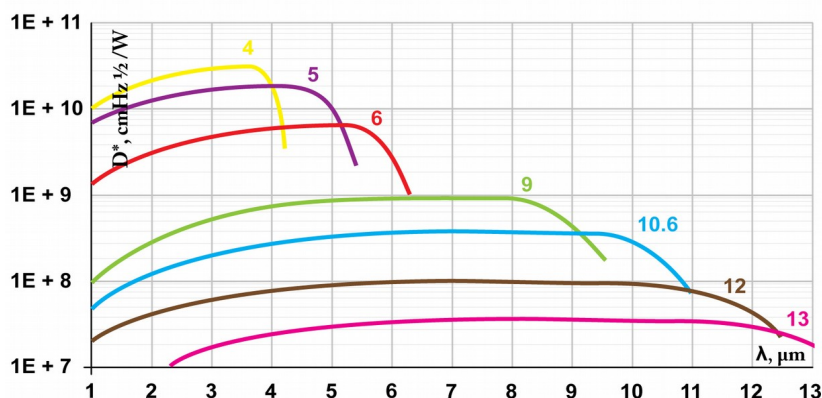
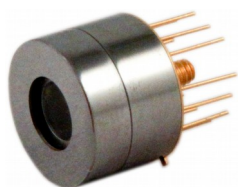


## PC-2TE Series

## 2 – 13 μm IR PHOTOCONDUCTORS THERMOELECTRICALLY COOLED



Example of  $D^*$  vs Wavelength  $\lambda$  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- $\lambda_{opt}$**  photodetectors series ( $\lambda_{opt}$  - optimal wavelength in micrometers) feature IR photoconductive detector on two-stage thermoelectrical cooler. The devices are optimized for the maximum performance at  $\lambda_{opt}$ . 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 (**HgCdTe**) 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 **WAl2O3** or **wZnSeAR** 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 <sup>1)</sup>	$\lambda_{opt}$	$\mu\text{m}$	4	5	6	9	10.6	12	13
Detectivity <sup>2)</sup> :									
@ $\lambda_{peak}$ , 20 kHz	$D^*$	$\frac{\text{cm} \cdot \sqrt{\text{Hz}}}{\text{W}}$	$\geq 3.2 \times 10^{10}$	$\geq 2.0 \times 10^{10}$	$\geq 6.0 \times 10^9$	$\geq 9.0 \times 10^8$	$\geq 4.0 \times 10^8$	$\geq 1.0 \times 10^8$	$\geq 4.0 \times 10^7$
@ $\lambda_{opt}$ , 20 kHz			$\geq 2.0 \times 10^{10}$	$\geq 1.0 \times 10^{10}$	$\geq 3.0 \times 10^9$	$\geq 4.5 \times 10^8$	$\geq 1.4 \times 10^8$	$\geq 4.5 \times 10^7$	$\geq 2.0 \times 10^7$
Voltage Responsivity - Width Product @ $\lambda_{opt}$ , 1x1mm	$R_v \cdot w$	$\frac{\text{V} \cdot \text{mm}}{\text{W}}$	$\geq 1000$	$\geq 500$	$\geq 70$	$\geq 5$	$\geq 1.5$	$\geq 0.5$	$\geq 0.25$
Time Constant	$\tau$	ns	$\leq 4000$	$\leq 2000$	$\leq 1000$	$\leq 20$	$\leq 10$	$\leq 2$	$\leq 2$
Corner Frequency	$1/f$	kHz	1 to 20						
Bias Current - Width Ratio	$\frac{I_b}{w}$	$\frac{\text{mA}}{\text{mm}}$	1 to 2	2 to 4	4 to 8	4 to 10	5 to 15		
Sheet Resistance	$R_{sq}$	$\Omega$	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/#	$\Phi$ , -	deg, -	70, 0.87						

<sup>1)</sup> Other Optimal Wavelengths available upon request.

<sup>2)</sup> 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