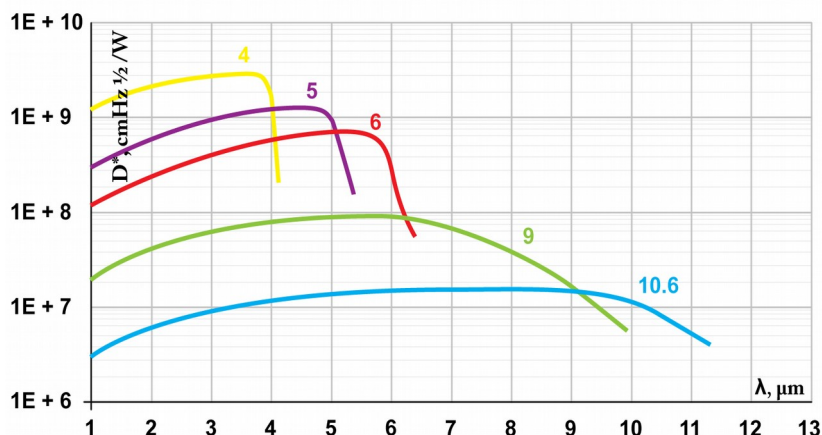


PC Series

2 – 11 μm IR PHOTOCONDUCTORS



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

Features

- Ambient temperature operation
- Perfect match to fast electronics
- Convenient to use
- Wide dynamic range
- Low cost
- Prompt delivery
- Custom design upon request

Description

The **PC- λ_{opt}** (λ_{opt} - optimal wavelength in micrometers) feature IR photoconductive detector.

This series is easy to use, no cooling or heatsink needed. 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. Highest performance and stability are achieved by application of variable gap (HgCd)Te semiconductor, optimized doping and sophisticated surface processing.

Standard detectors are available in **TO39** or **BNC** packages without windows. Various windows, other packages and connectors are available upon request.

IR Detector Specification @20°C

Parameter	Symbol	Unit	PC-4	PC-5	PC-6	PC-9	PC-10.6
Optimal Wavelength ¹⁾	λ_{opt}	μm	4	5	6	9	10.6
Detectivity ²⁾ :							
@ λ_{peak} , 20 kHz	D^*	$\frac{\text{cm} \cdot \sqrt{\text{Hz}}}{\text{W}}$	$\geq 3.2 \times 10^9$	$\geq 1.5 \times 10^9$	$\geq 7.0 \times 10^8$	$\geq 1.0 \times 10^8$	$\geq 1.9 \times 10^7$
@ λ_{opt} , 20 kHz			$\geq 2.0 \times 10^9$	$\geq 1.0 \times 10^9$	$\geq 3.0 \times 10^8$	$\geq 2.0 \times 10^7$	$\geq 9.0 \times 10^6$
Voltage Responsivity - Width Product @ λ_{opt} , 1x1mm	$R_v \cdot w$	$\frac{\text{V} \cdot \text{mm}}{\text{W}}$	≥ 100	≥ 40	≥ 6	≥ 0.4	≥ 0.1
Time Constant	τ	ns	≤ 1000	≤ 500	≤ 200	≤ 2	≤ 1
Corner Frequency	$1/f$	kHz	1 to 20				
Bias Current - Width Ratio	$\frac{I_b}{w}$	$\frac{\text{mA}}{\text{mm}}$	1 to 5	1 to 10	1 to 15	2 to 20	5 to 30
Sheet Resistance	R_{sq}	Ω	300 to 1000	200 to 400	100 to 300	50 to 150	40 to 120
Operating Temperature	T	K	~ 300				
Acceptance Angle, F/#	Φ , -	deg, -	$> 90, 0.71$				

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-4	X	X	X	X	X	X	X	X	X	X
PC-5	X	X	X	X	X	X	X	X	X	X
PC-6	X	X	X	X	X	X	X	X	X	X
PC-9	X	X	X	X	X	X	X	X	X	X
PC-10.6	X	X	X	X	X	X	X	X	X	X

X – standard detectors