



Electro Optical Components, Inc.

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Photoconductive detectors PC

PC series features room temperature and TE cooled IR photoconductive detectors. The devices are optimized for the maximum performance at λ_{opt} . Cut-on wavelength is limited by GaAs transmittance ($\sim 0.9 \mu\text{m}$). Bias is needed to operate photocurrent. Performance at low frequencies ($< 20 \text{ kHz}$) is reduced due to $1/f$ noise. The 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 $\lambda_{opt} [\mu\text{m}]$	Detectivity ^{**)} $D^* \left[\frac{\text{cm} \cdot \sqrt{\text{Hz}}}{\text{W}} \right]$		Current responsivity length product @ λ_{opt} $R_s \cdot L \left[\frac{\text{A} \cdot \text{mm}}{\text{W}} \right]$	Time constant $\tau [\mu\text{s}]$	$1/f$ noise corner frequency $f_c [kHz]$	Bias voltage length ratio $\frac{V_b}{L} \left[\frac{\text{V}}{\text{mm}} \right]$	Sheet resistance $R_{sq} [\Omega]$	Acceptance angle $\varnothing [^\circ]_{1/2NA}$	Optical area ^{***)} $[\text{mm} \times \text{mm}]$	Package	Window ^{****)}		
			@ λ_{peak} 20kHz	@ λ_{opt} 20kHz											
PC	uncooled, ~ 300	4	$\geq 3.2 \times 10^9$	$\geq 2.0 \times 10^9$	≥ 0.1	≤ 12000	≤ 20	≤ 6.0	≤ 2000	$\geq 90, 0.71$	0.025 x 0.025 0.05 x 0.05 0.1 x 0.1 0.2 x 0.2 0.25 x 0.25 0.5 x 0.5 1 x 1 2 x 2 3 x 3 ¹⁾ 4 x 4 ¹⁾	BNC, TO39	no window		
		5	$\geq 1.5 \times 10^9$	$\geq 1.0 \times 10^9$	≥ 0.07	≤ 5000		≤ 6.0	≤ 1200						
		6	$\geq 7.0 \times 10^8$	$\geq 3.0 \times 10^8$	≥ 0.02	≤ 500		≤ 6.0	≤ 600						
		9	$\geq 1.0 \times 10^8$	$\geq 2.0 \times 10^7$	≥ 0.003	≤ 10		≤ 6.0	≤ 300						
		10.6	$\geq 1.9 \times 10^7$	$\geq 9.0 \times 10^6$	≥ 0.001	≤ 3		≤ 6.0	≤ 120						
	two-stage TE-cooled (2TE), ~ 230	4	$\geq 3.2 \times 10^{10}$	$\geq 2.0 \times 10^{10}$	≥ 0.65	≤ 30000		≤ 4.5	≤ 1500	$\sim 70, 0.87$	≤ 2000	$\geq 90, 0.71$	0.025 x 0.025 0.05 x 0.05 0.1 x 0.1 0.2 x 0.2 0.25 x 0.25 0.5 x 0.5 1 x 1 2 x 2 3 x 3 ¹⁾ 4 x 4 ¹⁾	TO8, TO66	wedged Al_2O_3
		5	$\geq 2.0 \times 10^{10}$	$\geq 1.0 \times 10^{10}$	≥ 0.5	≤ 20000		≤ 4.5	≤ 1200						
		6	$\geq 6.0 \times 10^9$	$\geq 3.0 \times 10^9$	≥ 0.18	≤ 4000		≤ 4.5	≤ 800						
		9	$\geq 9.0 \times 10^8$	$\geq 4.5 \times 10^8$	≥ 0.025	≤ 40		≤ 3.8	≤ 400						
		10.6	$\geq 4.0 \times 10^8$	$\geq 1.4 \times 10^8$	≥ 0.01	≤ 10		≤ 3.8	≤ 300						
		12	$\geq 1.0 \times 10^8$	$\geq 4.5 \times 10^7$	≥ 0.005	≤ 3		≤ 2.5	≤ 200						
	three-stage TE-cooled (3TE), ~ 210	9	$\geq 1.5 \times 10^9$	$\geq 1.0 \times 10^9$	≥ 0.075	≤ 60		≤ 2.5	≤ 150	$\sim 70, 0.87$	≤ 2000	$\geq 90, 0.71$	0.025 x 0.025 0.05 x 0.05 0.1 x 0.1 0.2 x 0.2 0.25 x 0.25 0.5 x 0.5 1 x 1 2 x 2 3 x 3 ¹⁾ 4 x 4 ¹⁾	TO8, TO66	wedged ZnSe AR coated
		10.6	$\geq 4.5 \times 10^8$	$\geq 2.5 \times 10^8$	≥ 0.02	≤ 20		≤ 3.0	≤ 400						
		12	$\geq 1.8 \times 10^8$	$\geq 9.0 \times 10^7$	≥ 0.01	≤ 5		≤ 2.25	≤ 300						
		13	$\geq 1.2 \times 10^8$	$\geq 6.0 \times 10^7$	≥ 0.007	≤ 4		≤ 2.25	≤ 300						
	four-stage TE-cooled (4TE), ~ 195	9	$\geq 2.5 \times 10^9$	$\geq 2.0 \times 10^9$	≥ 0.1	≤ 80		≤ 3.0	≤ 400	$\sim 70, 0.87$	≤ 2000	$\geq 90, 0.71$	0.025 x 0.025 0.05 x 0.05 0.1 x 0.1 0.2 x 0.2 0.25 x 0.25 0.5 x 0.5 1 x 1 2 x 2 3 x 3 ¹⁾ 4 x 4 ¹⁾	TO8, TO66	wedged ZnSe AR coated
		10.6	$\geq 5.0 \times 10^8$	$\geq 3.5 \times 10^8$	≥ 0.03	≤ 30		≤ 3.0	≤ 400						
		12	$\geq 4.0 \times 10^8$	$\geq 2.0 \times 10^8$	≥ 0.015	≤ 7		≤ 3.0	≤ 400						
		13	$\geq 2.0 \times 10^8$	$\geq 1.0 \times 10^8$	≥ 0.01	≤ 6		≤ 3.0	≤ 400						
		14	$\geq 1.0 \times 10^8$	$\geq 6.0 \times 10^7$	≥ 0.007	≤ 5		≤ 2.25	≤ 300						

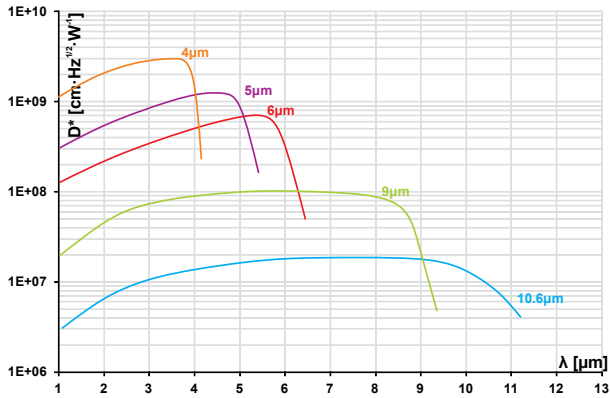
^{**) Data sheet states minimum guaranteed D^* values for each detector model. Higher performance detectors can be provided upon request.}

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

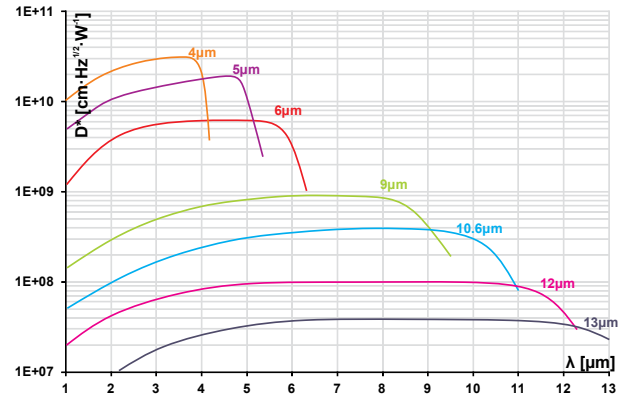
^{1) Other windows available upon request.}
^{1) Optical area available only for uncooled detectors}

Spectral characteristics^{*)}

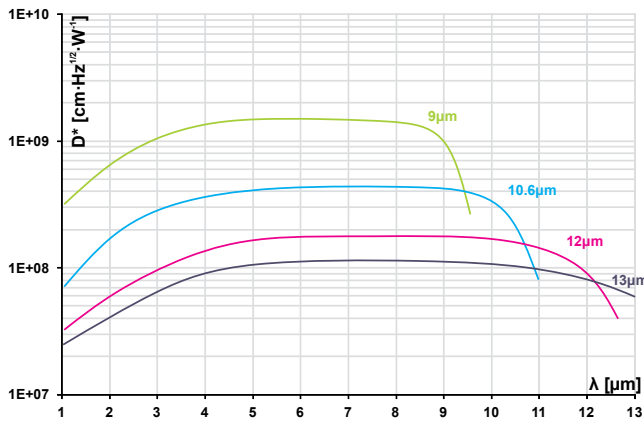
PC



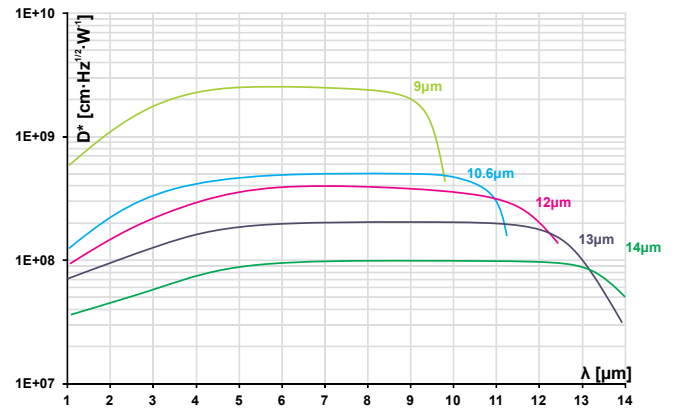
PC-2TE



PC-3TE



PC-4TE



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