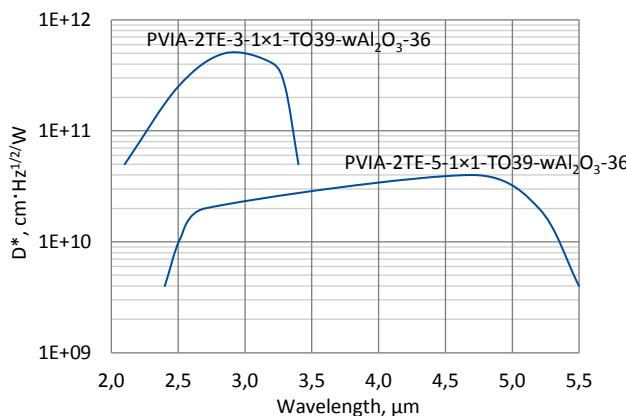


2.28 PVIA-2TE series

2.28.1 2.0 – 5.5 µm InAs and InAsSb two-stage thermoelectrically cooled, optically immersed photovoltaic detectors

PVIA-2TE series features two-stage thermoelectrically cooled IR photovoltaic detectors based on $\text{InAs}_{1-x}\text{Sb}_x$ alloys, optically immersed in order to improve performance of the devices. They do not contain mercury or cadmium and are complying with the RoHS Directive. 3° wedged sapphire (wAl_2O_3) window prevents unwanted interference effects.

Spectral response ($T_a = 20^\circ\text{C}$, $V_b = 0 \text{ mV}$)



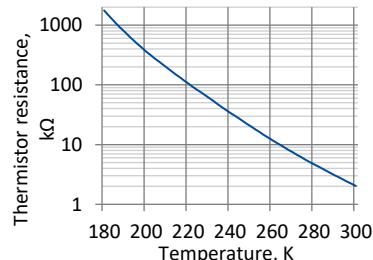
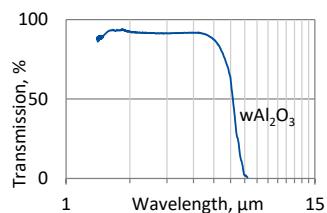
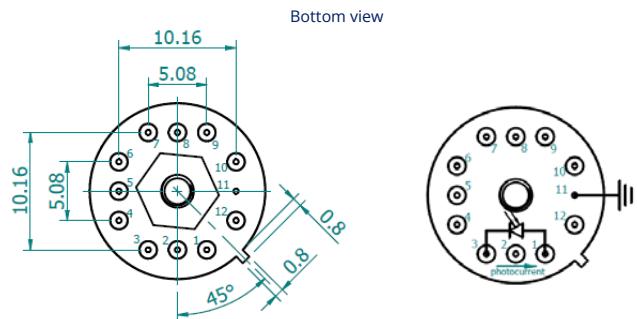
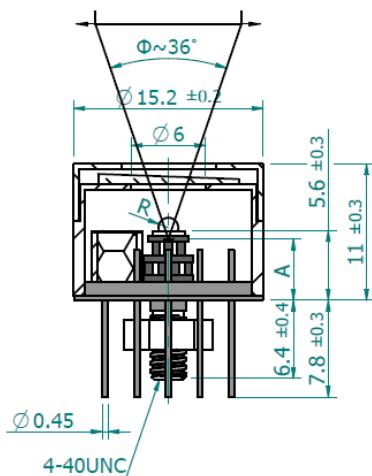
Exemplary spectral detectivity, the spectral response of delivered devices may differ.

Specification ($T_a = 20^\circ\text{C}$, $V_b = 0 \text{ mV}$)

Parameter	Detector type	
	PVIA-2TE-3-1x1-T08-wAl ₂ O ₃ -36	PVIA-2TE-5-1x1-T08-wAl ₂ O ₃ -36
Active element material	epitaxial InAs heterostructure	epitaxial InAsSb heterostructure
Cut-on wavelength $\lambda_{\text{cut-on}}$ (10 %), µm	≤2.4	≤2.6
Peak wavelength λ_{peak} , µm	2.9±0.3	4.5±0.6
Cut-off wavelength $\lambda_{\text{cut-off}}$ (10 %), µm	≥3.2	≥5.3
Detectivity D^* (λ_{peak}), $\text{cm} \cdot \text{Hz}^{1/2}/\text{W}$	≥5.0×10 ¹¹	≥4.0×10 ¹⁰
Current responsivity R_i (λ_{peak}), A/W	≥1.1	≥1.2
Time constant τ , ns	≤15	≤5
Resistance R , Ω	≥200k	≥1.0k
Active element temperature T_{det} , K	~230	
Optical area A_o , mm×mm	1×1	
Package	TO8	
Acceptance angle Φ	~36°	
Window	wAl_2O_3	

Two-stage thermoelectric cooler parameters

Parameter	Value
T _{dev} , K	~230
V _{max} , V	1.3
I _{max} , A	1.2
Q _{max} , W	0.36

Thermistor characteristics

Spectral transmission of wAl₂O₃ window (typical example)

Mechanical layout, mm


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 the 2TE-T08 header to the focal plane

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

Dedicated preamplifier


„all-in-one“ AIP



programmable PIP



standard MIP



small SIP-T08