

PVA-3-1×1-TO39-NW-90 PRELIMINARY DATASHEET

InAs room temperature photovoltaic infrared detector



FEATURES

- Spectral range: 2.3 to 3.5 μm
- III-V material compliant with the RoHS Directive
- High ambient operating and storage temperature
- Back-side illuminated
- No minimum order quantity required

APPLICATIONS

Gas detection (CO, CO₂, HF, NH₃, C₂H₂, CH₄, C₂H₆, HCl, NO_x)

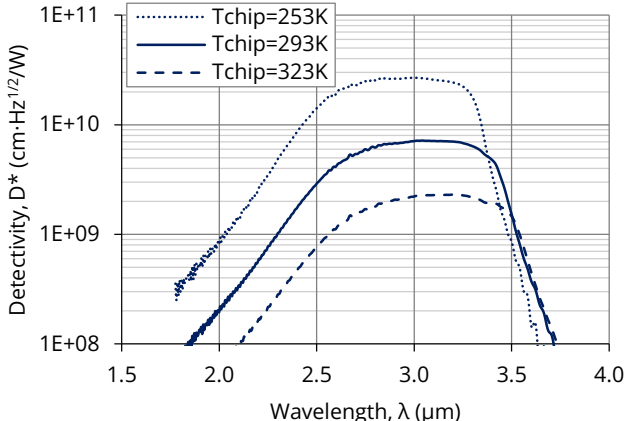
DETECTOR CONFIGURATION

Detector symbol	PVA-3-1×1-TO39-NW-90
Detector type	photovoltaic
Active element material	epitaxial InAs heterostructure
Active area, A	1 mm × 1 mm
Immersion	no
Cooling	no
Detector package	TO39
Acceptance angle, Φ	~90 deg.
Window	no

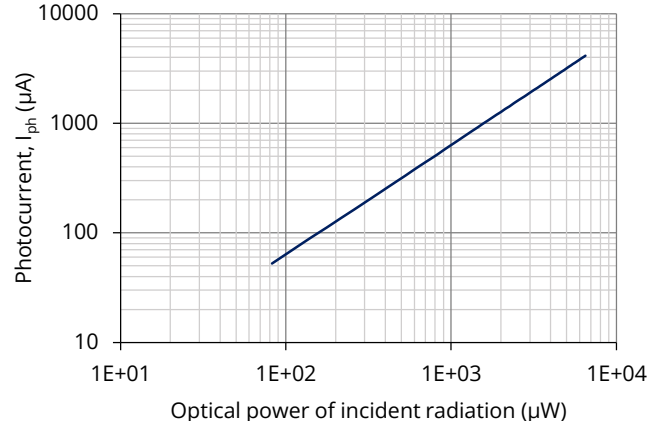
SPECIFICATION ($T_{\text{chip}} = 293 \text{ K}$, $V_b = 0 \text{ V}$, unless otherwise noted)

Parameter	Test conditions/remarks	Value			Unit
		Min.	Typ.	Max.	
Active element temperature, T_{chip}	T_{amb}	-	293	-	K
Cut-on wavelength, $\lambda_{\text{cut-on}}$ (10%)	At 10% of peak responsivity	-	2.3	-	μm
Peak wavelength, λ_{peak}		-	3.1	-	μm
Cut-off wavelength, $\lambda_{\text{cut-off}}$ (10%)	At 10% of peak responsivity	-	3.5	-	μm
Detectivity, D^*	At λ_{peak} , $f = 20 \text{ kHz}$	5.0×10^9	7.0×10^9	-	$\text{cm}\cdot\text{Hz}^{1/2}/\text{W}$
Current responsivity, R_i	At λ_{peak}	0.7	0.9	-	A/W
Time constant, τ		-	35	40	ns
Resistance, R		55	75	-	Ω

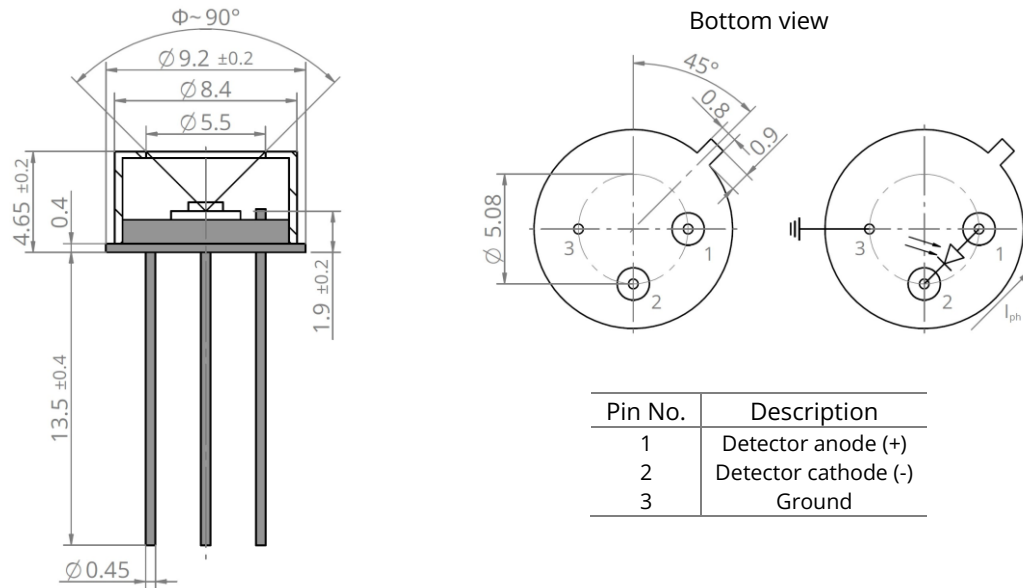
SPECTRAL RESPONSE (Typ.)



LINEARITY (Typ., $T_{\text{chip}} = 293 \text{ K}$, $\lambda = 3.06 \mu\text{m}$)



MECHANICAL LAYOUT AND PINOUT (Unit: mm)



Pin No.	Description
1	Detector anode (+)
2	Detector cathode (-)
3	Ground

Φ – acceptance angle

ABSOLUTE MAXIMUM RATINGS

Parameter	Test conditions/remarks	Value	Unit
Maximum incident optical power density	Continuous wave (CW) or single pulses >1 μ s duration	100	W/cm ²
	Single pulses <1 μ s duration	1	MW/cm ²
Maximum bias voltage $V_{b \max}$		-1	V
Soldering temperature	Within 5 s or less	≤ 370	$^{\circ}$ C
Ambient operating temperature T_{amb}	Detector parameters depend on T_{amb}	-20 to 70	$^{\circ}$ C
Storage temperature T_{stg}		-20 to 85	$^{\circ}$ C
Storage humidity	No dew condensation	10 to 90	%

Stresses beyond those listed under Absolute Maximum Ratings may cause permanent damage to the device.

Constant or repeated exposure to absolute maximum rating conditions may affect the quality and reliability of the device.