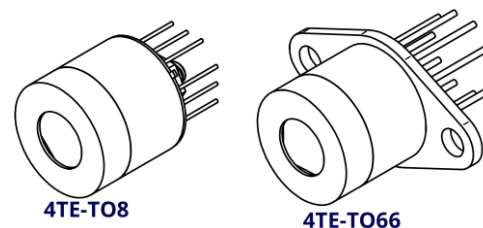


PCI-14 DETECTOR SERIES

DATASHEET

**HgCdTe thermoelectrically cooled
optically immersed photoconductive
infrared detectors**



FEATURES

- Spectral range: over 15.0 μm
- Back-side illuminated
- Unique immersion lens technology applied
- No minimum order quantity required

APPLICATIONS

- FTIR spectroscopy
- Gas detection, monitoring and analysis: CH_3Cl , C_2H_2
- Toxic gas detection

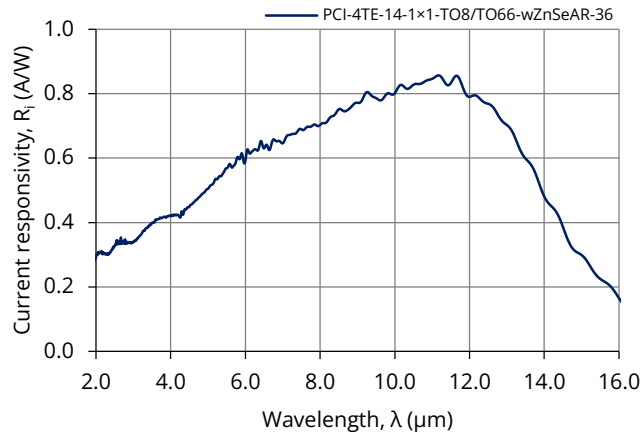
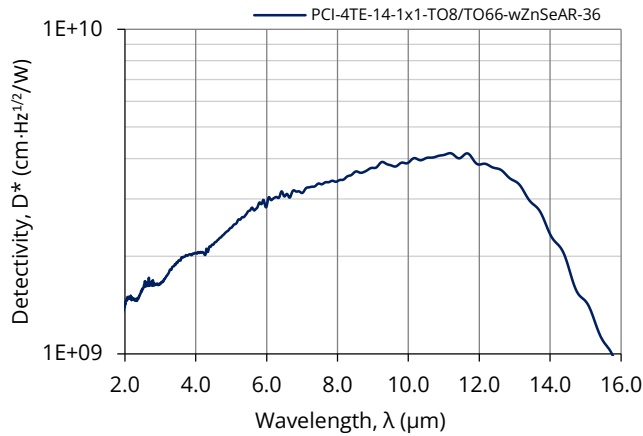
SERIES DESCRIPTION

Detector symbol	Cooling	Temperature sensor	Optical area, A_o , mm×mm	Optical immersion	Package	Acceptance angle, Φ , deg.	Window
PCI-4TE-14-1x1-TO8-wZnSeAR-36	4TE $T_{\text{chip}} \cong 200\text{K}$	thermistor	1×1	hyperhemisphere	4TE-TO8	~36	wZnSeAR (3 deg. zinc selenide, anti-reflection coating)
PCI-4TE-14-1x1-TO66-wZnSeAR-36					4TE-TO66		

SPECIFICATION ($T_{\text{amb}} = 293\text{ K}$, $V_b = 0.5\text{ V}$)

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}	$\lambda_{\text{cut-off}}$	$D^*(\lambda_{\text{peak}}, 20\text{kHz})$	$D^*(\lambda_{\text{spec}}, 20\text{kHz})$		$R_i(\lambda_{\text{peak}})$	$R_i(\lambda_{\text{spec}})$		τ	R	V_b	f_c
	μm	μm	μm	$\text{cm}\cdot\text{Hz}^{1/2}/\text{W}$	Min.	Typ.	A/W	A/W		ns	Ω	V	kHz
PCI-4TE-14-1x1-TO8-wZnSeAR-36	Typ.	Typ.	Typ.	Typ.			Typ.	Min.	Typ.	Typ.	Max.	Typ.	Typ.
PCI-4TE-14-1x1-TO66-wZnSeAR-36	11.2±0.6	14.0	15.0	1.7×10^9	1.0×10^9	1.2×10^9	0.8	0.2	0.4	5	250	0.5	20

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



MECHANICAL LAYOUT AND PINOUT

- [4TE-TO8\(12p\)-wW, PVI/PCI detector technical drawing](#)
- [4TE-TO66\(9p\)-wW, PVI/PCI detector technical drawing](#)

RECOMMENDED AMPLIFIERS

Detector symbol	Amplifier type
PCI-4TE-14-1x1-TO8-wZnSeAR-36	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 $T_{amb} > 30^\circ\text{C}$ may increase the active element temperature and reduce the performance of the detector below specified parameters	-20 to 30	$^\circ\text{C}$
Storage temperature, T_{stg}		-20 to 50	$^\circ\text{C}$
Soldering temperature	Within 5 s or less	≤ 300	$^\circ\text{C}$
Storage humidity	No dew condensation	10 to 90	%
Maximum incident optical power density	Continuous wave (CW) or single pulses $> 1\text{ }\mu\text{s}$ duration	2.5	W/cm^2
	Single pulses $< 1\text{ }\mu\text{s}$ duration	10	kW/cm^2
Maximum bias voltage, $V_{b\text{ max}}$		1.5	V
Maximum TEC voltage, $V_{TEC\text{ max}}$	4TE	8.3	V
Maximum TEC current, $I_{TEC\text{ max}}$	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.