

Photovoltaic detectors PV

PV series features room temperature and TE cooled IR photovoltaic detectors. 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.

Detector type	Cooling, operating temperature $T [K]$	Optimal wavelength ¹⁾ $\lambda_{opt} [\mu m]$	Detectivity ^{*)} $D^* \left[\frac{cm \cdot \sqrt{Hz}}{W} \right]$		Current responsivity @ λ_{opt} $R_i \left[\frac{A}{W} \right]$	Time constant $\tau [ns]$	Resistance optical area product $R \cdot A [\Omega \cdot cm^2]$	Acceptance angle $\varnothing [^\circ]_{\frac{1}{2NA}}$	Optical area ^{**)} $[mm \times mm]$	Package	Window ^{****)}		
			@ λ_{peak}	@ λ_{opt}									
PV	uncooled, ~300	3	$\geq 8.0 \times 10^9$	$\geq 6.5 \times 10^9$	≥ 0.5	≤ 350	≥ 1	≥ 90 , 0.71	0.05×0.05 0.1×0.1	BNC, TO39	no window		
		3.4	$\geq 7.0 \times 10^9$	$\geq 5.0 \times 10^9$	≥ 0.8	≤ 260	≥ 0.5						
		4	$\geq 5.0 \times 10^9$	$\geq 3.0 \times 10^9$	≥ 1	≤ 150	≥ 0.1						
		5	$\geq 2.0 \times 10^9$	$\geq 1.0 \times 10^9$	≥ 1	≤ 120	≥ 0.01						
		6	$\geq 1.0 \times 10^9$	$\geq 5.0 \times 10^8$	≥ 1	≤ 80	≥ 0.002						
	two-stage TE-cooled (2TE), ~230	3	$\geq 1.0 \times 10^{11}$	$\geq 7.0 \times 10^{10}$	≥ 0.5	≤ 280	≥ 150	~ 70 , 0.87	0.05×0.05 0.1×0.1	TO8, TO66	wedged Al ₂ O ₃		
		3.4	$\geq 6.0 \times 10^{10}$	$\geq 4.0 \times 10^{10}$	≥ 0.8	≤ 200	≥ 3						
		4	$\geq 4.0 \times 10^{10}$	$\geq 3.0 \times 10^{10}$	≥ 1.0	≤ 100	≥ 2						
		5	$\geq 1.5 \times 10^{10}$	$\geq 9.0 \times 10^9$	≥ 1.3	≤ 80	≥ 0.1						
		6	$\geq 5.0 \times 10^9$	$\geq 2.0 \times 10^9$	≥ 1.5	≤ 50	≥ 0.02						
		8	$\geq 4.0 \times 10^8$	$\geq 2.0 \times 10^8$	≥ 0.8	≤ 30	≥ 0.0002		0.025×0.025 0.05×0.05		wedged ZnSe AR coated		
						≤ 45			0.1×0.1				
		10.6	$\geq 2.0 \times 10^8$	$\geq 1.0 \times 10^8$	≥ 0.4	≤ 10	≥ 0.0001		0.025×0.025 0.05×0.05				
	three-stage TE-cooled (3TE), ~210	3	$\geq 3.0 \times 10^{11}$	$\geq 1.0 \times 10^{11}$	≥ 0.5	≤ 280	≥ 240		0.05×0.05 0.1×0.1		wedged Al ₂ O ₃		
		3.4	$\geq 9.0 \times 10^{10}$	$\geq 7.0 \times 10^{10}$	≥ 0.8	≤ 200	≥ 15						
		4	$\geq 6.0 \times 10^{10}$	$\geq 4.0 \times 10^{10}$	≥ 1.0	≤ 100	≥ 6						
		5	$\geq 4.0 \times 10^{10}$	$\geq 1.0 \times 10^{10}$	≥ 1.3	≤ 80	≥ 0.3						
		6	$\geq 7.0 \times 10^9$	$\geq 4.0 \times 10^9$	≥ 1.5	≤ 50	≥ 0.025						
		8	$\geq 5.0 \times 10^8$	$\geq 3.0 \times 10^8$	≥ 1.0	≤ 30	≥ 0.0004					0.025×0.025 0.05×0.05	wedged ZnSe AR coated
						≤ 45						0.1×0.1	
		10.6	$\geq 3.0 \times 10^8$	$\geq 1.5 \times 10^8$	≥ 0.7	≤ 10	≥ 0.0002					0.025×0.025 0.05×0.05	
	four-stage TE-cooled (4TE), ~195	3	$\geq 3.0 \times 10^{11}$	$\geq 1.5 \times 10^{11}$	≥ 0.5	≤ 280	≥ 300		0.05×0.05 0.1×0.1		wedged Al ₂ O ₃		
		3.4	$\geq 2.0 \times 10^{11}$	$\geq 1.0 \times 10^{11}$	≥ 0.8	≤ 200	≥ 20						
		4	$\geq 1.0 \times 10^{11}$	$\geq 6.0 \times 10^{10}$	≥ 1.0	≤ 100	≥ 8						
		5	$\geq 4.0 \times 10^{10}$	$\geq 1.5 \times 10^{10}$	≥ 1.3	≤ 80	≥ 0.4		0.05×0.05 0.1×0.1		wedged ZnSe AR coated		
		6	$\geq 9.0 \times 10^9$	$\geq 5.0 \times 10^9$	≥ 1.5	≤ 50	≥ 0.03						
		8	$\geq 5.0 \times 10^8$	$\geq 4.0 \times 10^8$	≥ 1.5	≤ 30	≥ 0.0006					0.025×0.025 0.05×0.05	
						≤ 45			0.1×0.1				
		10.6	$\geq 4.0 \times 10^8$	$\geq 2.0 \times 10^8$	≥ 0.7	≤ 10	≥ 0.0005		0.025×0.025 0.05×0.05				
						≥ 0.5			≤ 25		0.1×0.1		

^{*)} Other optimal wavelengths available upon request.
^{**) Data sheet states minimum guaranteed D^* values for each detector model. Higher performance detectors can be provided upon request.}

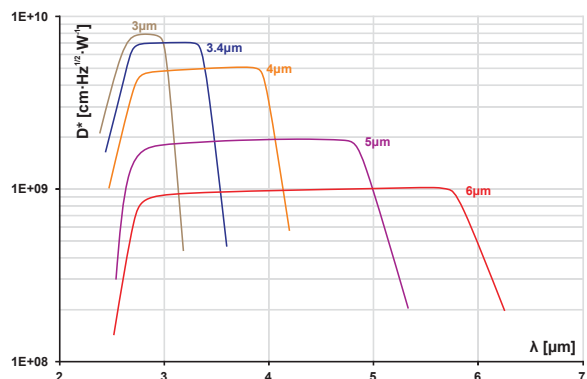
^{*)} Other optical areas available upon request.

^{****)} Other windows available upon request.

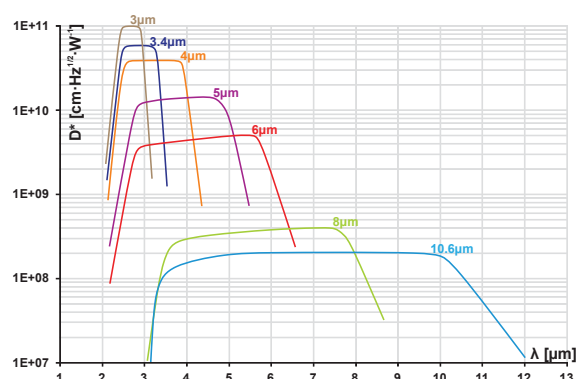
¹⁾ Optical area available only for uncooled detectors

Spectral characteristics^{*)}

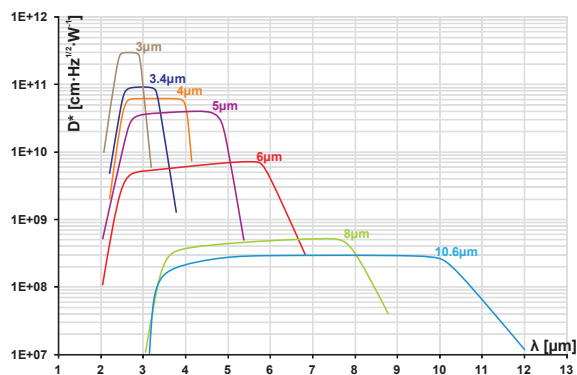
PV



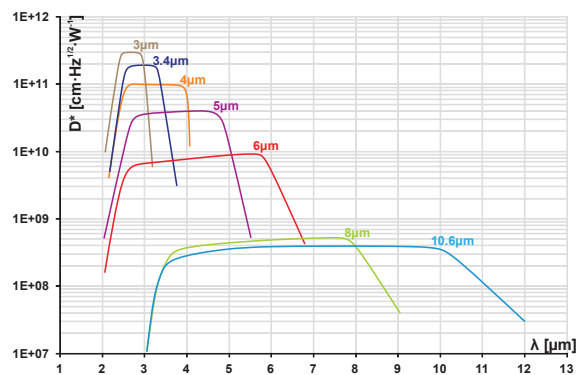
PV-2TE



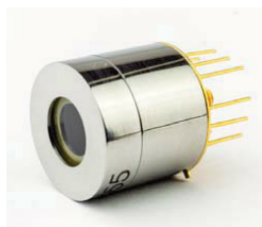
PV-3TE



PV-4TE



^{*)}Example of D^* vs wavelength λ for HgCdTe detectors.
Spectral characteristics of individual detectors may vary from those shown on the chart.



Detector code

Different information such as detector type, optical immersion, number of stages TE-cooler, wavelength a detector is optimized for, dimensions of optical area, package type, window type and FOV combine, to create VIGO detector code.

Code description of uncooled detector

PC - 10 6 - 1x1 - BNC - NoWindow - 102

VIGO detector type	Optimal wavelength	Optical area	Detector package	Window (without window)	FOV
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Code description of cooled detector

PVI - 2TE - 5 - 1x1 - TO8 - wAl2O3 - 35

VIGO detector type (I - optical immersion)	Cooling	Optimal wavelength	Optical area	Detector package	Window	FOV
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Please see data sheets to get possible option of each type detector.

