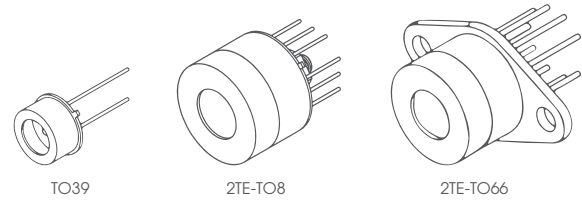


PV-5 SERIES

HgCdTe room temperature and thermoelectrically cooled photovoltaic infrared detectors



FEATURES

- Spectral range: 2.0 to 5.6 μm
- Back-side illuminated
- No minimum order quantity required

RELATED PRODUCTS

- **LabM-I-5** detection module (p. 101)
- **PVIA-5-1x1-TO39-NW-36** RoHS-compliant detector (p. 16)
- **PVMA-1TE-5-1x1-TO39-pSiAR-70** RoHS-compliant detector (p. 18)
- **AMS3140-01** RoHS-compliant detection module (p. 86)

APPLICATIONS

- Contactless temperature measurement: railway transport, industrial and laboratory processes monitoring
- Flame and explosion detection
- Threat warning systems
- Heat-seeking, thermal signature detection
- Dentistry
- 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
- Breath analysis: C_2H_6 , CH_2O , NH_3 , NO , OCS
- Gas leak detection
- Combustion process control
- Non-destructive material testing

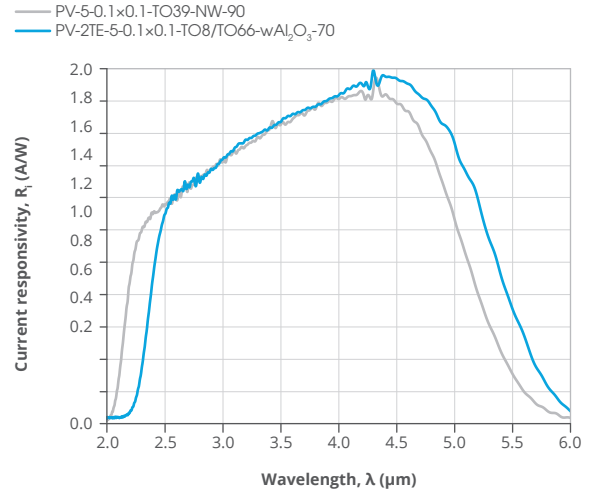
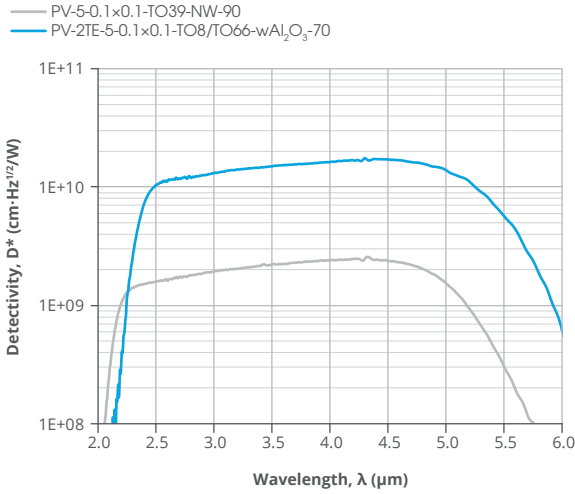
SERIES DESCRIPTION

Detector symbol	Cooling (p. 191)	Temperature sensor (p. 192)	Active area, A, mm \times mm	Optical immersion	Package	Acceptance angle, Φ , deg.	Window (p. 193)
PV-5-0.1 \times 0.1-TO39-NW-90	no	n/a	0.1 \times 0.1	no	TO39 (3 pins)	\sim 90	no
PV-2TE-5-0.1 \times 0.1-TO8-wAl ₂ O ₃ -70	2TE	thermistor			2TE-T08	\sim 70	wAl ₂ O ₃ (3 deg. wedged sapphire)
PV-2TE-5-0.1 \times 0.1-TO66-wAl ₂ O ₃ -70	T _{chip} \approx 230K				2TE-T066		

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

Detector symbol	Wavelength				Detectivity			Current responsivity			Time constant	Dynamic resistance	
	Cut-on wavelength (10%)	Peak wavelength	Specific wavelength	Cut-off wavelength (10%)	D*(λ_{peak} , 20kHz)		D*(λ_{spec} , 20kHz)		R(λ_{peak})	R(λ_{spec})	τ	R _d	
	$\lambda_{\text{cut-on}}$	λ_{peak}	λ_{spec}	$\lambda_{\text{cut-off}}$	cm \cdot Hz ^{1/2} /W	cm \cdot Hz ^{1/2} /W	A/W	A/W	ns	Ω			
	μm	μm	μm	μm	Typ.	Min.	Typ.	Typ.	Min.	Typ.	Typ.	Min.	Typ.
PV-5-0.1 \times 0.1-TO39-NW-90	2.0			5.4	2.5 \times 10 ⁹	1.0 \times 10 ⁹	1.5 \times 10 ⁹	2.0	1.0	1.2	120	100	250
PV-2TE-5-0.1 \times 0.1-TO8-wAl ₂ O ₃ -36	2.3	4.4 \pm 0.2	5.0	5.6	1.7 \times 10 ¹⁰	9.0 \times 10 ⁹	1.2 \times 10 ¹⁰	2.1	1.2	1.5	80	2 000	5 000
PV-2TE-5-0.1 \times 0.1-TO66-wAl ₂ O ₃ -36													

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



MECHANICAL LAYOUT AND PINOUT

- TO39 (3 pins) package (without window)
 - Technical drawing (p. 197)
- 2TE-TO8 package
 - Technical drawing (p. 203)
- 2TE-TO66 package
 - Technical drawing (p. 205)

RECOMMENDED AMPLIFIERS

Detector symbol	Amplifier type
PV-5-0.1x0.1-TO39-NW-90	SIP-TO39 series (p. 138)
PV-2TE-5-0.1x0.1-TO8-wAl ₂ O ₃ -70	AIP series (p. 126), PIP series (p. 129), MIP series (p. 132), SIP-TO8 series (p. 135), FIP series ^{*)} (p. 141)

^{*)} 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	°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	1.3	V
Maximum TEC current, $I_{TEC\ max}$	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.