# PVMI-2TE series

2 – 13 µm HgCdTe two-stage thermoelectrically cooled, optically immersed photovoltaic multiple junction detectors

PVMI-2TE series features two-stage thermoelectrically cooled IR photovoltaic multiple junction detectors based on sophisticated HgCdTe heterostructures for the best performance and stability, optically immersed in order to improve parameters of the devices. The detectors are optimized for the maximum performance at λ_{opt}. They are especially useful as large optical area detectors operating within 2 to 12 µm spectral range. 3° wedged zinc selenide anti-reflection coated (wZnSeAR) window prevents unwanted interference effects.

Spectral response (T_a = 20°C)
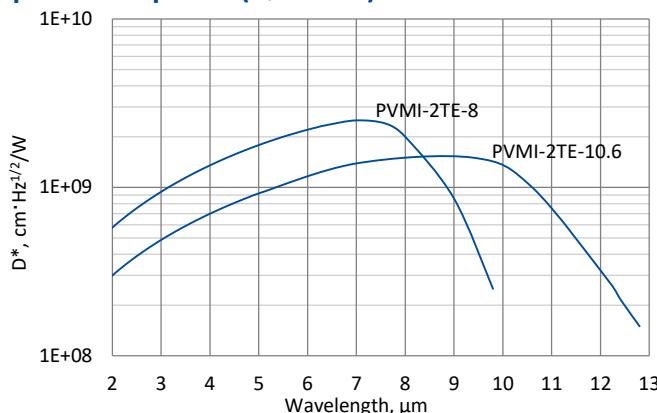
Exemplary spectral detectivity, the spectral response of delivered devices may differ.

2TE-TO66   2TE-TO8

Specification (T_a = 20°C)

Parameter	Detector type	
	PVMI-2TE-8	PVMI-2TE-10.6
Active element material	epitaxial HgCdTe heterostructure	
Optimal wavelength λ_{opt}, µm	8.0	10.6
Detectivity $D^*(\lambda_{peak})$, cm·Hz$^{1/2}$/W	$\geq 2.5\times10^9$	$\geq 1.5\times10^9$
Detectivity $D^*(\lambda_{opt})$, cm·Hz$^{1/2}$/W	$\geq 2.0\times10^9$	$\geq 1.0\times10^9$
Current responsivity $R_i(\lambda_{opt})$, A/W	≥ 0.1	
Time constant τ, ns	≤ 4	≤ 3
Resistance R, Ω	150 to 1000	90 to 350
Active element temperature T_{det}, K	~230	
Optical area A_O, mm×mm	1×1	
Package	TO8, TO66	
Acceptance angle Φ	~36°	
Window	wZnSeAR	

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
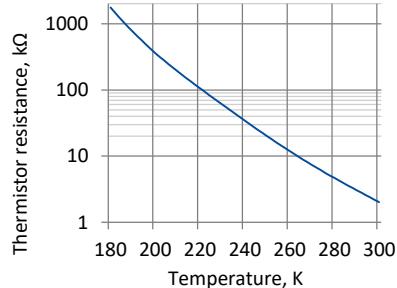
Spectral transmission of wZnSeAR window (typical example)
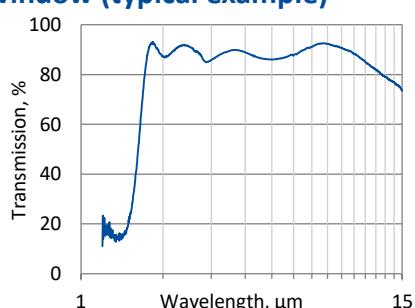
Mechanical layout, mm

2TE-TO8 package

| Parameter	Value
Immersion microlens shape	hyperhemisphere
Optical area A_O, mm×mm	1×1
R, mm	0.8
A, mm	3.2±0.3

Φ – acceptance angle
R – hyperhemisphere microlens radius
A – distance from the bottom of 2TE-TO8 header to the focal plane
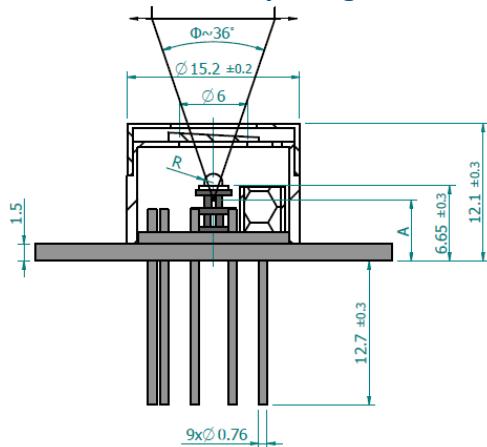
Bottom view
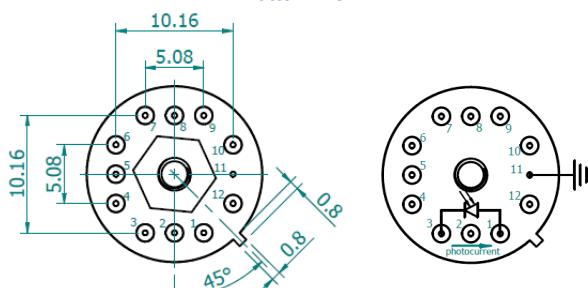
Function	Pin number
Detector	1, 3
Thermistor	7, 9
TE cooler supply	2(+), 8(−)
Chassis ground	11
Not used	4, 5, 6, 10, 12

2TE-TO66 package

Parameter	Value
Immersion microlens shape	hyperhemisphere
Optical area A_O, mm×mm	1×1
R, mm	0.8
A, mm	3.2±0.3

Φ – acceptance angle
R – hyperhemisphere microlens radius
A – distance from the bottom of 2TE-TO66 header to the focal plane

Top view
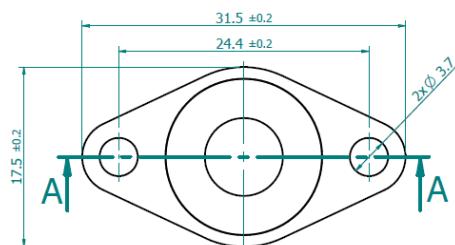
Bottom view
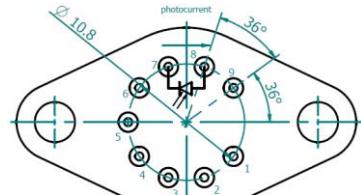
Function	Pin number
Detector	7, 8
Thermistor	5, 6
TE cooler supply	1(+), 9(−)
Not used	2, 3, 4

Dedicated preamplifiers

„all-in-one" AIP

programmable PIP

standard MIP

small SIP-TO8