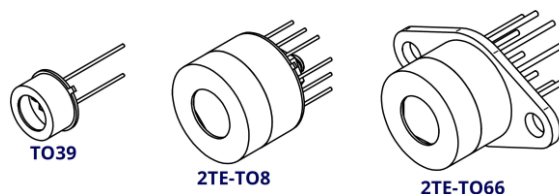


# PV-5 DETECTOR SERIES

# DATASHEET

## HgCdTe room temperature and thermoelectrically cooled photovoltaic infrared detectors



### FEATURES

- Spectral range: 2.0 to 5.6  $\mu\text{m}$
- Back-side illuminated
- No minimum order quantity required

### RELATED PRODUCTS

- [LabM-I-5 detection module](#)
- [PVIA-5-1x1-TO39-NW-36 RoHS-compliant detector](#)
- [PVMA-1TE-5-1x1-TO39-pSiAR-70 RoHS-compliant detector](#)
- [AMS3140-01 RoHS-compliant detection module](#)

### 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:  $\text{CH}_4$ ,  $\text{C}_2\text{H}_2$ ,  $\text{CH}_2\text{O}$ ,  $\text{HCl}$ ,  $\text{NH}_3$ ,  $\text{SO}_2$ ,  $\text{C}_2\text{H}_6$ ,  $\text{CO}$ ,  $\text{CO}_2$ ,  $\text{NO}_x$
- Breath analysis:  $\text{C}_2\text{H}_6$ ,  $\text{CH}_2\text{O}$ ,  $\text{NH}_3$ ,  $\text{NO}$ ,  $\text{OCS}$
- Gas leak detection
- Combustion process control
- Non-destructive material testing

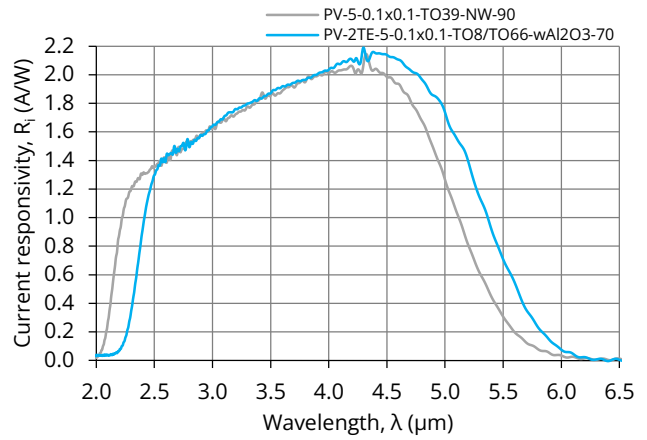
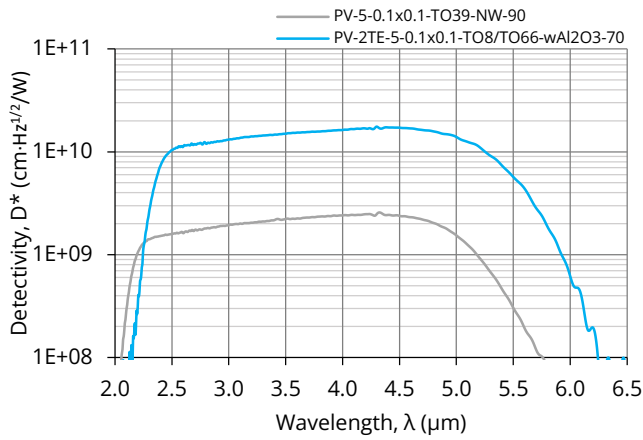
### SERIES DESCRIPTION

Detector symbol	Cooling	Temperature sensor	Active area, A, mm×mm	Optical immersion	Package	Acceptance angle, $\phi$ , deg.	Window
PV-5-0.1x0.1-TO39-NW-90	no	n/a	0.1×0.1	no	TO39 (3 pin)	~90	no
PV-2TE-5-0.1x0.1-TO8-wAl <sub>2</sub> O <sub>3</sub> -70	2TE $T_{\text{chip}} \cong 230\text{K}$	thermistor			2TE-TO8	~70	wAl <sub>2</sub> O <sub>3</sub> (3 deg. wedged sapphire)
PV-2TE-5-0.1x0.1-TO66-wAl <sub>2</sub> O <sub>3</sub> -70					2TE-TO66		

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

Detector symbol	Wavelength				Detectivity			Current responsivity			Time constant	Dynamic resistance	
	Cut-on wavelength (10%)	Peak wavelength	Specific wavelength	Cut-off wavelength (10%)	$D^*(\lambda_{\text{peak}}, 20\text{kHz})$		$D^*(\lambda_{\text{spec}}, 20\text{kHz})$		$R_i(\lambda_{\text{peak}})$		$\tau$	$R_d$	
	$\mu\text{m}$	$\mu\text{m}$	$\mu\text{m}$	$\mu\text{m}$	$\text{cm}\cdot\text{Hz}^{1/2}/\text{W}$		$\text{cm}\cdot\text{Hz}^{1/2}/\text{W}$		$\text{A/W}$		ns	$\Omega$	
	Typ.	Typ.	Typ.	Typ.	Typ.		Min. Typ.		Typ. Min. Typ.		Typ.	Min. Typ.	
PV-5-0.1x0.1-TO39-NW-90	2.0	4.4±0.2	5.0	5.4	2.5×10 <sup>9</sup>		1.0×10 <sup>9</sup> 1.5×10 <sup>9</sup>		2.0 1.0 1.2		120	100 250	
PV-2TE-5-0.1x0.1-TO8-wAl <sub>2</sub> O <sub>3</sub> -36	2.3			5.6	1.7×10 <sup>10</sup>		9.0×10 <sup>9</sup> 1.2×10 <sup>10</sup>		2.1 1.2 1.5		80	2 000 5 000	
PV-2TE-5-0.1x0.1-TO66-wAl <sub>2</sub> O <sub>3</sub> -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-5-0.1x0.1-TO39-NW-90	<a href="#">SIP-TO39 series</a>
PV-2TE-5-0.1x0.1-TO8-wAl <sub>2</sub> O <sub>3</sub> -70	<a href="#">AIP series</a> <a href="#">PIP series</a> <a href="#">MIP series</a> <a href="#">SIP-TO8 series</a> <a href="#">FIP series<sup>*)</sup></a>

<sup>\*)</sup> 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	$\leq 300$	$^{\circ}\text{C}$
Storage humidity	No dew condensation	10 to 90	%
Maximum incident optical power density	Continuous wave (CW) or single pulses $> 1\ \mu\text{s}$ duration	100	$\text{W}/\text{cm}^2$
	Single pulses $< 1\ \mu\text{s}$ duration	1	$\text{MW}/\text{cm}^2$
Maximum bias voltage, $V_{b\ max}$		-800	mV
Maximum TEC voltage, $V_{TEC\ max}$	2TE	1.0	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.