microM-10.6 detection module
- PVIA-10.6-1x1-TO39-NW-36 RoHS-compliant detector
- PVIA-4TE-10.6-1x1-TO8-wZnSeAR-36 RoHS-compliant detector

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
- Bacteria identification in medicine
- Dentistry
- Glucose sensing

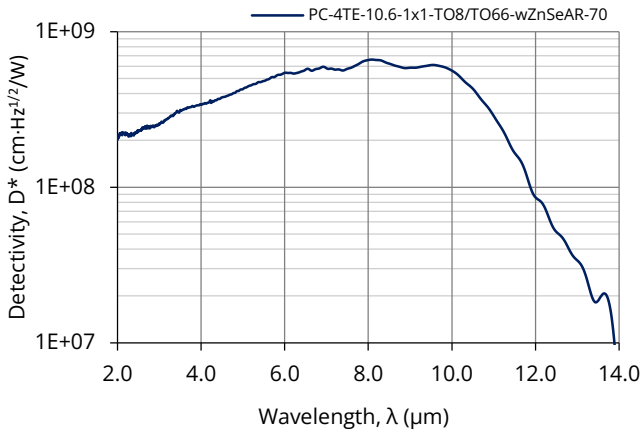
SERIES DESCRIPTION

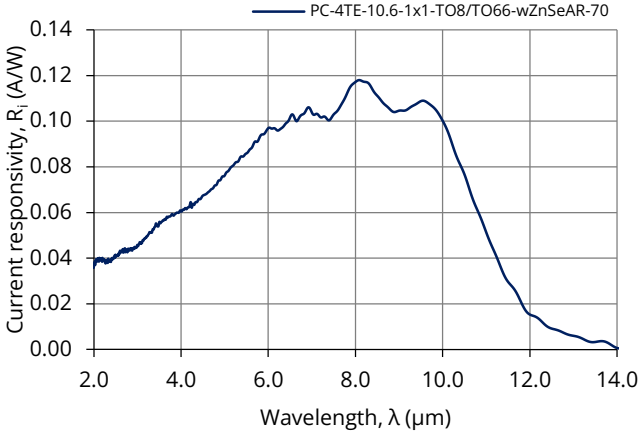
Detector symbol	Cooling	Temperature sensor	Active area, A, mm×mm	Optical immersion	Package	Acceptance angle, Φ, deg.	Window
PC-4TE-10.6-1x1-TO8-wZnSeAR-70	4TE T_{chip}≅200K	thermistor	1×1	no	4TE-TO8	~70	wZnSeAR (3 deg. zinc selenide, anti-reflection coating)
PC-4TE-10.6-1x1-TO66-wZnSeAR-70					4TE-TO66		

SPECIFICATION (T_{amb} = 293 K, V_b = 0.4 V)

Detector symbol	Peak wavelength	Specific wavelength	Cut-off wavelength (10%)	Detectivity			Current responsivity			Time constant	Resistance	Bias voltage	1/f corner frequency
	λ_{peak}	λ_{spec}	$\lambda_{cut\text{-}off}$	D*(λ_{peak}, 20kHz)	D*(λ_{spec}, 20kHz)		$R_i(\lambda_{peak})$	$R_i(\lambda_{spec})$		τ	R	V_b	f_c
	µm	µm	µm	cm·Hz$^{1/2}$/W	cm·Hz$^{1/2}$/W		A/W	A/W		ns	Ω	V	kHz
	Typ.	Typ.	Typ.	Typ.	Min.	Typ.	Typ.	Min.	Typ.	Typ.	Max.	Typ.	Typ.
PC-4TE-10.6-1x1-TO8-wZnSeAR-70	8.5±0.6	10.6	13.0	6.5×10^8	3.5×10^8	4.0×10^8	0.06	0.03	0.06	30	250	0.4	20
PC-4TE-10.6-1x1-TO66-wZnSeAR-70													

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





MECHANICAL LAYOUT AND PINOUT

- 4TE-TO8(12p)-wW, PC detector technical drawing
- 4TE-TO66(9p)-wW, PC detector technical drawing

RECOMMENDED AMPLIFIERS

Detector symbol	Amplifier type
PC-4TE-10.6-1x1-TO8-wZnSeAR-70	AIP series PIP series MIP series SIP-TO8 series

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, $V_{b\,max}$		2.0	V
Maximum TEC voltage, $V_{TEC\,max}$	4TE	8.3	V
Maximum TEC current, $I_{TEC\,max}$	4TE	0.4	A

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.