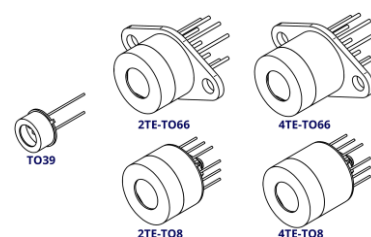


# PVMI-10.6 DETECTOR SERIES

## DATASHEET

**HgCdTe room temperature and thermoelectrically cooled photovoltaic multi-junction optically immersed infrared detectors**



### FEATURES

- Spectral range: 2.0 to 13.0  $\mu\text{m}$
- Back-side illuminated
- Fast response
- Unique immersion lens technology applied
- No minimum order quantity required

### 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
- Bacteria identification in medicine
- Dentistry
- Glucose sensing

### RELATED PRODUCTS

- [LabM-I-10.6 detection module](#)
- [UM-I-10.6 detection module](#)
- [microM-10.6 detection module](#)
- [PVIA-10.6-1x1-TO39-NW-36 RoHS-compliant detector](#)
- [PVIA-4TE-10.6-1x1-TO8-wZnSeAR-36 RoHS-compliant detector](#)

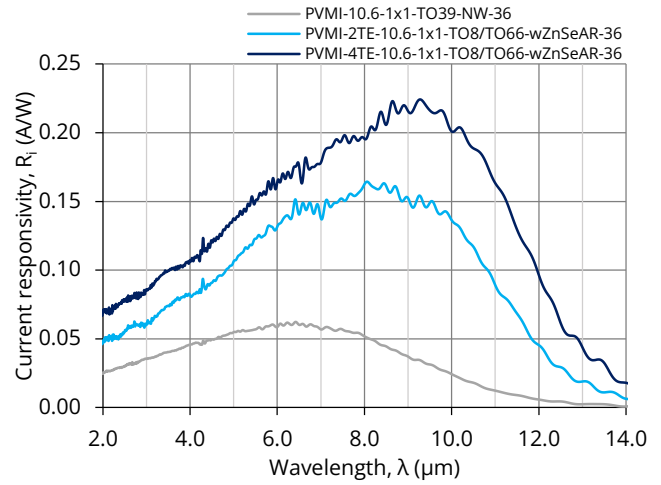
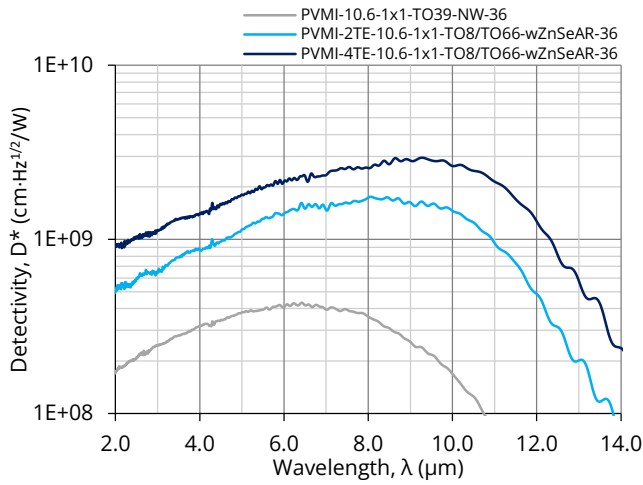
### SERIES DESCRIPTION

Detector symbol	Cooling	Temperature sensor	Optical area, $A_o$ , mm $\times$ mm	Optical immersion	Package	Acceptance angle, $\Phi$ , deg.	Window
PVMI-10.6-1x1-TO39-NW-36	no	n/a	1 $\times$ 1	hyperhemisphere	TO39 (3 pin)	~36	no
PVMI-2TE-10.6-1x1-TO8-wZnSeAR-36	2TE	thermistor			2TE-T08		wZnSeAR (3 deg. zinc selenide, anti-reflection coating)
PVMI-2TE-10.6-1x1-TO66-wZnSeAR-36	$T_{\text{chip}} \cong 230\text{K}$				2TE-T066		
PVMI-4TE-10.6-1x1-TO8-wZnSeAR-36	4TE				4TE-T08		
PVMI-4TE-10.6-1x1-TO66-wZnSeAR-36	$T_{\text{chip}} \cong 197\text{K}$				4TE-T066		

### 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%)	$D^*(\lambda_{\text{peak}}, 20\text{kHz})$	$D^*(\lambda_{\text{spec}}, 20\text{kHz})$	$R_i(\lambda_{\text{peak}})$	$R_i(\lambda_{\text{spec}})$		$\tau$	$R_d$												
	$\lambda_{\text{cut-on}}$	$\lambda_{\text{peak}}$	$\lambda_{\text{spec}}$	$\lambda_{\text{cut-off}}$	$\text{cm}\cdot\text{Hz}^{1/2}/\text{W}$	$\text{cm}\cdot\text{Hz}^{1/2}/\text{W}$	A/W	A/W		ns	$\Omega$												
	$\mu\text{m}$	$\mu\text{m}$	$\mu\text{m}$	$\mu\text{m}$	Typ.	Typ.	Typ.	Min.	Typ.	Typ.	Min.	Typ.											
PVMI-10.6-1x1-TO39-NW-36	2.0	8.5 $\pm$ 1.0	10.6	12.0	2.0 $\times$ 10 <sup>8</sup>	1.0 $\times$ 10 <sup>8</sup>	0.02	0.01	0.015	1.5	20	50											
PVMI-2TE-10.6-1x1-TO8-wZnSeAR-36		8.0 $\pm$ 1.0		13.0	2.0 $\times$ 10 <sup>9</sup>	1.0 $\times$ 10 <sup>9</sup>	0.2	0.1	0.12				3	90	120								
PVMI-2TE-10.6-1x1-TO66-wZnSeAR-36		9.0 $\pm$ 1.0														12.0	3.0 $\times$ 10 <sup>9</sup>	2.5 $\times$ 10 <sup>9</sup>	0.36	0.18	0.2	120	250
PVMI-4TE-10.6-1x1-TO8-wZnSeAR-36																							
PVMI-4TE-10.6-1x1-TO66-wZnSeAR-36																							

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



## MECHANICAL LAYOUT AND PINOUT

- [TO39\(3p\)-NW, PVI detector technical drawing](#)
- [2TE-TO8\(12p\)-wW, PVI/PCI detector technical drawing](#)
- [2TE-TO66\(9p\)-wW, PVI/PCI detector technical drawing](#)
- [4TE-TO8\(12p\)-wW, PVI/PCI detector technical drawing](#)
- [4TE-TO66\(9p\)-wW, PVI/PCI detector technical drawing](#)

## RECOMMENDED PREAMPLIFIERS

Detector symbol	Preamplifier type
PVMI-10.6-1x1-TO39-NW-36	<a href="#">SIP-TO39 series</a>
PVMI-2TE-10.6-1x1-TO8-wZnSeAR-36	<a href="#">AIP series</a> <a href="#">PIP series</a> <a href="#">MIP series</a>
PVMI-4TE-10.6-1x1-TO8-wZnSeAR-36	<a href="#">SIP-TO8 series</a>

## 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	2.5	$\text{W}/\text{cm}^2$
	Single pulses $< 1\ \mu\text{s}$ duration	10	$\text{kW}/\text{cm}^2$
Maximum bias voltage, $V_{b,max}$	No bias voltage needed	-	-
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.