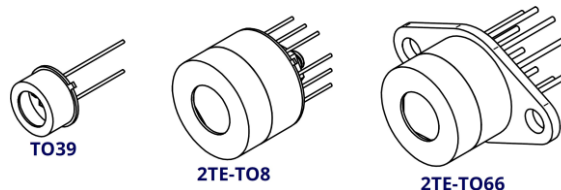


PV-4 DETECTOR SERIES

DATASHEET

HgCdTe room temperature and thermoelectrically cooled photovoltaic infrared detectors



FEATURES

- Spectral range: 2.3 to 4.4 μm
- Back-side illuminated
- No minimum order quantity required

RELATED PRODUCT

- [LabM-I-4 detection module](#)

APPLICATIONS

- Gas detection, monitoring and analysis: CH_4 , C_2H_2 , CH_2O , HCl , NH_3 , SO_2 , C_2H_6 , CO_2
- Breath analysis: C_2H_6 , CH_2O , NH_3
- Explosion prevention
- Exhaust gas denitrification
- Emission control (exhaust fumes, greenhouse gases)
- Contactless temperature measurements (metal industry)

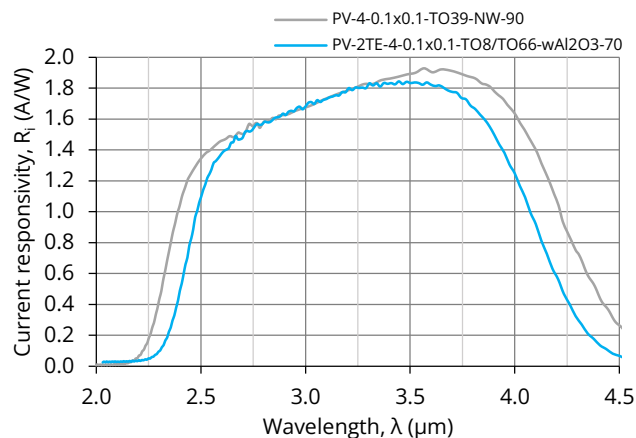
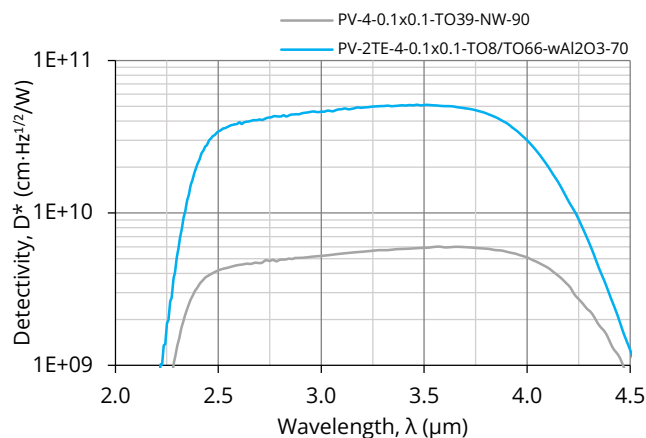
SERIES DESCRIPTION

Detector symbol	Cooling	Temperature sensor	Active area, A, mm×mm	Optical immersion	Package	Acceptance angle, Φ, deg.	Window
PV-4-0.1x0.1-TO39-NW-90	no	n/a	0.1×0.1	no	TO39 (3 pin)	~90	no
PV-2TE-4-0.1x0.1-TO8-wAl ₂ O ₃ -70	2TE	thermistor			2TE-TO8	~70	wAl ₂ O ₃ (3 deg. wedged sapphire)
PV-2TE-4-0.1x0.1-TO66-wAl ₂ O ₃ -70	T _{chip} ≅230K				2TE-TO66		

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}	$\lambda_{\text{cut-off}}$	$D^*(\lambda_{\text{peak}}, 20\text{kHz})$	$D^*(\lambda_{\text{spec}}, 20\text{kHz})$		$R_i(\lambda_{\text{peak}})$	$R_i(\lambda_{\text{spec}})$		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	Ω		
	Typ.	Typ.	Typ.	Typ.	Typ.	Min.	Typ.	Typ.	Min.	Typ.	Typ.	Min.	Typ.	
PV-4-0.1x0.1-TO39-NW-90	2.3	3.5±0.1	4.0	4.3	6.0×10 ⁹	3.0×10 ⁹	4.0×10 ⁹	1.8	1.0	1.3	150	800	2 000	
PV-2TE-4-0.1x0.1-TO8-wAl ₂ O ₃ -70				4.4	5.0×10 ¹⁰	2.0×10 ¹⁰	3.0×10 ¹⁰				100	30 000	100 000	
PV-2TE-4-0.1x0.1-TO66-wAl ₂ O ₃ -70														

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



MECHANICAL LAYOUT AND PINOUT

- [TO39\(3p\)-NW, PV detector technical drawing](#)
- [2TE-TO8\(12p\)-wW, PV detector technical drawing](#)
- [2TE-TO66\(9p\)-wW, PV detector technical drawing](#)

RECOMMENDED AMPLIFIERS

Detector symbol	Amplifier type
PV-4-0.1x0.1-TO39-NW-90	SIP-TO39 series
PV-2TE-4-0.1x0.1-TO8-wAl ₂ O ₃ -70	AIP series
	PIP series
	MIP series
	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 $T_{amb} > 30^\circ\text{C}$ 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 $> 1\text{ }\mu\text{s}$ duration	100	W/cm^2
	Single pulses $< 1\text{ }\mu\text{s}$ duration	1	MW/cm^2
Maximum bias voltage, $V_{b\text{ max}}$		-800	mV
Maximum TEC voltage, $V_{TEC\text{ max}}$	2TE	1.0	V
Maximum TEC current, $I_{TEC\text{ max}}$	2TE	1.2	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.