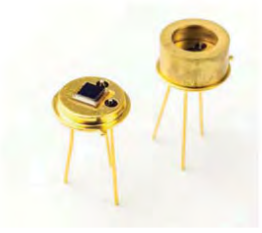
Photoconductive detectors optically immersed PCI

PCI series features room temperature and TE cooled IR photoconductive detectors, optically immersed (achieved by using high refractive index micro lenses) in order to improve performance of the devices, different acceptance angle and saturation level. The devices are optimized for the maximum performance at λ_{opt} . Cut-on wavelength is limited by GaAs transmittance (~0.9 μm). Bias is needed to operate photocurrent. Performance at low frequencies (<20 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*) $\lambda_{opt}\,[\mu m]$	Detectivity**) $D^*\left[\frac{cm\cdot\sqrt{Hz}}{W}\right]$ @λ_{peak}, 20kHz	Detectivity**) $D^*\left[\frac{cm\cdot\sqrt{Hz}}{W}\right]$ @λ_{opt}, 20kHz	Current responsivity length product @λ_{opt} $R_i \cdot L\left[\frac{A\cdot mm}{W}\right]$	Time constant $\tau\,[ns]$	1/f noise corner frequency $f_c\,[kHz]$	Bias voltage length ratio $\frac{V_b}{L}\left[\frac{V}{mm}\right]$	Sheet resistance $R_{sq}\,[\Omega]$	Acceptance angle $\varnothing\,[°]$ $\frac{1}{2tgA}$	Optical area***) $[mm\times mm]$	Package	Window****)
PCI	uncooled, ~300	4	≥1.0×10^{10}	≥6.0×10^{9}	≥0.6	≤12000	≤20	≤4.8	≤2000	~36, 1.62	0.25×0.25 0.5×0.5 1×1 2×2	BNC, TO39	no window
		5	≥6.0×10^{9}	≥4.0×10^{9}	≥0.5	≤5000		≤4.8	≤1200				
		6	≥2.5×10^{9}	≥1.0×10^{9}	≥0.2	≤500		≤4.8	≤600				
		9	≥5.0×10^{8}	≥1.0×10^{8}	≥0.02	≤10		≤4.8	≤300				
		10.6	≥1.0×10^{8}	≥8.0×10^{7}	≥0.008	≤3		≤4.8	≤240				
	two-stage TE-cooled (2TE), ~230	4	≥6.0×10^{10}	≥4.0×10^{10}	≥4.0	≤30000		≤3.8	≤3000			TO8, TO66	wedged Al_2O_3
		5	≥4.0×10^{10}	≥2.0×10^{10}	≥3.0	≤20000		≤3.8	≤2000				
		6	≥2.0×10^{10}	≥1.0×10^{10}	≥1.5	≤4000		≤3.8	≤800				wedged ZnSe AR coated
		9	≥8.0×10^{9}	≥4.0×10^{9}	≥0.225	≤40		≤3.0	≤400				
		10.6	≥2.8×10^{9}	≥1.0×10^{9}	≥0.1	≤10		≤3.0	≤300				
		12	≥1.0×10^{9}	≥4.5×10^{8}	≥0.05	≤3		≤2.0	≤200				
		13	≥4.0×10^{8}	≥2.3×10^{8}	≥0.03	≤2		≤2.0	≤240				
	three-stage TE-cooled (3TE), ~210	9	≥1.0×10^{10}	≥6.2×10^{9}	≥0.7	≤60		≤2.4	≤400				wedged ZnSe AR coated
		10.6	≥4.5×10^{9}	≥2.5×10^{9}	≥0.17	≤20		≤1.8	≤300				
		12	≥1.8×10^{9}	≥9.0×10^{8}	≥0.07	≤5		≤1.8	≤300				
		13	≥9.0×10^{8}	≥4.5×10^{8}	≥0.03	≤4		≤1.8	≤300				
	four-stage TE-cooled (4TE), ~195	9	≥1.25×10^{10}	≥1.0×10^{10}	≥0.9	≤80		≤3.0	≤500				wedged ZnSe AR coated
		10.6	≥4.0×10^{9}	≥3.0×10^{9}	≥0.2	≤30		≤2.4	≤400				
		12	≥3.0×10^{9}	≥2.0×10^{9}	≥0.09	≤7		≤2.4	≤400				
		13	≥2.0×10^{9}	≥1.0×10^{9}	≥0.05	≤6		≤2.4	≤400				
		14	≥5.0×10^{8}	≥3.0×10^{8}	≥0.03	≤5		≤1.8	≤300				

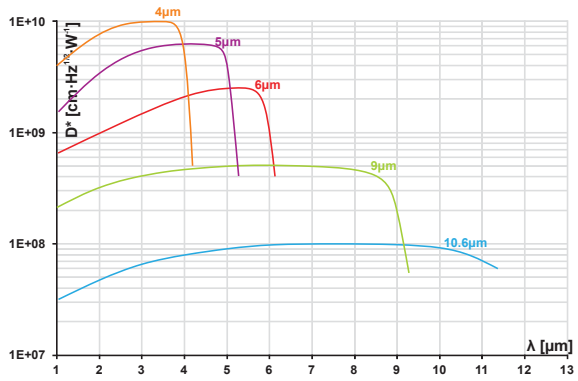
*) *Other optimal wavelengths available upon request.*
**) *Data sheet states minimum guaranteed D* values for each detector model. Higher performance detectors can be provided upon request.*
***) *Other optical areas available upon request.*
****) *Other windows available upon request.*
. [1]) *Optical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



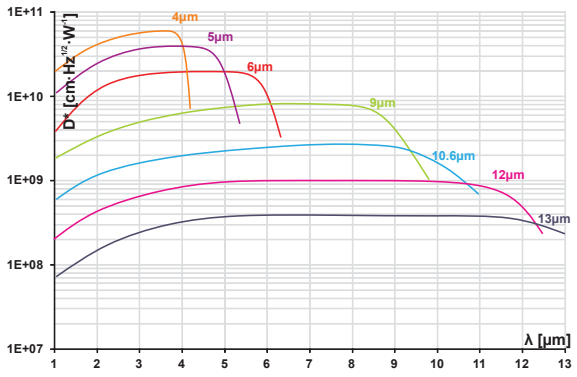



Spectral characteristics*)

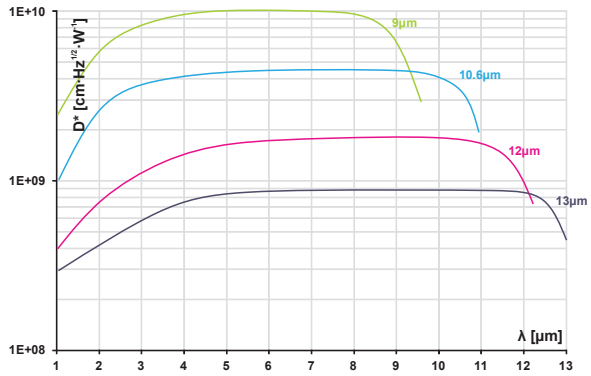
PCI



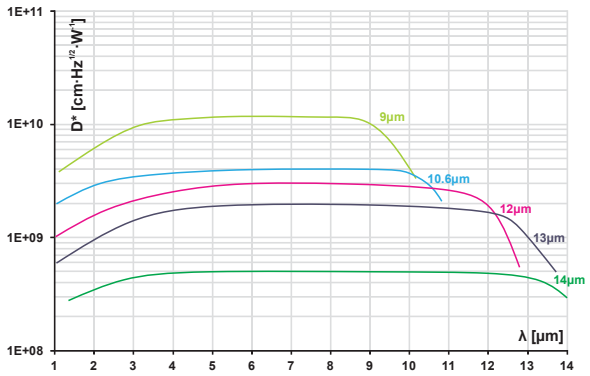
PCI-2TE



PCI-3TE



PCI-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

Code sescription 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

Please see data sheets to get possibile option of each type detector.