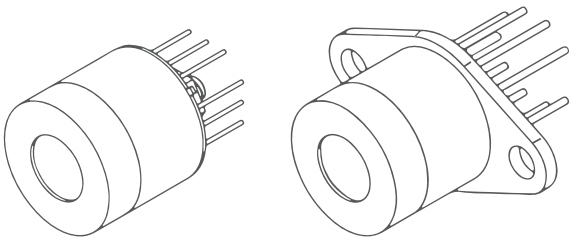
PCI-13 SERIES

HgCdTe thermoelectrically cooled optically immersed photoconductive infrared detectors



4TE-TO8 4TE-TO66

FEATURES

- Spectral range: over 14.0 µm
- Back-side illuminated
- Unique immersion lens technology applied
- No minimum order quantity required

APPLICATIONS

- FTIR spectroscopy
- Gas detection, monitoring and analysis: C_2H_6
- Toxic gas detection
- Gas leak detection

RELATED PRODUCT

- **PVIA-4TE-13-1×1-TO8-wZnSeAR-36**
  RoHS-compliant detector (p. 24)

SERIES DESCRIPTION

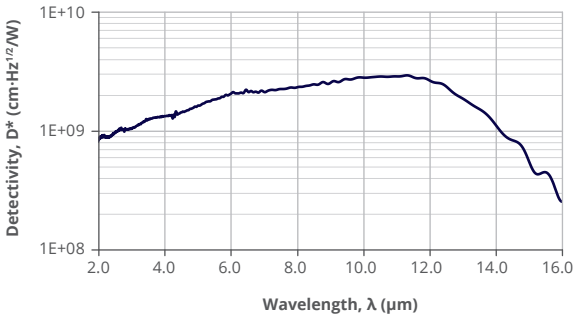
Detector symbol	Cooling (p. 191)	Temperature sensor (p. 192)	Optical area, A_o, mm×mm	Optical immersion (p. 188)	Package	Acceptance angle, Φ, deg.	Window (p. 193)
PCI-4TE-13-1×1-TO8-wZnSeAR-36	4TE T_{chip}≅200K	thermistor	1×1	hyperhemi-sphere	TO8	~36	wZnSeAR (3 deg. zinc selenide, anti-reflection coating)
PCI-4TE-13-1×1-TO66-wZnSeAR-36					TO66		

SPECIFICATION (T_{amb} = 293 K, V_b = 0.8 V)

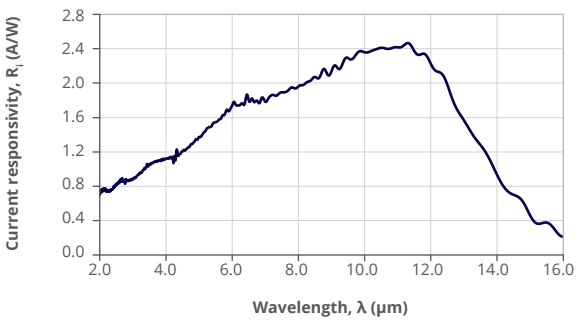
Detector symbol	Peak wavelength	Specific wavelength	Cut-off wavelength (10%)	Detectivity			Current responsivity			Time constant	Dynamic resistance	Bias voltage	1/f corner frequency
	λ_{peak}	λ_{spec}	$\lambda_{cut-off}$	$D^*(\lambda_{peak}, 20kHz)$	$D^*(\lambda_{spec}, 20kHz)$		$R_i(\lambda_{peak})$	$R_i(\lambda_{spec})$		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.
PCI-4TE-13-1×1-TO8-wZnSeAR-36	10.4±0.6	13.0	14.0	2.4×10^9	1.0×10^9	1.8×10^9	0.5	0.05	0.4	6	300	0.8	20
PCI-4TE-13-1×1-TO66-wZnSeAR-36													

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

PCI-4TE-13-1×1-TO8/TO66-wZnSeAR-36



PCI-4TE-13-1×1-TO8/TO66-wZnSeAR-36



MECHANICAL LAYOUT AND PINOUT

- 4TE-TO8 package
  – Technical drawing (p. 210)
- 4TE-TO66 package
  – Technical drawing (p. 212)

RECOMMENDED AMPLIFIERS

Detector symbol	Amplifier type
PCI-4TE-13-1×1-TO8-wZnSeAR-36	AIP series (p. 126) PIP series (p. 129) MIP series (p. 132) SIP-TO8 series (p. 135)

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	2.5	W/cm²
	Single pulses <1 µs duration	10	kW/cm²
Maximum bias voltage, $V_{b\ max}$		1.5	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.