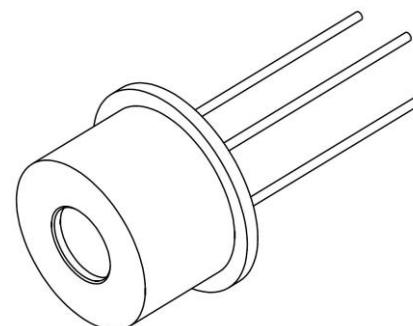


PVA-1.7-d1-TO39-wAl₂O₃-45

**PRELIMINARY
DATASHEET**

InGaAs room-temperature photovoltaic infrared detector



FEATURES

Cut-off wavelength: 1.7 μm
 III-V material
 High ambient operating and storage temperature
 Long-term stability and reliability
 Front-side illuminated

APPLICATIONS

DIRCM
 LIDAR
 Air monitoring
 Leakage detection
 Gas detection
 Lasers and diodes life tests

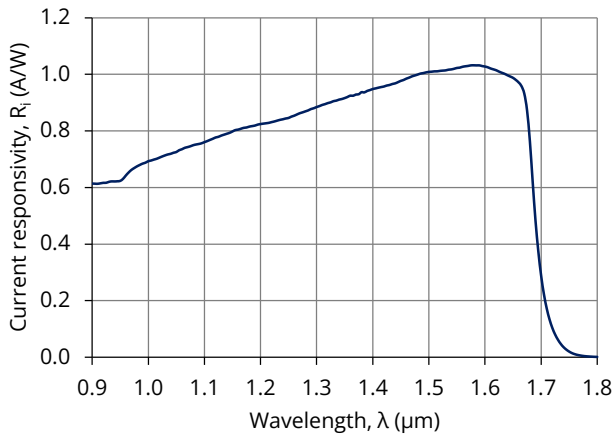
DETECTOR CONFIGURATION

Detector symbol	PVA-1.7-d1-TO39-wAl ₂ O ₃ -45
Detector type	photovoltaic
Active element material	epitaxial InGaAs heterostructure
Active area diameter, d_A	1 mm
Immersion	no
Cooling	no
Detector package	TO39
Acceptance angle, Φ	~45 deg.
Window	wAl ₂ O ₃ (3 deg. wedged sapphire)

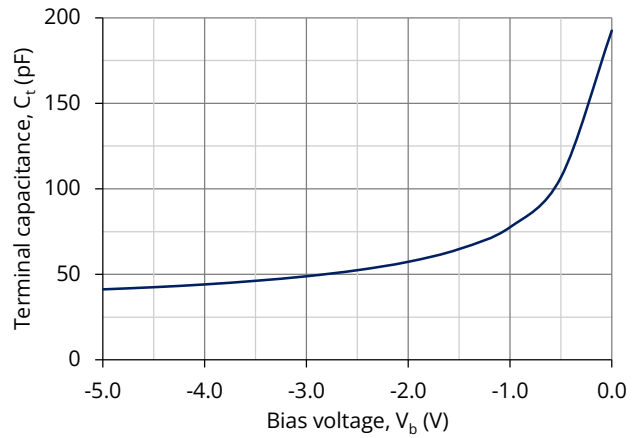
SPECIFICATION ($T_{\text{amb}} = 293 \text{ K}$, $V_b = -5 \text{ V}$, unless otherwise noted)

Parameter	Test conditions/remarks	Value			Unit
		Min.	Typ.	Max.	
Peak wavelength, λ_{peak}		1.56	1.59	1.62	μm
Cut-off wavelength, $\lambda_{\text{cut-off}}$ (10%)	At 10% of peak responsivity	1.69	1.71	-	μm
Detectivity, D^*	At $\lambda = 1.55 \mu\text{m}$, $f = 20 \text{ kHz}$	2.0×10^{11}	6.0×10^{11}	-	$\text{cm} \cdot \text{Hz}^{1/2} / \text{W}$
Current responsivity, R_i	At $\lambda = 1.55 \mu\text{m}$	1.00	1.02	-	A/W
Dark current, I_{dark}		-	-	100	nA
Dark current density, J_{dark}		-	4.0×10^{-6}	1.0×10^{-5}	A/cm ²
Terminal capacitance, C_t		27	30	33	pF
3 dB bandwidth		-	250	-	MHz
Resistance, R		3	-	-	M Ω
Bias voltage, V_b		-	-5	-	V

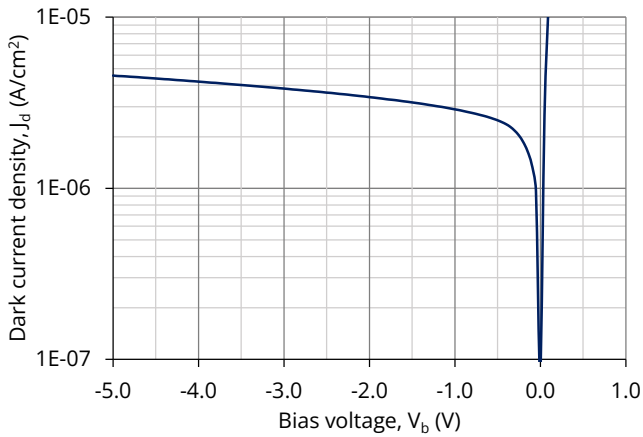
SPECTRAL RESPONSE (Typ., T_{amb} = 293 K)



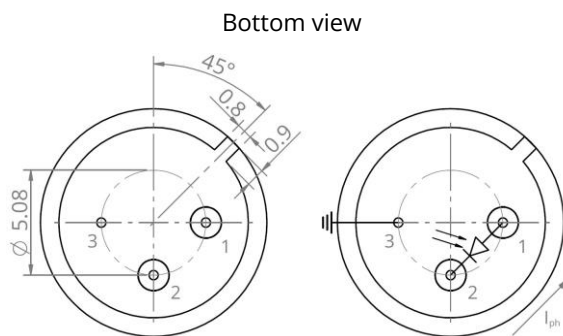
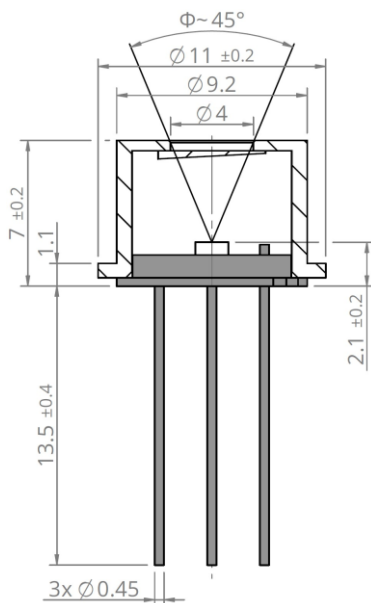
C_t-V_b CHARACTERISTICS (Typ., T_{amb} = 293 K)



J_{dark}-V_b CHARACTERISTICS (Typ., T_{amb} = 293 K)



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 bias voltage $V_{b \max}$		-10	V
Soldering temperature	Within 5 s or less	≤ 260	$^{\circ}\text{C}$
Ambient operating temperature T_{amb}		-20 to 70	$^{\circ}\text{C}$
Storage temperature T_{stg}		-20 to 85	$^{\circ}\text{C}$
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.