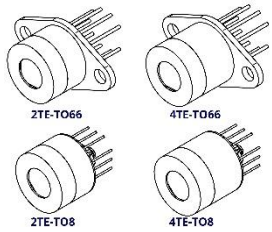
PV-6 DETECTOR SERIES

DATASHEET

HgCdTe thermoelectrically cooled photovoltaic infrared detectors



FEATURES

- Spectral range: 2.6 to 6.8 µm
- Back-side illuminated
- No minimum order quantity required

RELATED PRODUCTS

- LabM-I-6-01 detection module
- PVMA-1TE-6-1x1-TO39-pSiAR-70 RoHS-compliant detector
- AMS6140-01 RoHS-compliant detection module

APPLICATIONS

- Gas detection, monitoring and analysis: CH_4, C_2H_2, CH_2O, HCl, NH_3, SO_2, C_2H_6, CO, CO_2, NO_x, SO_x, HNO_3
- Exhaust gas denitrification
- Combustion process control
- Contactless temperature measurement: railway transport, industrial and laboratory processes monitoring
- Heat-seeking, thermal signature detection
- Non-destructive material testing
- Biochemical analysis
- Laser calibration

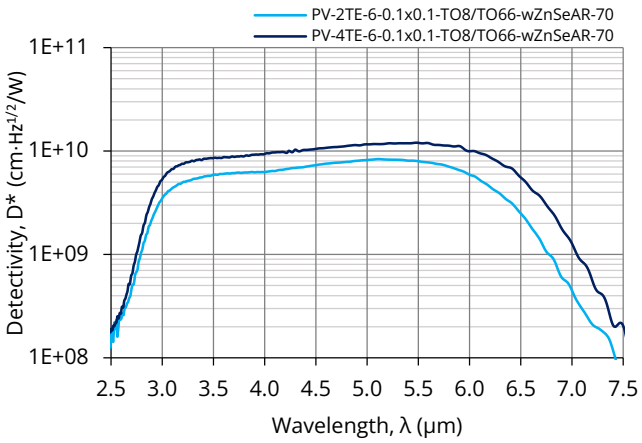
SERIES DESCRIPTION

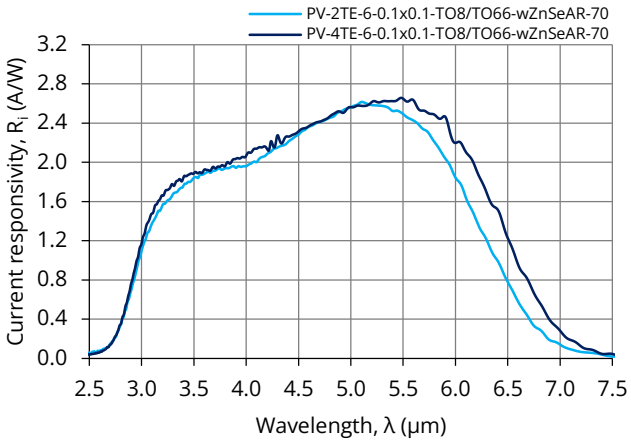
Detector symbol	Cooling	Temperature sensor	Active area, A, mm×mm	Optical immersion	Package	Acceptance angle, Φ, deg.	Window
PV-2TE-6-0.1x0.1-TO8-wZnSeAR-70	2TE T_{chip}≅230K	thermistor	0.1×0.1	no	2TE-TO8	~70	wZnSeAR (3 deg. zinc selenide, anti-reflection coating)
PV-2TE-6-0.1x0.1-TO66-wZnSeAR-70					2TE-TO66		
PV-4TE-6-0.1x0.1-TO8-wZnSeAR-70	4TE T_{chip}≅198K				4TE-TO8		
PV-4TE-6-0.1x0.1-TO66-wZnSeAR-70					4TE-TO66		

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

Detector symbol	Cut-on wavelength (10%)	Peak wavelength	Specific wavelength	Cut-off wavelength (10%)	Detectivity			Current responsivity			Time constant	Dynamic resistance	
	$\lambda_{cut\text{-}on}$	λ_{peak}	λ_{spec}	$\lambda_{cut\text{-}off}$	D*(λ_{peak}, 20kHz)	D*(λ_{spec}, 20kHz)		$R_i(\lambda_{peak})$	$R_i(\lambda_{spec})$		τ	R_d	
	µm	µm	µm	µm	cm·Hz$^{1/2}$/W	cm·Hz$^{1/2}$/W		A/W	A/W		ns	Ω	
	Typ.	Typ.	Typ.	Typ.	Typ.	Min.	Typ.	Typ.	Min.	Typ.	Typ.	Min.	Typ.
PV-2TE-6-0.1x0.1-TO8-wZnSeAR-70	2.6	5.2±0.2	6.0	6.8	8.0×10^9	3.0×10^9	6.0×10^9	2.5	1.3	1.8	50	300	1 000
PV-2TE-6-0.1x0.1-TO66-wZnSeAR-70													
PV-4TE-6-0.1x0.1-TO8-wZnSeAR-70		5.4±0.2			1.2×10^{10}	4.0×10^9	9.0×10^9					600	1 500
PV-4TE-6-0.1x0.1-TO66-wZnSeAR-70													

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





MECHANICAL LAYOUT AND PINOUT

- 2TE-TO8(12p)-wW, PV detector technical drawing
- 2TE-TO66(9p)-wW, PV detector technical drawing
- 4TE-TO8(12p)-wW, PV detector technical drawing
- 4TE-TO66(9p)-wW, PV detector technical drawing

RECOMMENDED AMPLIFIERS

Detector symbol	Amplifier type
PV-2TE-6-0.1x0.1-TO8-wZnSeAR-70	AIP series PIP series MIP series
PV-4TE-6-0.1x0.1-TO8-wZnSeAR-70	SIP-TO8 series FIP series*)

*) Only for biased detectors

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	100	W/cm^2
	Single pulses <1 μs duration	1	MW/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.