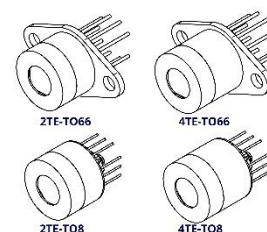


PVI-8 DETECTOR SERIES DATASHEET

HgCdTe thermoelectrically cooled photovoltaic optically immersed infrared detectors



FEATURES

- Spectral range: 3.0 to 10.0 μm
- Back-side illuminated
- Unique immersion lens technology applied
- No minimum order quantity required

APPLICATIONS

- Gas detection, monitoring and analysis: CH_4 , H_2S , NO_2 , SO_x
- FTIR spectroscopy

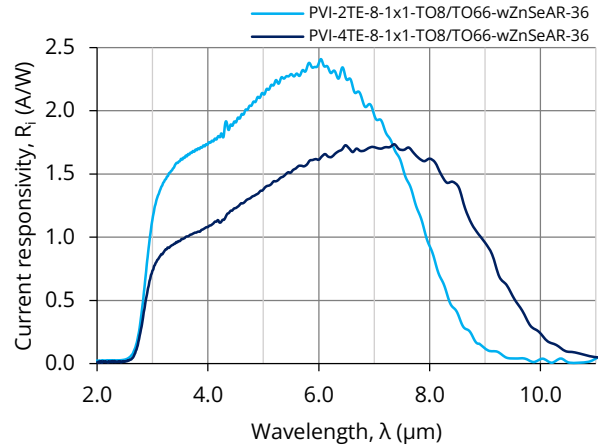
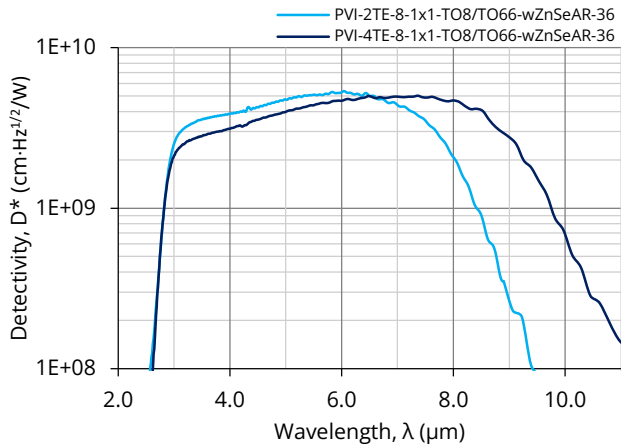
SERIES DESCRIPTION

Detector symbol	Cooling	Temperature sensor	Optical area, A_o , mm \times mm	Optical immersion	Package	Acceptance angle, Φ , deg.	Window
PVI-2TE-8-1x1-TO8-wZnSeAR-36	2TE	thermistor	1 \times 1	hyperhemisphere	2TE-T08	~36	wZnSeAR (3 deg. zinc selenide, anti-reflection coating)
PVI-2TE-8-1x1-TO66-wZnSeAR-36	$T_{\text{chip}} \cong 230\text{K}$				2TE-T066		
PVI-4TE-8-1x1-TO8-wZnSeAR-36	4TE				4TE-T08		
PVI-4TE-8-1x1-TO66-wZnSeAR-36	$T_{\text{chip}} \cong 197\text{K}$				4TE-T066		

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

Detector symbol	Cut-on wavelength (10%)		Peak wavelength	Specific wavelength	Cut-off wavelength (10%)		Detectivity		Current responsivity		Time constant	Dynamic resistance	
	$\lambda_{\text{cut-on}}$	λ_{peak}	λ_{spec}	$\lambda_{\text{cut-off}}$	$D^*(\lambda_{\text{peak}}, 20\text{kHz})$	$D^*(\lambda_{\text{spec}}, 20\text{kHz})$	$R(\lambda_{\text{peak}})$	$R(\lambda_{\text{spec}})$	τ	R_d			
	μm	μm	μm	μm	$\text{cm}\cdot\text{Hz}^{1/2}/\text{W}$	$\text{cm}\cdot\text{Hz}^{1/2}/\text{W}$	A/W	A/W	ns	Min.	Typ.		
	Typ.	Typ.	Typ.	Typ.	Typ.	Min.	Typ.	Min.	Typ.	Max.	Min.	Typ.	
PVI-2TE-8-1x1-TO8-wZnSeAR-36	3.0	6.0 \pm 1.0	8.0	8.9	4.0 \times 10 ⁹	2.0 \times 10 ⁹	1.6	0.8	1.0	45	30	40	
PVI-2TE-8-1x1-TO66-wZnSeAR-36				10.0	5.0 \times 10 ⁹	4.0 \times 10 ⁹	3.0	1.5	1.7		50	100	
PVI-4TE-8-1x1-TO8-wZnSeAR-36		6.5 \pm 1.0		8.9	4.0 \times 10 ⁹	2.0 \times 10 ⁹	1.6	0.8	1.0	45	30	40	
PVI-4TE-8-1x1-TO66-wZnSeAR-36				10.0	5.0 \times 10 ⁹	4.0 \times 10 ⁹	3.0	1.5	1.7		50	100	

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



MECHANICAL LAYOUT AND PINOUT

- [2TE-TO8\(12p\)-wW, PVI/PCI detector technical drawing](#)
- [2TE-TO66\(9p\)-wW, PVI/PCI detector technical drawing](#)
- [4TE-TO8\(12p\)-wW, PVI/PCI detector technical drawing](#)
- [4TE-TO66\(9p\)-wW, PVI/PCI detector technical drawing](#)

RECOMMENDED AMPLIFIERS

Detector symbol	Amplifier type
PVI-2TE-8-1x1-TO8-wZnSeAR-36	AIP series
	PIP series
PVI-4TE-8-1x1-TO8-wZnSeAR-36	MIP series
	SIP-TO8 series
	EIP series^{*)}

^{*)} Only for biased detectors

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 $> 1\ \mu\text{s}$ duration	2.5	W/cm^2
	Single pulses $< 1\ \mu\text{s}$ duration	10	kW/cm^2
Maximum bias voltage, $V_{b\ max}$		-800	mV
Maximum TEC voltage, $V_{TEC\ max}$	2TE	1.0	V
	4TE	8.3	
Maximum TEC current, $I_{TEC\ max}$	2TE	1.2	A
	4TE	0.4	

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.