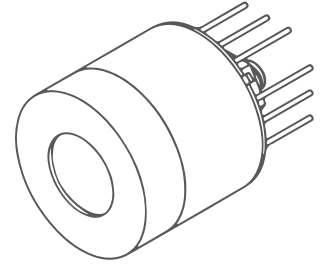


PVIA-4TE-13-1×1-TO8-wZnSeAR-36

**InAs/InAsSb superlattice
four-stage thermoelectrically
cooled optically immersed
photovoltaic infrared detector**



FEATURES

- Spectral range: 2.0 to 13.6 μm
- RoHS-compliant III-V material
- Unique optical immersion technology applied
- Back-side illuminated
- Long term stability
- Fast response
- No minimum order quantity required

APPLICATIONS

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

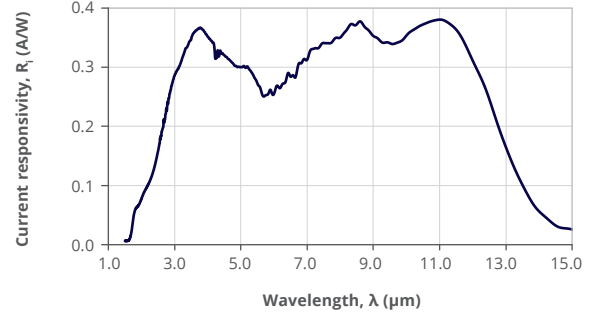
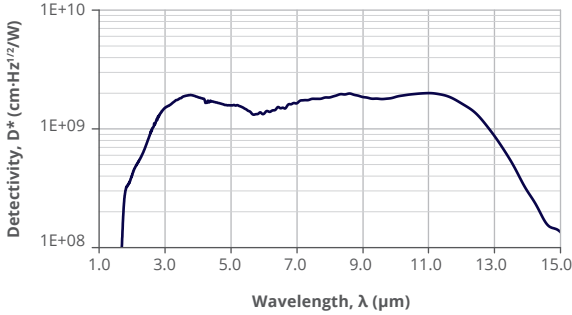
DETECTOR CONFIGURATION

Detector symbol	Cooling (p. 191)	Temperature sensor (p. 192)	Active area, A, mm×mm	Optical immersion (p. 188)	Package	Acceptance angle, Φ , deg.	Window (p. 193)
PVIA-4TE-13-1×1-TO8-wZnSeAR-36	4TE ($T_{\text{chip}} \approx 200\text{K}$)	thermistor	1×1	hyperhemisphere	TO8	~36	wZnSeAR (3 deg. wedged zinc selenide, anti-reflection coating)

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

Detector symbol	Cut-on wavelength (10%)	Peak wavelength	Cut-off wavelength (10%)	Detectivity		Current responsivity		Time constant	Dynamic resistance	
	$\lambda_{\text{cut-on}}$	λ_{peak}	$\lambda_{\text{cut-off}}$	$D^*(\lambda_{\text{peak}}, 20\text{kHz})$		$R_i(\lambda_{\text{peak}})$		τ	R_d	
	μm	μm	μm	$\text{cm}\cdot\text{Hz}^{1/2}/\text{W}$		A/W		ns	Ω	
	Max.	Typ.	Min.	Min.	Typ.	Min.	Typ.	Typ.	Min.	Typ.
PVIA-4TE-13-1×1-TO8-wZnSeAR-36	2.0	10.5	13.6	2.0×10^9	3.0×10^9	0.25	0.38	3	90	120

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



MECHANICAL LAYOUT AND PINOUT

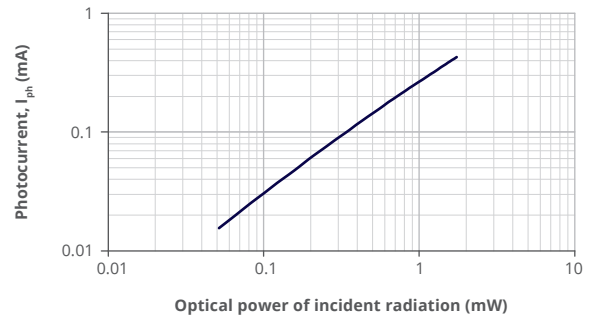
- 4TE-TO8 package – Technical drawing (p. 210)

RECOMMENDED AMPLIFIERS

- AIP series (p. 126)
- PIP series (p. 129)
- MIP series (p. 132)
- SIP-TO8 series (p. 135)

LINEARITY

(Typ., $T_{amb} = 293\text{ K}$, $\lambda = 4.55\text{ μm}$)



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	-40 to 70	$^{\circ}\text{C}$
Storage temperature, T_{stg}		-40 to 85	$^{\circ}\text{C}$
Soldering temperature	Within 5 s or less	≤ 370	$^{\circ}\text{C}$
Storage humidity	No dew condensation	10 to 90	%
Maximum incident optical power density	Continuous wave (CW) or single pulses $> 1\text{ μs}$ duration	2.5	W/cm^2
	Single pulses $< 1\text{ μs}$ duration	10	kW/cm^2
Maximum bias voltage, $V_{b\text{ max}}$		-1.5	V
Maximum TEC voltage, $V_{\text{TEC max}}$	4TE	8.3	V
Maximum TEC current, $I_{\text{TEC max}}$	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.