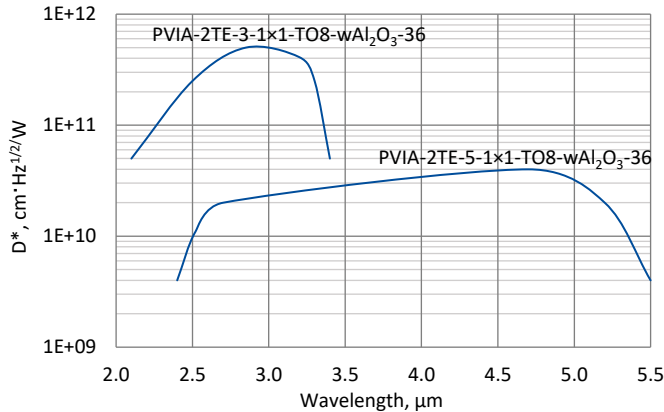


## PVIA-2TE series

### 2.4 – 5.3 $\mu\text{m}$ 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.  $3^\circ$  wedged sapphire ( $\text{wAl}_2\text{O}_3$ ) 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.

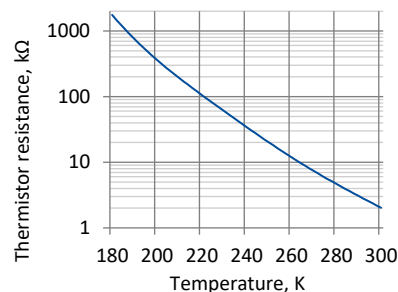
#### Specification ( $T_a = 20^\circ\text{C}$ , $V_b = 0\text{ mV}$ )

Parameter	Detector type	
	PVIA-2TE-3-1x1-TO8-wAl <sub>2</sub> O <sub>3</sub> -36	PVIA-2TE-5-1x1-TO8-wAl <sub>2</sub> O <sub>3</sub> -36
Active element material	epitaxial InAs heterostructure	epitaxial InAsSb heterostructure
Cut-on wavelength $\lambda_{\text{cut-on}}$ (10 %), $\mu\text{m}$	$\leq 2.4$	$\leq 2.6$
Peak wavelength $\lambda_{\text{peak}}$ , $\mu\text{m}$	$2.9 \pm 0.3$	$4.5 \pm 0.6$
Cut-off wavelength $\lambda_{\text{cut-off}}$ (10 %), $\mu\text{m}$	$\geq 3.2$	$\geq 5.3$
Detectivity $D^*$ ( $\lambda_{\text{peak}}$ ), $\text{cm}\cdot\text{Hz}^{1/2}/\text{W}$	$\geq 5.0 \times 10^{11}$	$\geq 4.0 \times 10^{10}$
Current responsivity $R_i$ ( $\lambda_{\text{peak}}$ ), $\text{A}/\text{W}$	$\geq 1.1$	$\geq 1.2$
Time constant $\tau$ , ns	$\leq 15$	$\leq 5$
Resistance $R$ , $\Omega$	$\geq 200\text{k}$	$\geq 1.0\text{k}$
Active element temperature $T_{\text{det}}$ , K	$\sim 230$	
Optical area $A_o$ , $\text{mm}\times\text{mm}$	1x1	
Package	TO8	
Acceptance angle $\Phi$	$\sim 36^\circ$	
Window	wAl <sub>2</sub> O <sub>3</sub>	

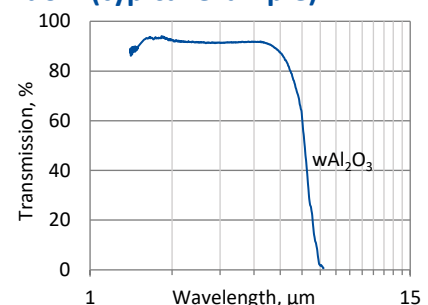
#### Two-stage thermoelectric cooler parameters

Parameter	Value
$T_{\text{det}}$ , K	$\sim 230$
$V_{\text{max}}$ , V	1.3
$I_{\text{max}}$ , A	1.2
$Q_{\text{max}}$ , W	0.36

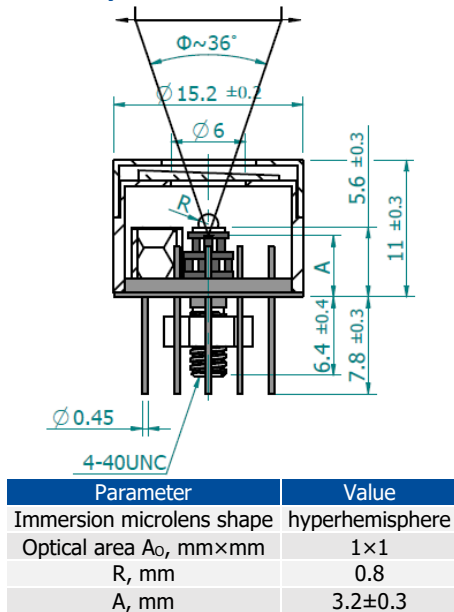
#### Thermistor characteristics



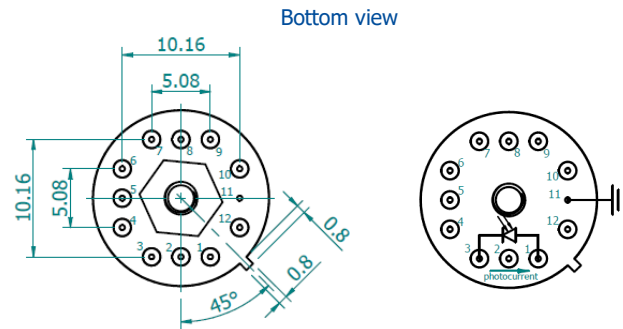
#### Spectral transmission of wAl<sub>2</sub>O<sub>3</sub> window (typical example)



### Mechanical layout, mm



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 preamplifiers



„all-in-one“ AIP



programmable PIP



standard MIP



small SIP-T08