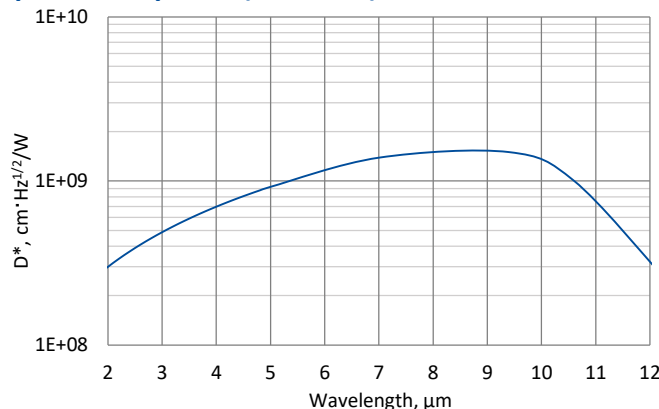


PVMI-2TE-10.6-1x1-TO8-wZnSeAR-36

2.0 – 12.0 μm HgCdTe two-stage thermoelectrically cooled, optically immersed photovoltaic multiple junction detector

PVMI-2TE-10.6-1x1-TO8-wZnSeAR-36 is two-stage thermoelectrically cooled IR photovoltaic multiple junction detector based on sophisticated HgCdTe heterostructure for the best performance and stability. The device is designed for the maximum performance at 10.6 μm . Detector element is monolithically integrated with hyperhemispherical GaAs microlens in order to improve performance of the device. 3° wedged zinc selenide anti-reflection coated (wZnSeAR) window prevents unwanted interference effects.

Spectral response ($T_a = 20^\circ\text{C}$)



Exemplary spectral detectivity, the spectral response of delivered devices may differ.



Specification ($T_a = 20^\circ\text{C}$)

Parameter	Detector type
	PVMI-2TE-10.6-1x1-TO8-wZnSeAR-36
Active element material	epitaxial HgCdTe heterostructure
Cut-on wavelength $\lambda_{\text{cut-on}}$ (10%), μm	≤ 2.0
Peak wavelength λ_{peak} , μm	8.5 ± 1.5
Optimum wavelength λ_{opt} , μm	10.6
Cut-off wavelength $\lambda_{\text{cut-off}}$ (10%), μm	≥ 12.0
Detectivity $D^*(\lambda_{\text{peak}})$, $\text{cm}^2 \cdot \text{Hz}^{1/2} / \text{W}$	$\geq 1.5 \times 10^9$
Detectivity $D^*(\lambda_{\text{opt}})$, $\text{cm}^2 \cdot \text{Hz}^{1/2} / \text{W}$	$\geq 1.0 \times 10^9$
Current responsivity $R_i(\lambda_{\text{peak}})$, A/W	≥ 0.15
Current responsivity $R_i(\lambda_{\text{opt}})$, A/W	≥ 0.1
Time constant τ , ns	≤ 3
Resistance R, Ω	≥ 90
Active element temperature T_{det} , K	~ 230
Optical area A_o , mm \times mm	1 \times 1
Package	TO8
Acceptance angle Φ	$\sim 36^\circ$
Window	wZnSeAR

Features

- Wide spectral range from 2.0 to 12.0 μm
- No bias required
- No flicker noise
- Operation from DC to high frequency
- Sensitive to IR radiation polarisation
- Versatility
- Quantity discounted price
- Fast delivery

Applications

- CO₂ laser (10.6 μm) measurements
- Laser power monitoring and control
- Laser beam profiling and positioning
- Laser calibration
- Dentistry

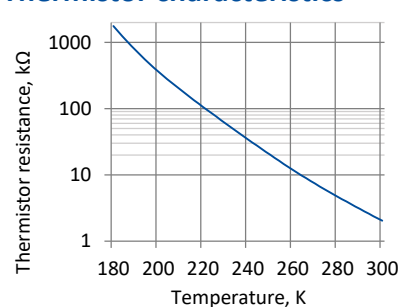
Related product

- UM-I-10.6 detection module

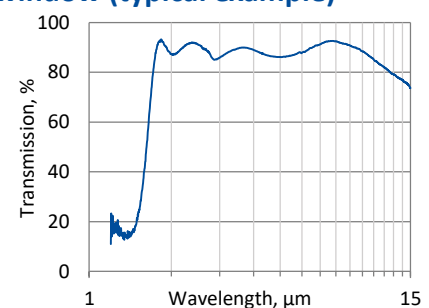
Two-stage thermoelectric cooler parameters

Parameter	Value
T_{det} , K	~ 230
V_{max} , V	1.3
I_{max} , A	1.2
Q_{max} , W	0.36

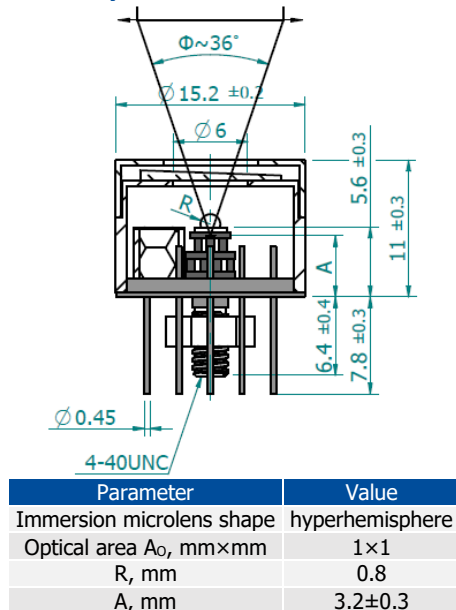
Thermistor characteristics



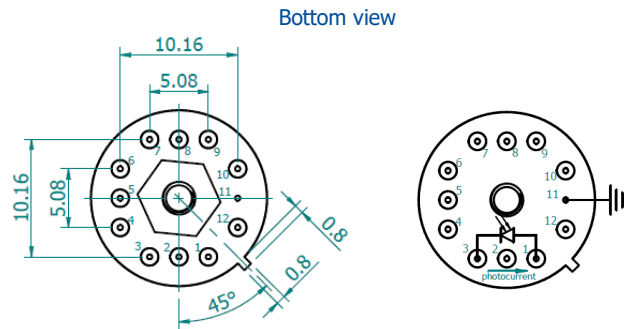
Spectral transmission of wZnSeAR window (typical example)



Mechanical layout, mm



Φ – acceptance angle
 A – distance from the bottom of the 2TE-TO8 header to the focal plane
 R – hyperhemisphere microlens radius



Function	Pin number
Detector	1, 3
Thermistor	7, 9
TE cooler supply	2(+), 8(-)
Chassis ground	11
Not used	4, 5, 6, 10, 12

Precautions for use and storage

- Heatsink with thermal resistance of ~ 2 K/W is necessary to dissipate heat generated by 2TE cooler.
- Operation in 10% to 80% humidity and -20°C to 30°C ambient temperature.
- Beam power limitations for optically immersed detector:
 - irradiance with CW or single pulse longer than 1 μ s irradiance on the apparent optical active area must not exceed 2.5 W/cm²,
 - irradiance of the pulse shorter than 1 μ s must not exceed 10 kW/cm².
- Storage in dark place with 10% to 90% humidity and -20°C to 50°C ambient temperature.