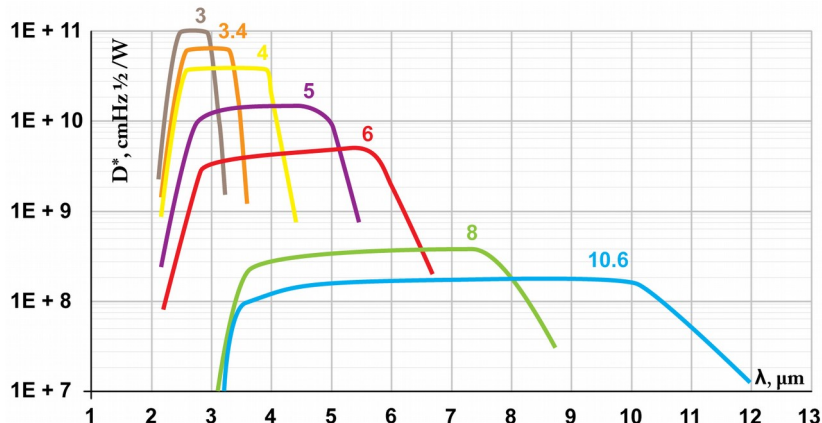
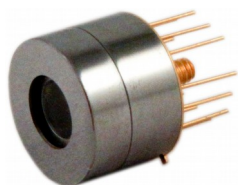


PV-2TE Series

2 – 12 μm IR PHOTOVOLTAIC DETECTORS THERMOELECTRICALLY COOLED



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

Features

- High performance in the 2 to 12 μm spectral range
- Fast response
- No flicker noise
- Convenient to use
- Wide dynamic range
- Compact, rugged and reliable
- Low cost
- Prompt delivery
- Custom design upon request

Description

The **PV-2TE- λ_{opt}** photodetectors series (λ_{opt} - optimal wavelength in micrometers) feature IR photovoltaic detector on two-stage thermoelectrical cooler. The devices are optimized for the maximum performance at λ_{opt} . Cut-on wavelength can be optimized upon request. Reverse bias may significantly increase speed of response and dynamic range. It results also in improved performance at high frequencies, but $1/f$ noise that appears in biased devices may reduce performance at low frequencies. 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	PV-2TE-3	PV-2TE-3.4	PV-2TE-4	PV-2TE-5	PV-2TE-6	PV-2TE-8	PV-2TE-10.6
Optimal Wavelength¹⁾	λ_{opt}	μm	3	3.4	4	5	6	8	10.6
Detectivity²⁾:	D^*	$\frac{\text{cm} \cdot \sqrt{\text{Hz}}}{\text{W}}$	$\geq 1.0 \times 10^{11}$	$\geq 6.0 \times 10^{10}$	$\geq 4.0 \times 10^{10}$	$\geq 1.5 \times 10^{10}$	$\geq 5.0 \times 10^9$	$\geq 4.0 \times 10^8$	$\geq 2.0 \times 10^8$
@ λ_{peak}			$\geq 7.0 \times 10^{10}$	$\geq 4.0 \times 10^{10}$	$\geq 3.0 \times 10^{10}$	$\geq 9.0 \times 10^9$	$\geq 2.0 \times 10^9$	$\geq 2.0 \times 10^8$	$\geq 1.0 \times 10^8$
@ λ_{opt}									
Current Responsivity	R_i	$\frac{\text{A}}{\text{W}}$	≥ 0.5	≥ 0.8	≥ 1	≥ 1.3	≥ 1.5	≥ 0.8	≥ 0.4
Time Constant	τ	ns	≤ 280	≤ 200	≤ 100	≤ 80	≤ 50	≤ 30	≤ 10
Time Constant³⁾	τ	ns	≤ 3	≤ 2	≤ 1	≤ 0.7	≤ 0.5	≤ 0.4	≤ 0.4
Resistance – Optical Area Product	$R \cdot A$	$\Omega \cdot \text{cm}^2$	≥ 150	≥ 3	≥ 2	≥ 0.1	≥ 0.02	≥ 0.0002	≥ 0.0001
Operating Temperature	T	K	~230						
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.

³⁾ Response which may be achieved at reverse bias (selected detectors upon request). Devices with faster response are available upon special request.

Type	Optical Area ¹⁾ [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
PV-2TE-3	O	X	X	O		O	O			
PV-2TE-3.4	O	X	X	O		O	O			
PV-2TE-4	O	X	X	O		O	O			
PV-2TE-5	O	X	X	O		O	O			
PV-2TE-6	O	X	X ²⁾	O		O				
PV-2TE-8	X	X ²⁾	P							
PV-2TE-10.6	X	X ²⁾	P							

¹⁾ Circular shaped Optical Area (Diameter [mm]) can be provided upon request.

²⁾ Custom detectors may require reverse bias in order to increase Dynamic Resistance to improve frequency response.

X – standard detectors

P – default with reverse bias

O – detectors available upon request; parameters may vary from these in Data Sheet