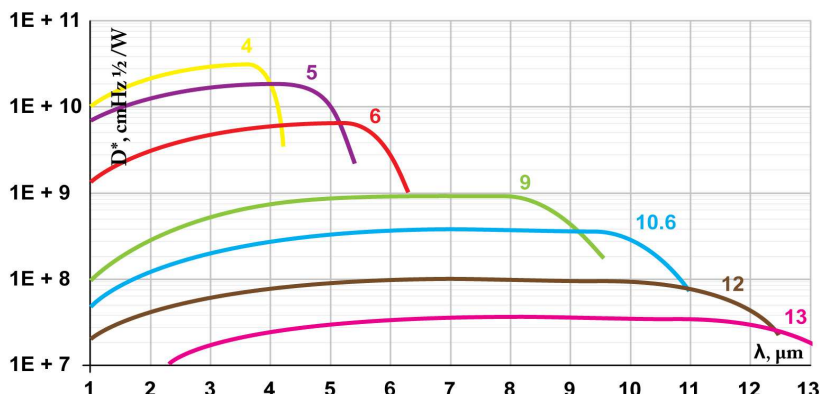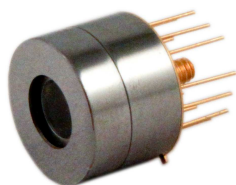# PC-2TE Series

2 – 13 µm IR PHOTOCONDUCTORS THERMOELECTRICALLY COOLED

Example of D* vs Wavelength λ for PC-2TE Series HgCdTe Detectors. Spectral Characteristics of individual detectors may vary from those shown on the chart.

Features

- High performance in the 2 to 13 µm spectral range
- Fast response
- Convenient to use
- Wide dynamic range
- Compact, rugged and reliable
- Low cost
- Prompt delivery
- Custom design upon request

Description

The **PC-2TE-λ$_{opt}$** photodetectors series (λ$_{opt}$ - optimal wavelength in micrometers) feature IR photoconductive detector on two-stage thermoelectrical cooler.

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. Highest performance and stability are achieved by application of variable gap **(HgCd)Te** semiconductor, optimized doping and sophisticated surface processing.

Custom devices with quadrant cells, multielement arrays, different windows, lenses and optical filters are available upon request.

Standard detectors are available in **TO8** packages with wedged **BaF$_2$** windows. Other packages, windows and connectors are also available.

IR Detector Specification @20°C

Parameter	Symbol	Unit	PC-2TE-4	PC-2TE-5	PC-2TE-6	PC-2TE-9	PC-2TE-10.6	PC-2TE-12	PC-2TE-13
Optimal Wavelength	λ$_{opt}$	µm	4	5	6	9	10.6	12	13
Detectivity[*): @ λ$_{peak}$, 20 kHz @ λ$_{opt}$, 20 kHz	D*	$\frac{cm \cdot \sqrt{Hz}}{W}$	≥3.2×10^{10} ≥2.0×10^{10}	≥2.0×10^{10} ≥1.0×10^{10}	≥6.0×10^{9} ≥3.0×10^{9}	≥9.0×10^{8} ≥4.5×10^{8}	≥4.0×10^{8} ≥1.4×10^{8}	≥1.0×10^{8} ≥4.5×10^{7}	≥4.0×10^{7} ≥2.0×10^{7}
Voltage Responsivity - Width Product @λ$_{opt}$ 1×1mm	R$_v$·w	$\frac{V \cdot mm}{W}$	≥1000	≥500	≥70	≥5	≥1.5	≥0.5	≥0.25
Time Constant	τ	ns	≤4000	≤2000	≤1000	≤20	≤10	≤2	≤2
Corner Frequency	1/f	kHz	1 to 20						
Bias Current - Width Ratio	$\frac{I_b}{w}$	$\frac{mA}{mm}$	1 to 2	2 to 4	4 to 8	4 to 10	5 to 15		
Sheet Resistance	R$_{sq}$	Ω/□	600 to 1500	300 to 500	200 to 400	80 to 200	50 to 150	60 to 100	40 to 120
Operating Temperature	T	K	~230						
Acceptance Angle, F/#	Φ, -	deg, -	70, 0.87						

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

Type	Optical Area [mm×mm]									
	0.025×0.025	0.05×0.05	0.1×0.1	0.2×0.2	0.25×0.25	0.5×0.5	1×1	2×2	3×3	4×4
PC-2TE-4	X	X	X	X	X	X	X	X		
PC-2TE-5	X	X	X	X	X	X	X	X		
PC-2TE-6	X	X	X	X	X	X	X	X		
PC-2TE-9	X	X	X	X	X	X	X	X		
PC-2TE-10.6	X	X	X	X	X	X	X	X		
PC-2TE-12	X	X	X	X	X	X	X	X		
PC-2TE-13	X	X	X	X	X	X	X	X		

X – standard detectors