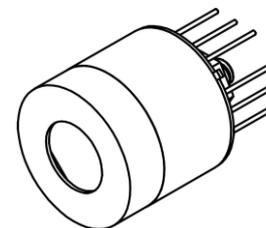


# PVIA-4TE-14-1x1-TO8-wZnSeAR-36

**PRELIMINARY  
DATASHEET**

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



## FEATURES

- Spectral range: 2.0 to 15.2  $\mu\text{m}$
- RoHS-compliant III-V material
- Unique optical immersion technology applied
- Back-side illuminated
- Long-term stability
- Very fast response
- No minimum order quantity required

## APPLICATIONS

- FTIR spectroscopy
- Gas detection, monitoring and analysis:  $\text{CH}_3\text{Cl}$ ,  $\text{C}_2\text{H}_2$
- Toxic gas detection

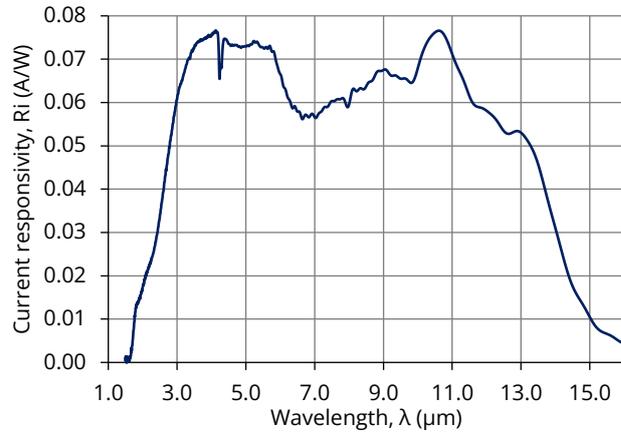
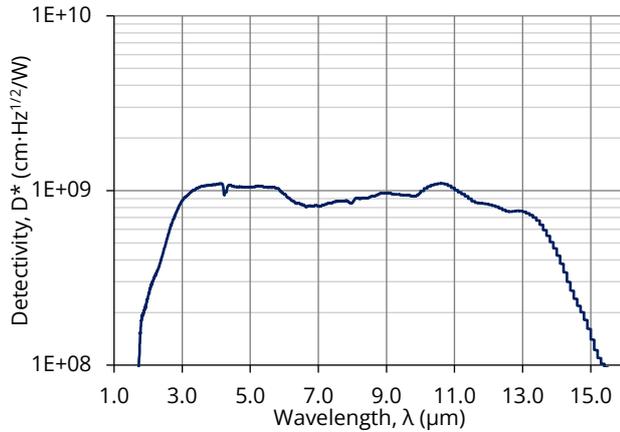
## DETECTOR CONFIGURATION

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

## SPECIFICATION ( $T_{\text{amb}} = 293\text{ K}$ , $T_{\text{chip}} = 200\text{ K}$ , $V_b = 0\text{ V}$ )

Detector symbol	Cut-on wavelength (10%)			Peak wavelength	Cut-off wavelength (10%)			Detectivity	Current responsivity		Time constant		Dynamic resistance		
	$\lambda_{\text{cut-on}}$	$\lambda_{\text{peak}}$	$\lambda_{\text{cut-off}}$		$D^*(\lambda_{\text{peak}}, 20\text{kHz})$		$R_i(\lambda_{\text{peak}})$		$\tau$		$R_d$				
	$\mu\text{m}$	$\mu\text{m}$	$\mu\text{m}$		$\text{cm}\cdot\text{Hz}^{1/2}/\text{W}$		$\text{A}/\text{W}$		$\text{ns}$		$\Omega$				
	Typ.	Typ.	Typ.		Min.	Typ.	Min.		Typ.	Typ.	Max.	Min.	Typ.		
PVIA-4TE-14-1x1-TO8-wAl <sub>2</sub> O <sub>3</sub> -36	2.0	10.6	15.2					$6.0 \times 10^8$	$1.1 \times 10^9$	0.052	0.075	0.8	1.4	125	250

### SPECTRAL RESPONSE (Typ., $T_{amb} = 293\text{ K}$ , $T_{chip} = 200\text{ K}$ )



### MECHANICAL LAYOUT AND PINOUT

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

### RECOMMENDED AMPLIFIER

Detector symbol	Preamplifier type
PVIA-4TE-14-1x1-TO8-wZnSeAR-36	<a href="#">AIP series</a>
	<a href="#">PIP series</a>
	<a href="#">MIP series</a>
	<a href="#">SIP-TO8 series</a>

### 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	$\leq 370$	$^{\circ}\text{C}$
Storage humidity	No dew condensation	10 to 90	%
Maximum incident optical power density	Continuous wave (CW) or single pulses $> 1\ \mu\text{s}$ duration	2.5	$\text{W}/\text{cm}^2$
	Single pulses $< 1\ \mu\text{s}$ duration	10	$\text{kW}/\text{cm}^2$
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.