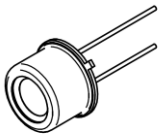
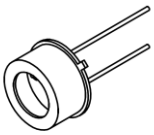
PVA-1.7 SERIES

PRELIMINARY DATASHEET

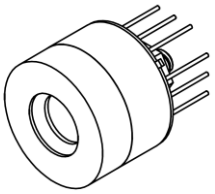
InGaAs room-temperature photovoltaic infrared detectors



TO39-BK7



TO39



TO8

FEATURES

- Cut-off wavelength: 1.7 µm
- Anti-reflection coating on the active element
- Large active area
- RoHs-compliant III-V material
- High ambient operating and storage temperature
- Long-term stability and reliability
- Front-side illuminated
- No minimum order quantity required

APPLICATIONS

- Gas detection, monitoring and analysis: CH_4
- Telecommunication
- LIDARs
- Laser range finders, laser warning systems
- Lasers and diodes life tests
- Food analysis
- Pharmaceutical analysis

RELATED PRODUCTS

- IC01410-01 detection module
- IC01420-01 detection module

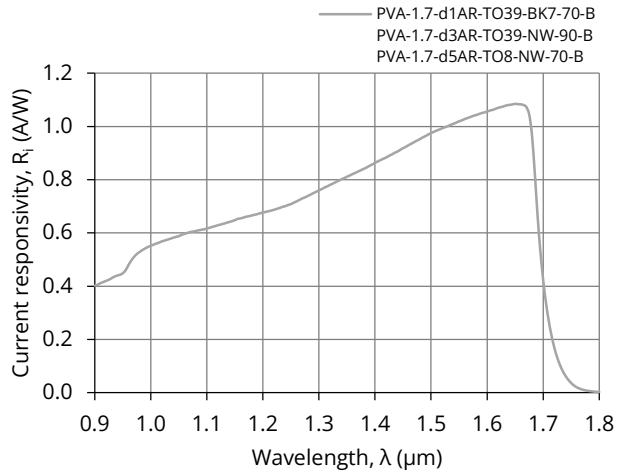
DETECTOR CONFIGURATION

Detector symbol	Cooling	Temperature sensor	Active area diameter, d_A, mm	Optical immersion	Package	Acceptance angle, Φ, deg.	Window
PVA-1.7-d1AR-TO39-BK7-70-B	no	n/a	1	no	TO39 (3 pin)	~70	BK7 (borosilicate glass)
PVA-1.7-d3AR-TO39-NW-90-B			3		TO39 (3 pin)	~90	no
PVA-1.7-d5AR-TO8-NW-70-B			5		TO8	~70	no

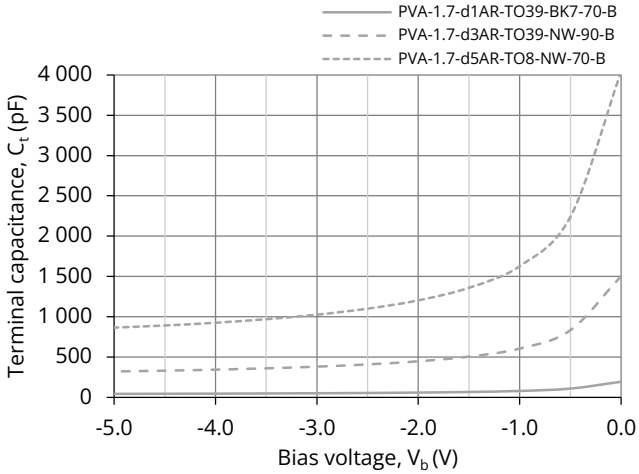
SPECIFICATION (T_{amb} = T_{chip} = 293 K, unless otherwise noted)

Detector symbol	Peak wavelength	Cut-off wavelength (10%)		Detectivity		Current responsivity		Dark current		Dark current density		Terminal capacitance			3dB bandwidth	Resistance	Bias voltage
	λ_{peak}	$\lambda_{cut-off}$		D*(λ=1.55µm, 20kHz)		R_i(λ=1.55µm)		I_{dark}		J_{dark}		C_t			R_{load}=5Ω	R (V_b=-10mV	V_b
	µm	µm		cm·Hz$^{1/2}$/W		A/W		nA		A/cm^2		pF			MHz	MΩ	V
	Typ.	Min.	Typ.	Min.	Typ.	Min	Typ.	Typ.	Max.	Typ.	Max	Min.	Typ.	Max.	Typ.	Min.	Typ.
PVA-1.7-d1AR-TO39-BK7-70-B	1.62±0.03	1.69	1.71	6.0×10^{11}	1.0×10^{12}	1.00	1.02	25	50	3.5×10^{-6}	7.0×10^{-6}	25	40	65	150	3	-5
PVA-1.7-d3AR-TO39-NW-90-B				4.5×10^{11}	-			200	400			-	-	500	25	1	
PVA-1.7-d5AR-TO8-NW-70-B				3.0×10^{11}	-			250	500	1.5×10^{-6}	3.0×10^{-6}	-	-	2 200	3	0.2	-1

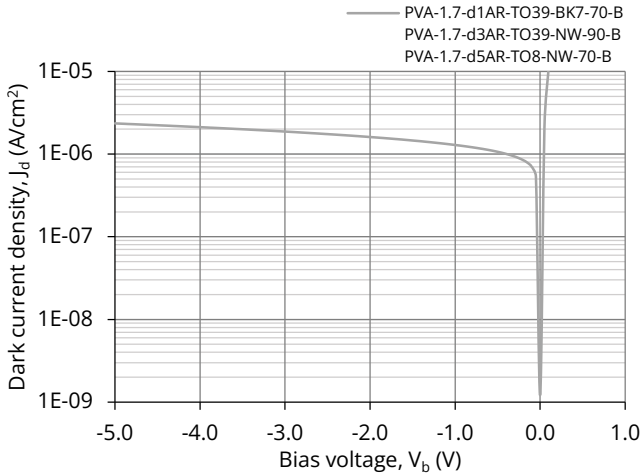
SPECTRAL RESPONSE (Typ., T_{amb} = 293 K)



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



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



MECHANICAL LAYOUT AND PINOUT

- TO39(3p)-pW, PV-FSI detector – Technical drawing
- TO39(3p)-NW, PV-FSI detector – Technical drawing
- TO8(12p)-NW, PV-FSI detector – Technical drawing

RECOMMENDED AMPLIFIER

Detector symbol	Amplifier type
PVA-1.7-d1AR-TO39-BK7-70-B	SIP-TO39 series
PVA-1.7-d3AR-TO39-NW-90-B	
PVA-1.7-d5AR-TO8-NW-70-B	AIP series PIP series MIP series SIP-TO8 series

ABSOLUTE MAXIMUM RATINGS

Parameter	Test conditions/remarks	Value	Unit
Ambient operating temperature, T_{amb}	Detector parameters depend on T_{amb}	-20 to 70	°C
Storage temperature, T_{stg}		-40 to 85	°C
Soldering temperature	Within 5 s or less	≤260	°C
Storage humidity	No dew condensation	10 to 90	%
Maximum bias voltage, $V_{b\,max}$	d_A = 1 mm	-15	V
	d_A = 3 mm	-10	
	d_A = 5 mm	-2	

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.