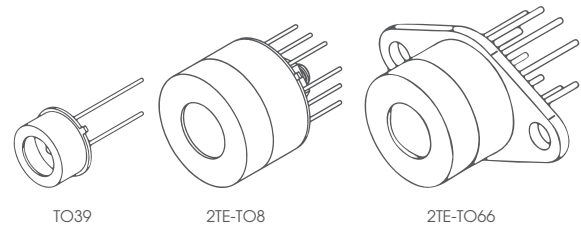


# PVM-10.6 SERIES

## HgCdTe room temperature and thermoelectrically cooled photovoltaic multi-junction infrared detectors



### FEATURES

- Spectral range: 2.0 to 13.0  $\mu\text{m}$
- Back-side illuminated
- No minimum order quantity required
- Detector **PVM-10.6-1x1-TO39-NW-90** is a **Selected Line product**

### RELATED PRODUCTS

- **LabM-I-10.6** detection module (p. 107)
- **UM-I-10.6** detection module (p. 113)
- **microM-10.6** detection module (p. 110)
- **PVIA-10.6-1x1-TO39-NW-36**  
RoHS-compliant detector (p. 22)
- **PVIA-4TE-10.6-1x1-TO8-wZnSeAR-36**  
RoHS-compliant detector (p. 22)

### APPLICATIONS

- Gas detection, monitoring and analysis:  $\text{SO}_2$ ,  $\text{NH}_3$ ,  $\text{SF}_6$
- CBRN threats detection
- $\text{CO}_2$  laser measurements: power monitoring and control, beam profiling and positioning, calibration
- Free-space optical communication
- FTIR spectroscopy
- Medical bacteria identification
- Dentistry
- Glucose sensing

### SERIES DESCRIPTION

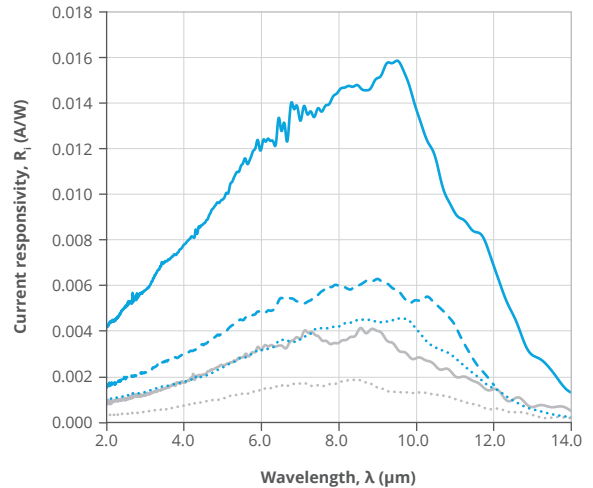
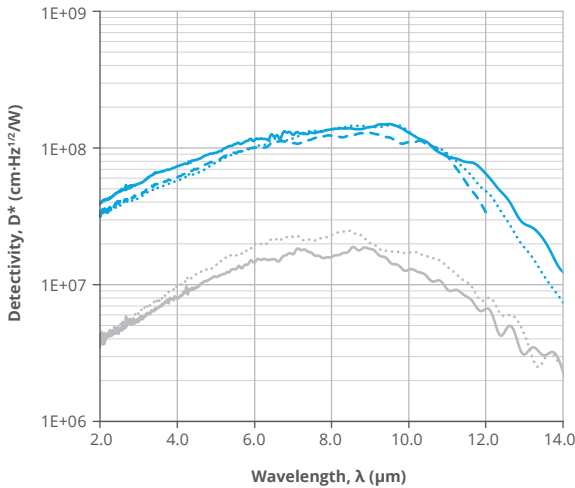
Detector symbol	Cooling (p. 191)	Temperature sensor (p. 192)	Active area, A, mm×mm	Optical immersion	Package	Acceptance angle, $\Phi$ , deg.	Window (p. 193)
PVM-10.6-1x1-TO39-NW-90	no	n/a	1x1		TO39 (3 pins)	~90	no
PVM-10.6-2x2-TO39-NW-90			2x2				
PVM-2TE-10.6-1x1-TO8-wZnSeAR-70	2TE $T_{\text{chip}} = 230\text{K}$	thermistor	1x1	no	TO8	~70	wZnSeAR (3 deg. zinc selenide, anti-reflection coating)
PVM-2TE-10.6-1x1-TO66-wZnSeAR-70			TO66				
PVM-2TE-10.6-2x2-TO8-wZnSeAR-70			TO8				
PVM-2TE-10.6-2x2-TO66-wZnSeAR-70			TO66				
PVM-2TE-10.6-3x3-TO8-wZnSeAR-70			TO8				
PVM-2TE-10.6-3x3-TO66-wZnSeAR-70			TO66				
			3x3				

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

Detector symbol	Cut-on wavelength (10%)	Peak wavelength	Specific wavelength	Cut-off wavelength (10%)	Detectivity		Current responsivity			Time constant	Dynamic resistance	
	$\lambda_{cut-on}$	$\lambda_{peak}$	$\lambda_{spec}$	$\lambda_{cut-off}$	$D^*(\lambda_{peak}, 20\text{kHz})$	$D^*(\lambda_{spec}, 20\text{kHz})$	$R_i(\lambda_{peak})$	$R_i(\lambda_{spec})$		$\tau$	$R_d$	
	$\mu\text{m}$	$\mu\text{m}$	$\mu\text{m}$	$\mu\text{m}$	$\text{cm}\cdot\text{Hz}^{1/2}/\text{W}$	$\text{cm}\cdot\text{Hz}^{1/2}/\text{W}$	$\text{A}/\text{W}$	$\text{A}/\text{W}$		ns	$\Omega$	
	Typ.	Typ.	Typ.	Typ.	Typ.	Min.	Typ.	Min.	Typ.	Typ.	Min.	Typ.
PVM-10.6-1x1-TO39-NW-90		8.5±1.0		12.0	2.0×10 <sup>7</sup>	1.0×10 <sup>7</sup>	0.004	0.002	0.0025	1.5	30	50
PVM-10.6-2x2-TO39-NW-90							0.002	0.001	0.0015			
PVM-2TE-10.6-1x1-TO8-wZnSeAR-70							0.015	0.01	0.012	4	90	120
PVM-2TE-10.6-1x1-TO66-wZnSeAR-70	2.0		10.6									
PVM-2TE-10.6-2x2-TO8-wZnSeAR-70		9.0±1.0		13.0	1.5×10 <sup>8</sup>	1.0×10 <sup>8</sup>	0.007	0.005	0.006			
PVM-2TE-10.6-2x2-TO66-wZnSeAR-70												
PVM-2TE-10.6-3x3-TO8-wZnSeAR-70							0.0045	0.03	0.04			
PVM-2TE-10.6-3x3-TO66-wZnSeAR-70												

### SPECTRAL RESPONSE ( $T_{amb} = 293\text{ K}$ )

- PVM-10.6-1x1-TO39-NW-90
- PVM-10.6-2x2-TO39-NW-90
- PVM-2TE-10.6-1x1-TO8/TO66-wZnSeAR-70
- PVM-2TE-10.6-2x2-TO8/TO66-wZnSeAR-70
- PVM-2TE-10.6-3x3-TO8/TO66-wZnSeAR-70



## 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
PVM-10.6-1x1-TO39-NW-90	SIP-TO39 series (p. 138)
PVM-10.6-2x2-TO39-NW-90	
PVM-2TE-10.6-1x1-TO8-wZnSeAR-70	AIP series (p. 126) PIP series (p. 129) MIP series (p. 132) SIP-TO8 series (p. 135)
PVM-2TE-10.6-2x2-TO8-wZnSeAR-70	
PVM-2TE-10.6-3x3-TO8-wZnSeAR-70	

## 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, $V_{b\max}$	No bias voltage needed	-	-
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.