

## Photovoltaic detectors PV

**PV series** features room temperature and TE cooled IR photovoltaic detectors. The devices are optimized for the maximum performance at  $\lambda_{opt}$ . 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 <sup>1)</sup> $\lambda_{opt}$ [ $\mu m$ ]	Detectivity <sup>2)</sup> $D^*$ [ $\frac{cm \cdot \sqrt{Hz}}{W}$ ]		Current responsivity @ $\lambda_{opt}$ $R_i$ [ $\frac{A}{W}$ ]	Time constant $\tau$ [ns]	Resistance optical area product $R \cdot A$ [ $\Omega \cdot cm^2$ ]	Acceptance angle $\varnothing$ [ $^\circ$ ], $\frac{1}{2NA}$	Optical area <sup>3)</sup> [ $mm \times mm$ ]	Package	Window <sup>4)</sup>
			@ $\lambda_{peak}$	@ $\lambda_{opt}$							
PV	uncooled, ~300	3	$\geq 8.0 \times 10^9$	$\geq 6.5 \times 10^9$	$\geq 0.5$	$\leq 350$	$\geq 1$	$\geq 90, 0.71$	$0.05 \times 0.05$ $0.1 \times 0.1$	BNC, TO39	no window
		3.4	$\geq 7.0 \times 10^9$	$\geq 5.0 \times 10^9$	$\geq 0.8$	$\leq 260$	$\geq 0.5$				
		4	$\geq 5.0 \times 10^9$	$\geq 3.0 \times 10^9$	$\geq 1$	$\leq 150$	$\geq 0.1$				
		5	$\geq 2.0 \times 10^9$	$\geq 1.0 \times 10^9$	$\geq 1$	$\leq 120$	$\geq 0.01$				
		6	$\geq 1.0 \times 10^9$	$\geq 5.0 \times 10^8$	$\geq 1$	$\leq 80$	$\geq 0.002$				
	two-stage TE-cooled (2TE), ~230	3	$\geq 1.0 \times 10^{11}$	$\geq 7.0 \times 10^{10}$	$\geq 0.5$	$\leq 280$	$\geq 150$	$\sim 70, 0.87$	$0.05 \times 0.05$ $0.1 \times 0.1$	TO8, TO66	wedged $Al_2O_3$
		3.4	$\geq 6.0 \times 10^{10}$	$\geq 4.0 \times 10^{10}$	$\geq 0.8$	$\leq 200$	$\geq 3$				
		4	$\geq 4.0 \times 10^{10}$	$\geq 3.0 \times 10^{10}$	$\geq 1.0$	$\leq 100$	$\geq 2$				
		5	$\geq 1.5 \times 10^{10}$	$\geq 9.0 \times 10^9$	$\geq 1.3$	$\leq 80$	$\geq 0.1$				
		6	$\geq 5.0 \times 10^9$	$\geq 2.0 \times 10^9$	$\geq 1.5$	$\leq 50$	$\geq 0.02$				
		8	$\geq 4.0 \times 10^8$	$\geq 2.0 \times 10^8$	$\geq 0.8$	$\leq 30$	$\geq 0.0002$				
						$\leq 45$					
	10.6	$\geq 2.0 \times 10^8$	$\geq 1.0 \times 10^8$	$\geq 0.4$	$\leq 10$	$\geq 0.0001$					
	three-stage TE-cooled (3TE), ~210	3	$\geq 3.0 \times 10^{11}$	$\geq 1.0 \times 10^{11}$	$\geq 0.5$	$\leq 280$	$\geq 240$	$\sim 70, 0.87$	$0.05 \times 0.05$ $0.1 \times 0.1$	TO8, TO66	wedged $Al_2O_3$
		3.4	$\geq 9.0 \times 10^{10}$	$\geq 7.0 \times 10^{10}$	$\geq 0.8$	$\leq 200$	$\geq 15$				
		4	$\geq 6.0 \times 10^{10}$	$\geq 4.0 \times 10^{10}$	$\geq 1.0$	$\leq 100$	$\geq 6$				
		5	$\geq 4.0 \times 10^{10}$	$\geq 1.0 \times 10^{10}$	$\geq 1.3$	$\leq 80$	$\geq 0.3$				
		6	$\geq 7.0 \times 10^9$	$\geq 4.0 \times 10^9$	$\geq 1.5$	$\leq 50$	$\geq 0.025$				
		8	$\geq 5.0 \times 10^8$	$\geq 3.0 \times 10^8$	$\geq 1.0$	$\leq 30$	$\geq 0.0004$				
	$\leq 45$										
	10.6	$\geq 3.0 \times 10^8$	$\geq 1.5 \times 10^8$	$\geq 0.7$	$\leq 10$	$\geq 0.0002$					
	four-stage TE-cooled (4TE), ~195	3	$\geq 3.0 \times 10^{11}$	$\geq 1.5 \times 10^{11}$	$\geq 0.5$	$\leq 280$	$\geq 300$	$\sim 70, 0.87$	$0.05 \times 0.05$ $0.1 \times 0.1$	TO8, TO66	wedged $Al_2O_3$
		3.4	$\geq 2.0 \times 10^{11}$	$\geq 1.0 \times 10^{11}$	$\geq 0.8$	$\leq 200$	$\geq 20$				
		4	$\geq 1.0 \times 10^{11}$	$\geq 6.0 \times 10^{10}$	$\geq 1.0$	$\leq 100$	$\geq 8$				
5		$\geq 4.0 \times 10^{10}$	$\geq 1.5 \times 10^{10}$	$\geq 1.3$	$\leq 80$	$\geq 0.4$					
6		$\geq 9.0 \times 10^9$	$\geq 5.0 \times 10^9$	$\geq 1.5$	$\leq 50$	$\geq 0.03$					
8		$\geq 5.0 \times 10^8$	$\geq 4.0 \times 10^8$	$\geq 1.5$	$\leq 30$	$\geq 0.0006$					
					$\leq 45$						
10.6		$\geq 4.0 \times 10^8$	$\geq 2.0 \times 10^8$	$\geq 0.7$	$\leq 10$	$\geq 0.0005$					
			$\geq 0.5$	$\leq 25$							

<sup>2)</sup> Other optimal wavelengths available upon request.  
<sup>3)</sup> Data sheet states minimum guaranteed  $D^*$  values for each detector model. Higher performance detectors can be provided upon request.

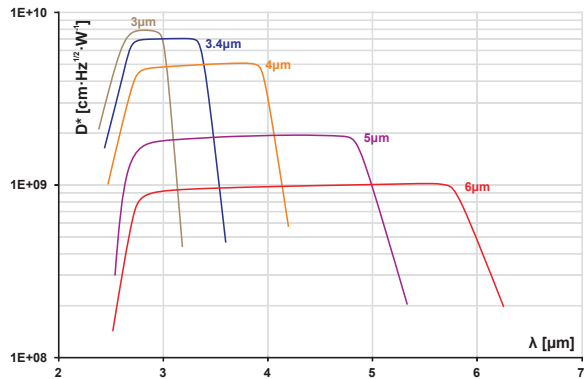
<sup>4)</sup> Other optical areas available upon request.

<sup>5)</sup> Other windows available upon request.

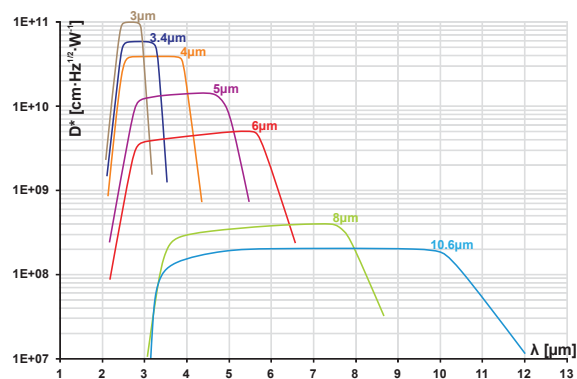
<sup>6)</sup> Optical area available only for uncooled detectors

# Spectral characteristics<sup>\*)</sup>

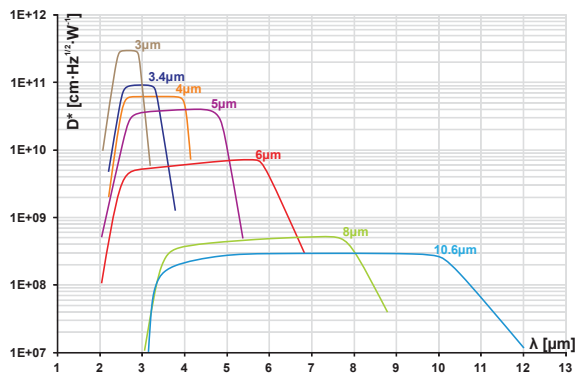
PV



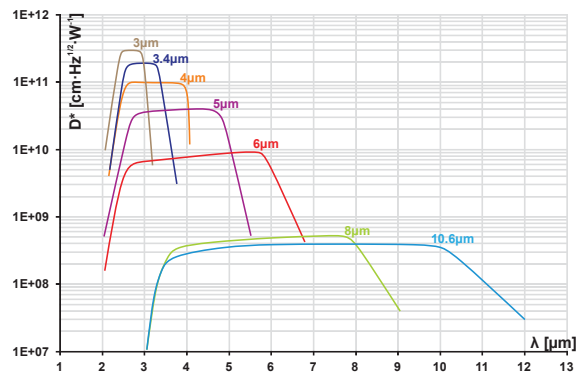
PV-2TE



PV-3TE



PV-4TE



<sup>\*)</sup>Example of  $D^*$  vs wavelength  $\lambda$  for HgCdTe detectors. Spectral characteristics of individual detectors may vary from those shown on the chart.

