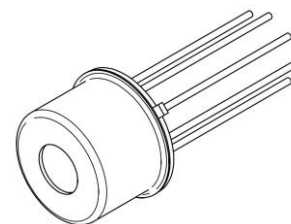


# PVMA-1TE-6-1x1-TO39-pSiAR-70

**PRELIMINARY  
DATASHEET**

**InAsSb one-stage  
thermoelectrically-cooled  
photovoltaic multi-junction  
infrared detector**



## FEATURES

- Spectral range: 2.0 to 6.6  $\mu\text{m}$
- RoHS-compliant III-V material
- Large active area
- Back-side illuminated
- No minimum order quantity required

## RELATED PRODUCT

- AMS6140-01 RoHS-compliant detection module

## APPLICATIONS

- Gas detection, monitoring and analysis:  $\text{CH}_4$ ,  $\text{C}_2\text{H}_2$ ,  $\text{CH}_2\text{O}$ ,  $\text{HCl}$ ,  $\text{NH}_3$ ,  $\text{SO}_2$ ,  $\text{C}_2\text{H}_6$ ,  $\text{CO}$ ,  $\text{CO}_2$ ,  $\text{NO}_x$ ,  $\text{SO}_x$ ,  $\text{HNO}_3$
- Exhaust gas denitrification
- Combustion process control
- Contactless temperature measurement: railway transport, industrial and laboratory processes monitoring
- Heat-seeking, thermal signature detection
- Non-destructive material testing
- Biochemical analysis
- Laser calibration

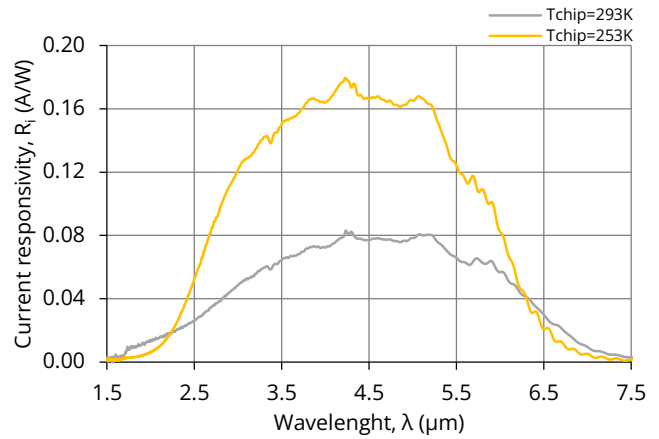
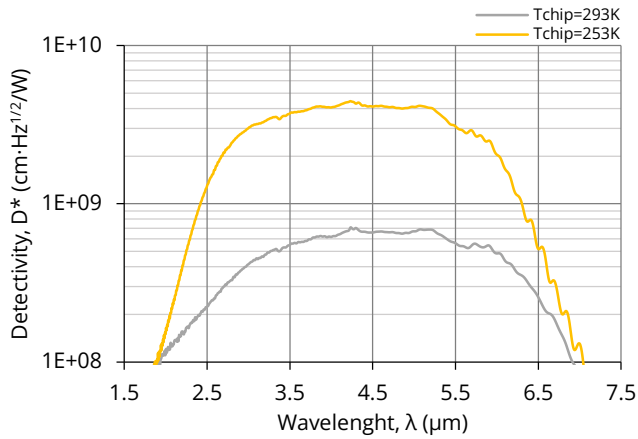
## DETECTOR CONFIGURATION

Detector symbol	Cooling	Temperature sensor	Active area, A, mm $\times$ mm	Optical immersion	Package	Acceptance angle, $\Phi$ , deg.	Window
PVMA-1TE-6-1x1-TO39-pSiAR-70	1TE ( $T_{\text{chip}} \cong 253\text{K}$ )	thermistor	1 $\times$ 1	no	1TE-TO39 (8 pin)	$\sim 70$	pSiAR (planar silicon, anti-reflection coating)

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

Detector symbol	Active element temperature	Cut-on wavelength (10%)	Peak wavelength	Cut-off wavelength (10%)	Detectivity		Current responsivity		Time constant		Dynamic resistance	
	$T_{\text{chip}}$	$\lambda_{\text{cut-on}}$	$\lambda_{\text{peak}}$	$\lambda_{\text{cut-off}}$	$D^*(\lambda_{\text{peak}}, 20\text{kHz})$		$R(\lambda_{\text{peak}})$		$\tau$		$R_d$	
	K	$\mu\text{m}$	$\mu\text{m}$	$\mu\text{m}$	$\text{cm}\cdot\text{Hz}^{1/2}/\text{W}$		A/W		ns		$\Omega$	
	Typ.	Typ.	Typ.	Typ.	Min.	Typ.	Min.	Typ.	Typ.	Max.	Min.	Typ.
PVMA-1TE-6-1x1-TO39-pSiAR-70	253	2.0	4.4 $\pm$ 0.5	6.6	1.4 $\times$ 10 <sup>9</sup>	4.3 $\times$ 10 <sup>9</sup>	0.08	0.18	40	200	300	800
	293			7.1	2.3 $\times$ 10 <sup>8</sup>	6.9 $\times$ 10 <sup>8</sup>	0.03	0.08			50	100

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



## MECHANICAL LAYOUT AND PINOUT

- [1TE-TO39\(8p\)-pW, PV detector technical drawing](#)

## 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 70	$^{\circ}\text{C}$
Storage temperature, $T_{stg}$		-20 to 85	$^{\circ}\text{C}$
Soldering temperature	Within 5 s or less	$\leq 370$	$^{\circ}\text{C}$
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, $V_{b\ max}$		-2	V
Maximum TEC voltage, $V_{TEC\ max}$	1TE	0.4	V
Maximum TEC current, $I_{TEC\ max}$	1TE	1.67	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.