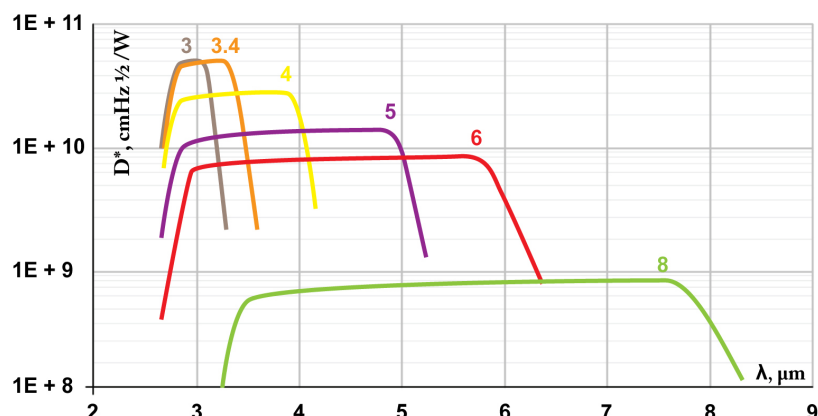


PVI Series

3 – 8 μm IR PHOTOVOLTAIC DETECTORS OPTICALLY IMMERSED



Example of D^* vs Wavelength λ for PVI Series HgCdTe Detectors. Spectral Characteristics of individual detectors may vary from those shown on the chart.

Features

- Ambient temperature operation
- No bias required
- Short time constant
- No flicker noise
- Operation from DC to VHF
- Perfect match to fast electronics
- Wide dynamic range
- Low cost
- Custom design upon request

The **PVI- λ_{opt}** photodetectors series (λ_{opt} - optimal wavelength in micrometers) feature IR photovoltaic detector, optically immersed to high refractive index GaAs hyperhemispherical (standard) or hemispherical or any intermediate lens (as option) for different acceptance angle and saturation level.

This series is easy to use, no cooling or heatsink needed. The devices 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. Highest performance and stability are achieved by application of variable gap **HgCdTe** semiconductor, optimized doping and sophisticated surface processing. Standard detectors are available in **TO39** or **BNC** packages without windows. Various windows, other packages and connectors are available upon request.

IR Detector Specification @20°C

Parameter	Symbol	Unit	PVI-3	PVI-3.4	PVI-4	PVI-5	PVI-6	PVI-8
Optimal Wavelength	λ_{opt}	μm	3	3.4	4	5	6	8
Detectivity ¹⁾ : @ λ_{peak} @ λ_{opt}	D^*	$\frac{\text{cm}\cdot\sqrt{\text{Hz}}}{\text{W}}$	$\geq 5.0 \times 10^{10}$ $\geq 5.0 \times 10^{10}$	$\geq 5.0 \times 10^{10}$ $\geq 4.5 \times 10^{10}$	$\geq 3.0 \times 10^{10}$ $\geq 2.0 \times 10^{10}$	$\geq 1.5 \times 10^{10}$ $\geq 9.0 \times 10^9$	$\geq 8.0 \times 10^9$ $\geq 4.0 \times 10^9$	$\geq 8.0 \times 10^8$ $\geq 4.0 \times 10^8$
Current Responsivity	R_i	$\frac{\text{A}}{\text{W}}$	≥ 0.5	≥ 0.8	≥ 1	≥ 1	≥ 1	≥ 0.3
Time Constant	τ	ns	≤ 350	≤ 260	≤ 150	≤ 120	≤ 80	≤ 4
Time Constant ²⁾	τ	ns	≤ 3	≤ 2	≤ 1	≤ 0.7	≤ 0.5	≤ 0.7
Resistance – Optical Area Product	$R \cdot A$	$\Omega \cdot \text{cm}^2$	≥ 100	≥ 50	≥ 6	≥ 1	≥ 0.2	≥ 0.01
Operating Temperature	T	K	~300					
Acceptance Angle, F/#	$\Phi, -$	deg, -	36, 1.62					

¹⁾ Data Sheet states minimum guaranteed D^* values for each detector model. Higher performance detectors can be provided upon request.

²⁾ Response which may be achieved at reverse bias (selected detectors upon request). Devices with faster response are available upon special request.

Type	Optical Area ¹⁾ [mm×mm]									
	0.025×0.025	0.05×0.05	0.1×0.1	0.2×0.2	0.25×0.25	0.5×0.5	1×1	2×2	3×3	4×4
PVI-3					O	X	X	O		
PVI-3.4					O	X	X	O		
PVI-4					O	X	X	O		
PVI-5					O	X	X	O		
PVI-6					O	X	X			
PVI-8				X	X	X ²⁾	P			

¹⁾ Circular shaped Optical Area (Diameter [mm]) can be provided upon request.

²⁾ Custom detectors may require reverse bias in order to increase Dynamic Resistance to improve frequency response.

X – standard detectors

P – default with reverse bias

O – detectors available upon request; parameters may vary from these in Data Sheet