Electro Optical Components, Inc.

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Photovoltaic detectors PV

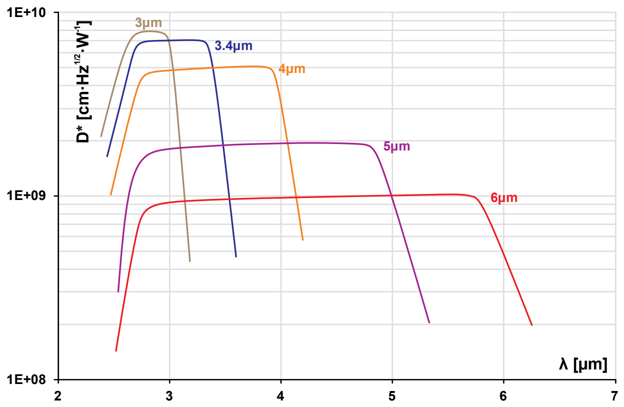
PV series features room temperature and TE cooled IR photovoltaic detectors. The devices are optimized for the maximum performance at λ_{opt}. Cut-on wavelength can be optimized upon request. Reverse bias may significantly increase speed of response and dynamic range. It results also in improved performance 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 HgCdTesemiconductor, optimized doping and sophisticated surface processing.

Detector type	Cooling, operating temperature $T[K]$	Optimal wavelength*) $\lambda_{opt}\ [\mu m]$	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 $\varnothing[°], \frac{1}{2NA}$	Optical area***) $[mm\times mm]$	Package	Window****)
			@λ_{peak}	@λ_{opt}							
PV	uncooled, ~300	3	$\ge8.0\times10^{9}$	$\ge6.5\times10^{9}$	≥0.5	≤350	≥1	≥90, 0.71	0.05×0.05 0.1×0.1	BNC, TO39, TO8	no window
		3.4	$\ge7.0\times10^{9}$	$\ge5.0\times10^{9}$	≥0.8	≤260	≥0.5				
		4	$\ge5.0\times10^{9}$	$\ge3.0\times10^{9}$	≥1	≤150	≥0.1				
		5	$\ge2.0\times10^{9}$	$\ge1.0\times10^{9}$	≥1	≤120	≥0.01				
		6	$\ge1.0\times10^{9}$	$\ge5.0\times10^{8}$	≥1	≤80	≥0.002				
	two-stage TE-cooled (2TE), ~230	3	$\ge1.0\times10^{11}$	$\ge7.0\times10^{10}$	≥0.5	≤280	≥150	~70, 0.87	0.05×0.05 0.1×0.1	TO8, TO66	wedged Al_2O_3
		3.4	$\ge6.0\times10^{10}$	$\ge4.0\times10^{10}$	≥0.8	≤200	≥3				
		4	$\ge4.0\times10^{10}$	$\ge3.0\times10^{10}$	≥1.0	≤100	≥2				
		5	$\ge1.5\times10^{10}$	$\ge9.0\times10^{9}$	≥1.3	≤80	≥0.1				
		6	$\ge5.0\times10^{9}$	$\ge2.0\times10^{9}$	≥1.5	≤50	≥0.02				wedged ZnSe AR coated
		8	$\ge4.0\times10^{8}$	$\ge2.0\times10^{8}$	≥0.8	≤30	≥0.0002		0.025×0.025 0.05×0.05		
						≤45			0.1×0.1		
		10.6	$\ge2.0\times10^{8}$	$\ge1.0\times10^{8}$	≥0.4	≤10	≥0.0001		0.025×0.025 0.05×0.05		
	three-stage TE-cooled (3TE), ~210	3	$\ge3.0\times10^{11}$	$\ge1.0\times10^{11}$	≥0.5	≤280	≥240		0.05×0.05 0.1×0.1		wedged Al_2O_3
		3.4	$\ge9.0\times10^{10}$	$\ge7.0\times10^{10}$	≥0.8	≤200	≥15				
		4	$\ge6.0\times10^{10}$	$\ge4.0\times10^{10}$	≥1.0	≤100	≥6				
		5	$\ge4.0\times10^{10}$	$\ge1.0\times10^{10}$	≥1.3	≤80	≥0.3				
		6	$\ge7.0\times10^{9}$	$\ge4.0\times10^{9}$	≥1.5	≤50	≥0.025				wedged ZnSe AR coated
		8	$\ge5.0\times10^{8}$	$\ge3.0\times10^{8}$	≥1.0	≤30	≥0.0004		0.025×0.025 0.05×0.05		
						≤45			0.1×0.1		
		10.6	$\ge3.0\times10^{8}$	$\ge1.5\times10^{8}$	≥0.7	≤10	≥0.0002		0.025×0.025 0.05×0.05		
	four-stage TE-cooled (4TE), ~195	3	$\ge3.0\times10^{11}$	$\ge1.5\times10^{11}$	≥0.5	≤280	≥300		0.05×0.05 0.1×0.1		wedged Al_2O_3
		3.4	$\ge2.0\times10^{11}$	$\ge1.0\times10^{11}$	≥0.8	≤200	≥20				
		4	$\ge1.0\times10^{11}$	$\ge6.0\times10^{10}$	≥1.0	≤100	≥8				
		5	$\ge4.0\times10^{10}$	$\ge1.5\times10^{10}$	≥1.3	≤80	≥0.4				wedged ZnSe AR coated
		6	$\ge9.0\times10^{9}$	$\ge5.0\times10^{9}$	≥1.5	≤50	≥0.03				
		8	$\ge5.0\times10^{8}$	$\ge4.0\times10^{8}$	≥1.5	≤30	≥0.0006		0.025×0.025 0.05×0.05		
						≤45			0.1×0.1		
		10.6	$\ge4.0\times10^{8}$	$\ge2.0\times10^{8}$	≥0.7	≤10	≥0.0005		0.025×0.025 0.05×0.05		
					≥0.5	≤25			0.1×0.1		

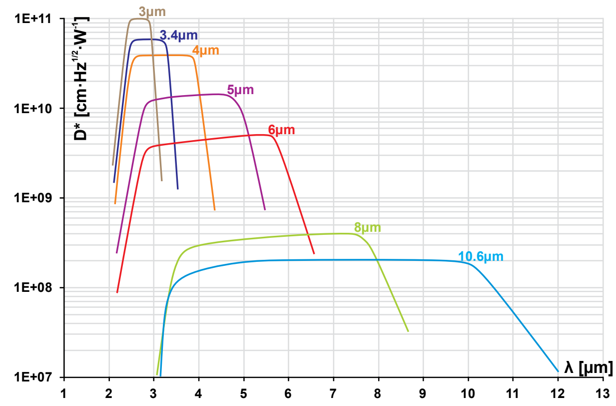
*) Other optimal wavelengths available upon request.
**) Data sheet states minimum guaranteed D* values for each detector model. Higher performance detectors can be provided upon request.
***) Other optical areas available upon request.
****) Other windows available upon request.
') Optical area available only for uncooled detectors

Spectral characteristics*)

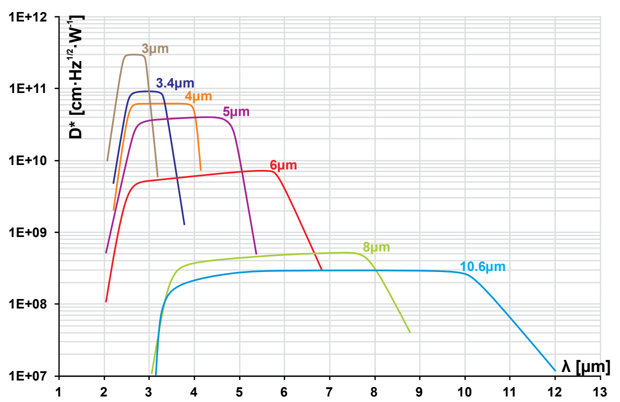
PV



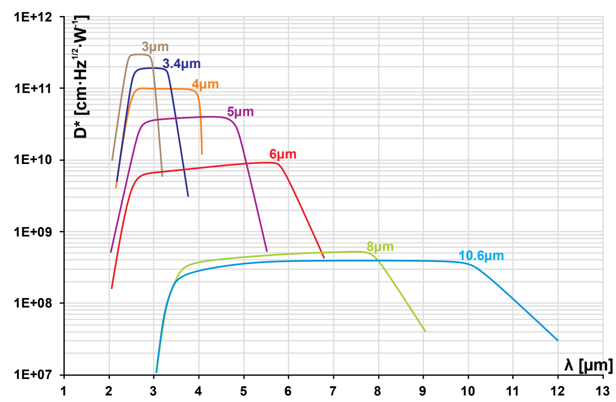
PV-2TE



PV-3TE



PV-4TE



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