



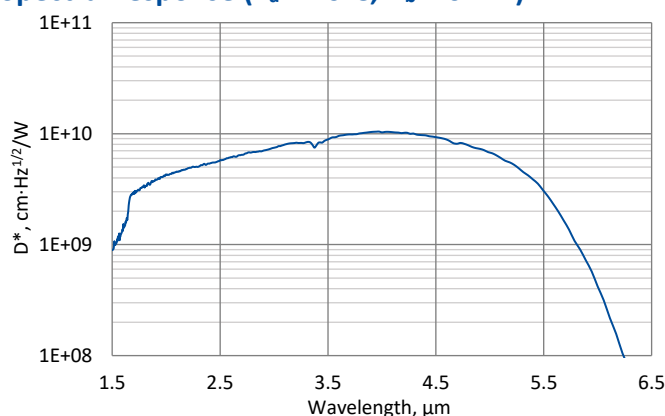
PVAS-2TE-5-0.1×0.1-TO8-wAl₂O₃-70 detector

PVAS-2TE-5-0.1×0.1-TO8-wAl₂O₃-70 – ENGINEERING SAMPLE

Type II superlattice, two-stage thermoelectrically cooled, photovoltaic detector

PVAS-2TE-5-0.1×0.1-TO8-wAl₂O₃-70 is a Type II superlattice two-stage thermoelectrically cooled IR photovoltaic detector, with excellent parameters. 3° wedged sapphire window (wAl₂O₃) prevents unwanted interference effects. This detector does not contain mercury or cadmium and is compliant with the RoHS Directive.

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
	PVAS-2TE-5-0.1×0.1-TO8-wAl ₂ O ₃ -70
Active element material	epitaxial superlattice heterostructure
Cut-on wavelength $\lambda_{\text{cut-on}}$ (10%), μm	1.7 ± 0.2
Peak wavelength λ_{peak} , μm	4.0 ± 0.3
Cut-off wavelength $\lambda_{\text{cut-off}}$ (10%), μm	5.8 ± 0.2
Detectivity $D^*(\lambda_{\text{peak}})$, $\text{cm}\cdot\text{Hz}^{1/2}/\text{W}$	$\sim 9.0 \times 10^9$
Current responsivity $R_i(\lambda_{\text{peak}})$, A/W	~ 1.4
Time constant τ , ns	~ 4
Resistance R , Ω	$\sim 5\text{k}$
Active element temperature T_{det} , K	~ 230
Active area A , mm×mm	0.1×0.1
Package	TO8
Acceptance angle Φ	$\sim 70^\circ$
Window	wAl ₂ O ₃

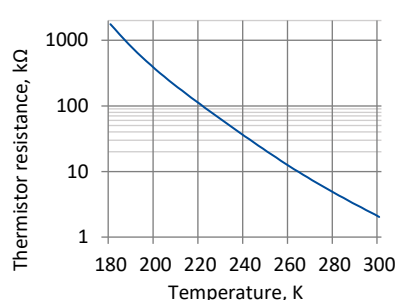
Features

- Wide spectral range from 1.7 to 5.8 μm
- High responsivity
- Excellent linearity
- No bias required
- No 1/f noise
- Environmentally friendly

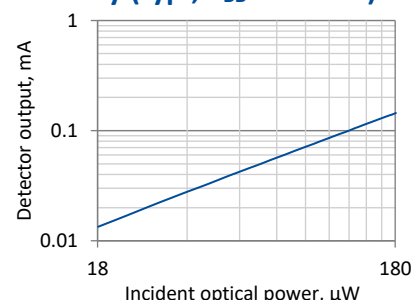
Two-stage thermoelectric cooler parameters

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

Thermistor characteristics

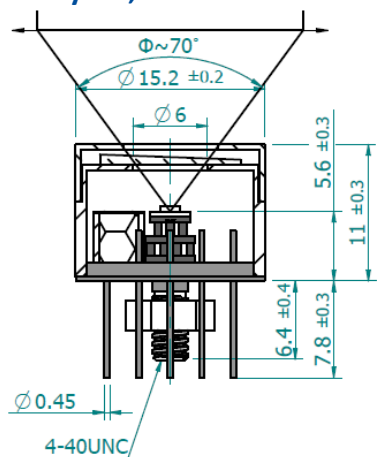


Linearity (typ., $T_{\text{BB}} = 1273\text{ K}$)

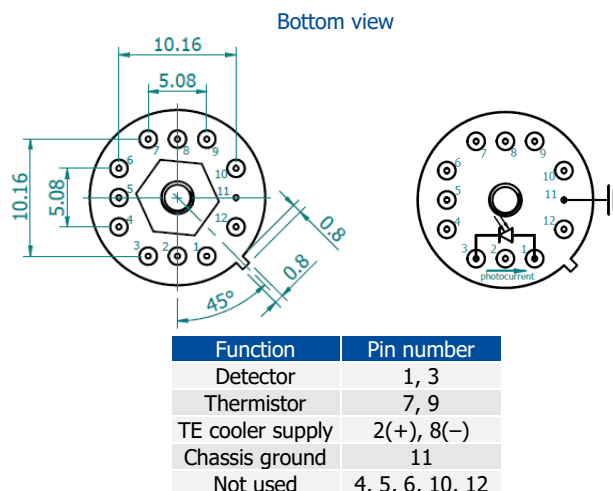


T_{BB} – black body temperature

Mechanical layout, mm



Φ – acceptance angle



Dedicated preamplifiers



„all-in-one“ AIP



programmable PIP



standard MIP



small SIP-T08

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:
 - irradiance with CW or single pulse longer than 1 μs irradiance on the apparent optical active area must not exceed 100 W/cm²,
 - irradiance of the pulse shorter than 1 μs must not exceed 1 MW/cm².
- Storage in dark place with 10% to 90% humidity and -20°C to 50°C ambient temperature.