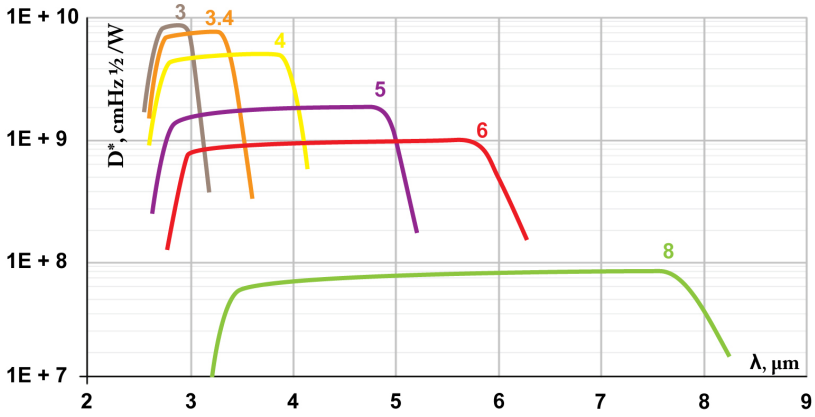
PV Series — 3 – 8 µm IR PHOTOVOLTAIC DETECTORS



Example of D vs Wavelength λ for PV 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 **PV-λ_{opt}** photodetectors series (λ_{opt} - optimal wavelength in micrometers) feature IR photovoltaic detector.
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	PV-3	PV-3.4	PV-4	PV-5	PV-6	PV-8
Optimal Wavelength	λ_{opt}	µm	3	3.4	4	5	6	8
Detectivity*): **@ λ_{peak}** **@ λ_{opt}**	**D***	$\frac{cm\cdot\sqrt{Hz}}{W}$	 ≥8.0×10^9 ≥6.5×10^9	 ≥7.0×10^9 ≥5.0×10^9	 ≥5.0×10^9 ≥3.0×10^9	 ≥2.0×10^9 ≥1.0×10^9	 ≥1.0×10^9 ≥5.0×10^8	 ≥8.0×10^7 ≥4.0×10^7
Current Responsivity	R_i	$\frac{A}{W}$	≥0.5	≥0.8	≥1	≥1	≥1	≥0.3
Time Constant	τ	ns	≤350	≤260	≤150	≤120	≤80	≤4
Time Constant**	τ	ns	≤3	≤2	≤1	≤0.7	≤0.7	≤0.7
Resistance – Optical Area Product	**R·A**	**Ω·cm^2**	≥1	≥0.5	≥0.1	≥0.01	≥0.002	≥0.0001
Operating Temperature	**T**	**K**	~300					
Acceptance Angle, F/#	**Φ, -**	**deg, -**	>90, 0.71					

*) *Data Sheet states minimum guaranteed D* values for each detector model. Higher performance detectors can be provided upon request.*
**) *Response which may be achieved at reverse bias (selected detectors upon request). Devices with faster response are availabe upon special request.*

Type	Optical Area*) [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
PV-3	O	X	X	O		O	O			
PV-3.4	O	X	X	O		O	O			
PV-4	O	X	X	O		O	O			
PV-5	O	X	X	O		O	O			
PV-6	O	X	X**)	O		O				
PV-8	X	X**)	P							

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