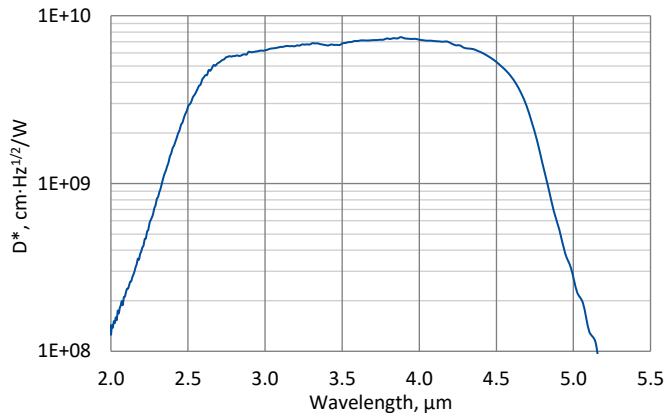


PVA-2TE-4.5-1x1-TO8-wAl₂O₃-70 – ENGINEERING SAMPLE

2.3 – 4.9 μm InAsSb two-stage thermoelectrically cooled photovoltaic detector

PVA-2TE-4.5-1x1-TO8-wAl₂O₃-70 is a two-stage thermoelectrically cooled IR photovoltaic detector based on InAs_{1-x}Sb_x alloy. 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°C, V_b = 0 mV)



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

Specification (T_a = 20°C, V_b = 0 mV)

Parameter	Detector type
	PVA-2TE-4.5-1x1-TO8-wAl ₂ O ₃ -70
Active element material	epitaxial InAsSb heterostructure
Cut-on wavelength λ _{cut-on} (10%), μm	2.3±0.2
Peak wavelength λ _{peak} , μm	4.0±0.3
Cut-off wavelength λ _{cut-off} (10%), μm	4.9±0.2
Detectivity D*(λ _{peak}), cm·Hz ^{1/2} /W	~7.0×10 ⁹
Current responsivity R _i (λ _{peak}), A/W	~1.1
Time constant τ, ns	~10
Resistance R, Ω	~60
Active element temperature T _{det} , K	~230
Active area A, mm×mm	1×1
Package	TO8
Acceptance angle Φ	~70°
Window	wAl ₂ O ₃

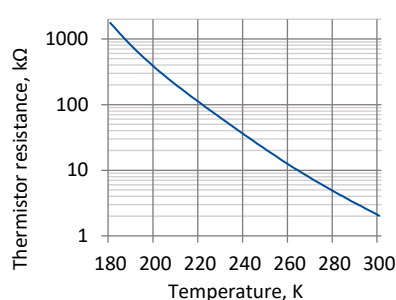
Features

- Wide spectral range from 2.3 to 4.9 μm
- High responsivity
- Excellent linearity
- No bias required
- No 1/f noise
- Environmentally friendly

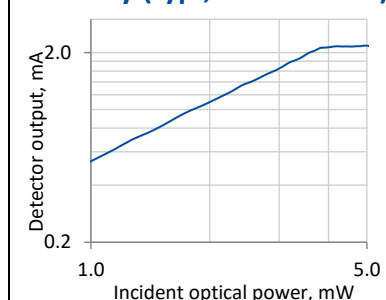
Two-stage thermoelectric cooler parameters

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

Thermistor characteristics

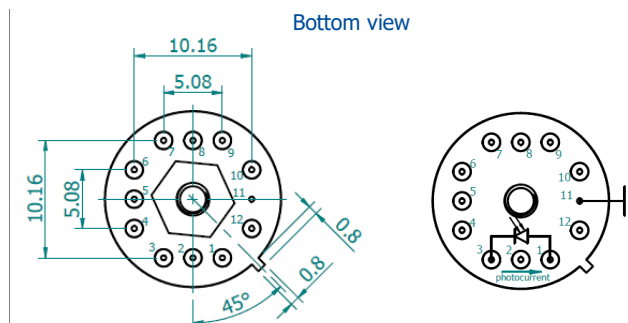
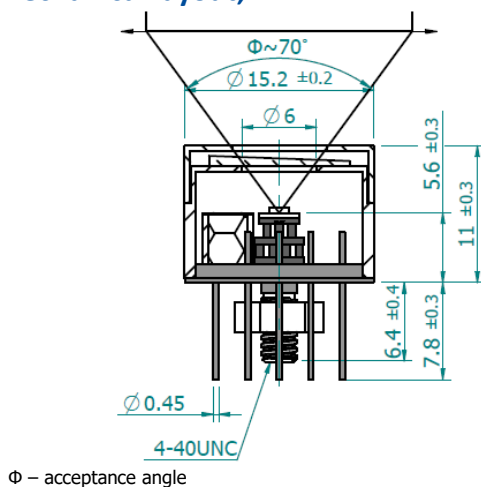


Linearity (typ., T_{BB} = 1273 K)



T_{BB} – black body temperature

Mechanical layout, mm



Function	Pin number
Detector	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-TO8

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.