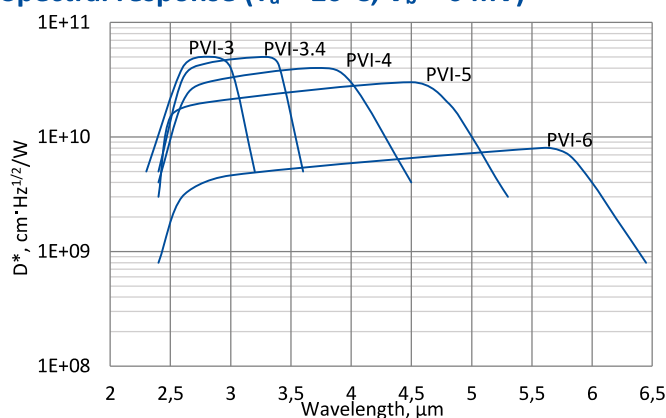


PVI series

2.5 – 6.5 μm HgCdTe ambient temperature, optically immersed photovoltaic detectors

PVI series features uncooled IR photovoltaic detectors based on sophisticated HgCdTe heterostructures for the best performance and stability, optically immersed in order to improve parameters of the devices. The detectors are optimized for the maximum performance at λ_{opt} . Cut-on wavelength can be optimized upon request. Reverse bias may significantly increase speed of response and dynamic range. It results also in improved performance at high frequencies, but $1/f$ noise that appears in biased devices may reduce performance at low frequencies.

Spectral response ($T_a = 20^\circ\text{C}$, $V_b = 0\text{ mV}$)

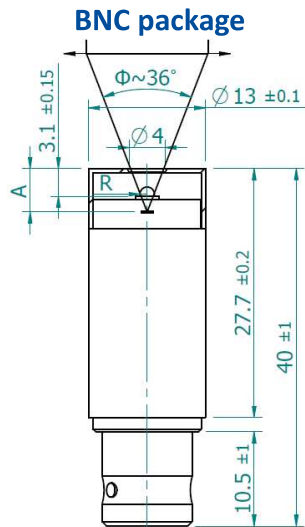


Exemplary spectral detectivity, the spectral response of delivered devices may differ.

Specification ($T_a = 20^\circ\text{C}$, $V_b = 0\text{ mV}$)

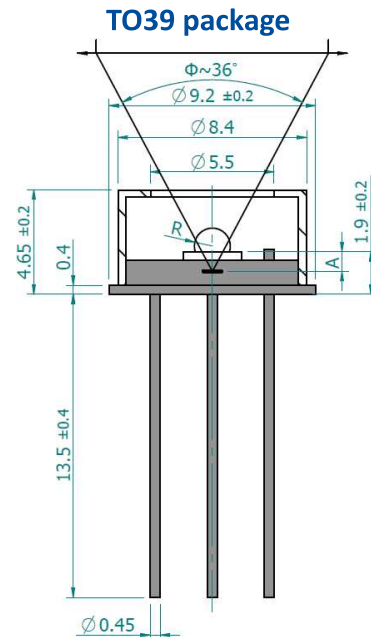
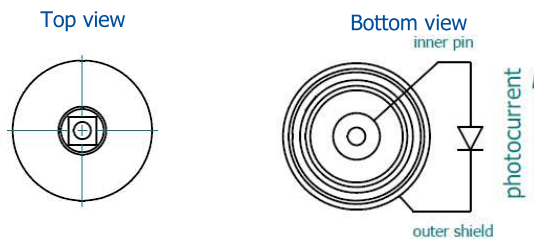
Parameter	Detector type				
	PVI-3	PVI-3.4	PVI-4	PVI-5	PVI-6
Active element material	epitaxial HgCdTe heterostructure				
Optimum wavelength λ_{opt} , μm	3.0	3.4	4.0	5.0	6.0
Detectivity $D^*(\lambda_{\text{peak}})$, $\text{cm}\cdot\text{Hz}^{1/2}/\text{W}$	$\geq 5.0 \times 10^{10}$	$\geq 5.0 \times 10^{10}$	$\geq 3.0 \times 10^{10}$	$\geq 1.5 \times 10^{10}$	$\geq 8.0 \times 10^9$
Detectivity $D^*(\lambda_{\text{opt}})$, $\text{cm}\cdot\text{Hz}^{1/2}/\text{W}$	$\geq 5.0 \times 10^{10}$	$\geq 4.5 \times 10^{10}$	$\geq 2.0 \times 10^{10}$	$\geq 9.0 \times 10^9$	$\geq 4.0 \times 10^9$
Current responsivity $R_i(\lambda_{\text{opt}})$, A/W	≥ 0.5	≥ 0.8		≥ 1.0	
Time constant τ , ns	≤ 350	≤ 260	≤ 150	≤ 120	≤ 80
Resistance-optical area product $R \cdot A_o$, $\Omega \cdot \text{cm}^2$	≥ 100	≥ 50	≥ 6	≥ 1	≥ 0.2
Optical area A_o , $\text{mm} \times \text{mm}$	0.5×0.5, 1×1				
Package	TO39, BNC				
Acceptance angle Φ	$\sim 36^\circ$				
Window	none				

Mechanical layout, mm



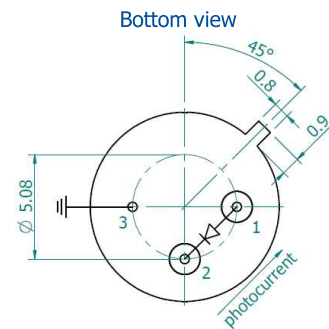
Parameter	Value	
Immersion microlens shape	hyperhemisphere	
Optical area A_o , mm×mm	0.5×0.5	1×1
R, mm	0.5	0.8
A, mm	4.6±0.3	5.5±0.3

Φ – acceptance angle
 R – hyperhemisphere microlens radius
 A – distance from the top of BNC package to the focal plane



Parameter	Value	
Immersion microlens shape	hyperhemisphere	
Optical area A_o , mm×mm	0.5×0.5	1×1
R, mm	0.5	0.8
A, mm	1.5±0.2	2.4±0.2

Φ – acceptance angle
 R – hyperhemisphere microlens radius
 A – distance from the bottom of hyperhemisphere microlens to the focal plane



Function	Pin number
Detector	1, 2
Reverse bias (optional)	1(-), 2(+)
Chassis ground	3

Dedicated preamplifier



small SIP-T039