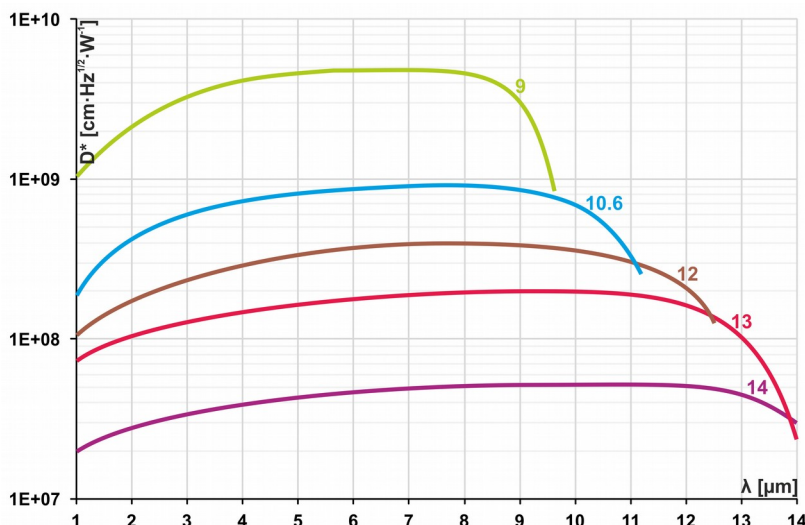
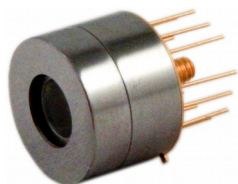


PC-4TE Series

2 – 14 μm IR PHOTOCONDUCTORS THERMOELECTRICALLY COOLED



Example of D^* vs Wavelength λ for PC-4TE Series HgCdTe Detectors. Spectral Characteristics of individual detectors may vary from those shown on the chart.

Features

- High performance in the 2 to 14 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-4TE- λ_{opt}** photodetectors series (λ_{opt} - optimal wavelength in micrometers) feature IR photoconductive detector on four-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 **wZnSeAR** windows. Other packages, windows and connectors are also available.

IR Detector Specification @20°C

Parameter	Symbol	Unit	PC-4TE-9	PC-4TE-10.6	PC-4TE-12	PC-4TE-13	PC-4TE-14
Optimal Wavelength ¹⁾	λ_{opt}	μm	9	10.6	12	13	14
Detectivity ²⁾ : @ λ_{peak} , 20 kHz @ λ_{opt} , 20 kHz	D^*	$\frac{cm \cdot \sqrt{Hz}}{W}$	$\geq 5.0 \times 10^9$ $\geq 3.0 \times 10^9$	$\geq 9.0 \times 10^8$ $\geq 5.0 \times 10^8$	$\geq 4.0 \times 10^8$ $\geq 2.0 \times 10^8$	$\geq 2.0 \times 10^8$ $\geq 1.0 \times 10^8$	$\geq 5.0 \times 10^7$ $\geq 3.0 \times 10^7$
Voltage Responsivity - Width Product @ λ_{opt} , 1×1mm	$R_v \cdot w$	$\frac{V \cdot mm}{W}$	≥ 25	≥ 5	≥ 3	≥ 2	≥ 1
Time Constant	τ	ns	≤ 8	≤ 7	≤ 7	≤ 6	≤ 5
Corner Frequency	1/f	kHz	1 to 20				
Bias Current - Width Ratio	$\frac{I_b}{w}$	$\frac{mA}{mm}$	4 to 10				
Sheet Resistance	R_{sq}	Ω	80 to 250	60 to 200			50 to 150
Operating Temperature	T	K	~195				
Acceptance Angle, F/#	Φ , -	deg, -	70, 0.87				

¹⁾ Other Optimal Wavelengths available upon request.

²⁾ 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-4TE-9	X	X	X	X	X	X	X	X		
PC-4TE-10.6	X	X	X	X	X	X	X	X		
PC-4TE-12	X	X	X	X	X	X	X	X		
PC-4TE-13	X	X	X	X	X	X	X	X		
PC-4TE-14	X	X	X	X	X	X	X	X		

X – standard detectors