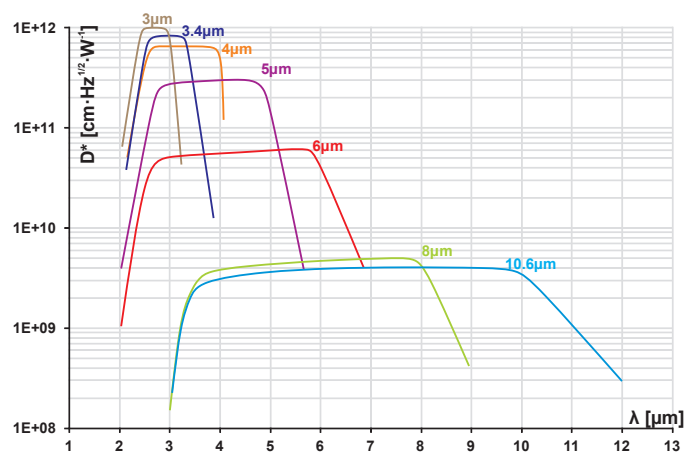


# PVI-4TE

## 2-12 $\mu\text{m}$ IR PHOTOVOLTAIC DETECTORS THERMOELECTRICALLY COOLED OPTICALLY IMMERSED

The **PVI-4TE- $\lambda_{\text{opt}}$**  photodetectors series ( $\lambda_{\text{opt}}$  - optimal wavelength in micrometers) feature IR photovoltaic detector on four-stage thermoelectrical cooler, optically immersed to high refractive index GaAs hyperhemispherical (standard) or hemispherical or any intermediate lens (as option) for different acceptance angle and saturation level.

### Detector code description



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

### Features:

- High performance in the 2 to 12  $\mu\text{m}$  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

### IR Detector Specification @20°C

Detector type	Cooling, operating temperature $T$ [K]	Optimal wavelength $\lambda_{\text{opt}}$ [ $\mu\text{m}$ ]	Detectivity <sup>*)</sup> $D^* \left[ \frac{\text{cm} \cdot \sqrt{\text{Hz}}}{\text{W}} \right]$		Current responsivity length product @ $\lambda_{\text{opt}}$ $R_i \cdot L \left[ \frac{\text{A} \cdot \text{mm}}{\text{W}} \right]$	Time constant $\tau$ [ns]	Resistance optical area product $R \cdot A \left[ \Omega \cdot \text{cm}^2 \right]$	Acceptance angle $\varnothing [^\circ]_{-2\text{V/A}}$	Optical area <sup>***)</sup> [ $\text{mm} \times \text{mm}$ ]	Package	Window <sup>****)</sup>	
			@ $\lambda_{\text{peak}}$	@ $\lambda_{\text{opt}}$								
PVI	four-stage TE-cooled (4TE), ~195	3	$\geq 1.0 \times 10^{12}$	$\geq 8.0 \times 10^{11}$	$\geq 0.5$	$\leq 280$	$\geq 30000$	~36, 1.62	0.5x0.5 1x1	TO8, TO66	wedged $\text{Al}_2\text{O}_3$	
		3.4	$\geq 8.0 \times 10^{11}$	$\geq 7.0 \times 10^{11}$	$\geq 0.8$	$\leq 200$	$\geq 2000$					
		4	$\geq 6.0 \times 10^{11}$	$\geq 4.0 \times 10^{11}$	$\geq 1.0$	$\leq 100$	$\geq 800$					
		5	$\geq 3.0 \times 10^{11}$	$\geq 1.0 \times 10^{11}$	$\geq 1.3$	$\leq 80$	$\geq 40$		0.3x0.3 0.5x0.5		1x1	wedged ZnSe
		6	$\geq 6.0 \times 10^{10}$	$\geq 4.0 \times 10^{10}$	$\geq 1.5$	$\leq 50$	$\geq 3$					
		8	$\geq 5.0 \times 10^9$	$\geq 4.0 \times 10^9$	$\geq 1.5$	$\leq 30$	$\geq 0.06$					
					$\leq 45$							
10.6	$\geq 4.0 \times 10^9$	$\geq 2.0 \times 10^9$	$\geq 0.7$	$\leq 10$	$\geq 0.05$	0.3x0.3 0.5x0.5	1x1	AR coated				
			$\geq 0.5$	$\leq 25$		1x1						

<sup>\*)</sup> Other optimal wavelengths available upon request.

<sup>\*\*) Data sheet states minimum guaranteed  $D^*$  values for each detector model. Higher performance detectors can be provided upon request.</sup>

<sup>\*\*\*)</sup> Other optical areas available upon request.

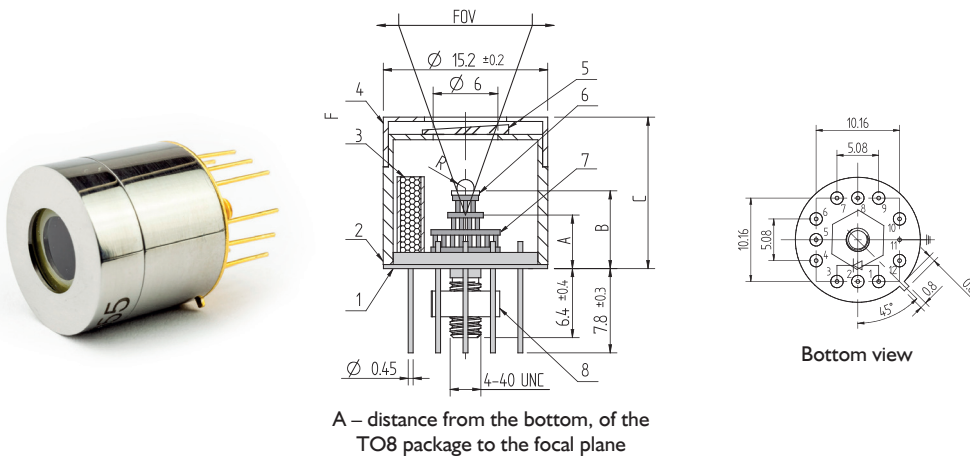
<sup>\*\*\*\*)</sup> Other windows available upon request.

<sup>l)</sup> Optical area available only for uncooled detectors

## DETECTOR PACKAGES

The packages of cooled detectors (TO8, TO66) are filled with dry, heavy noble gases for low thermal conductivity (Kr/Xe mixtures). Water vapor condensation is prevented by careful sealing and water absorbers applied inside the package. The packages are hermetically sealed with IR windows.

### TO8 detector package



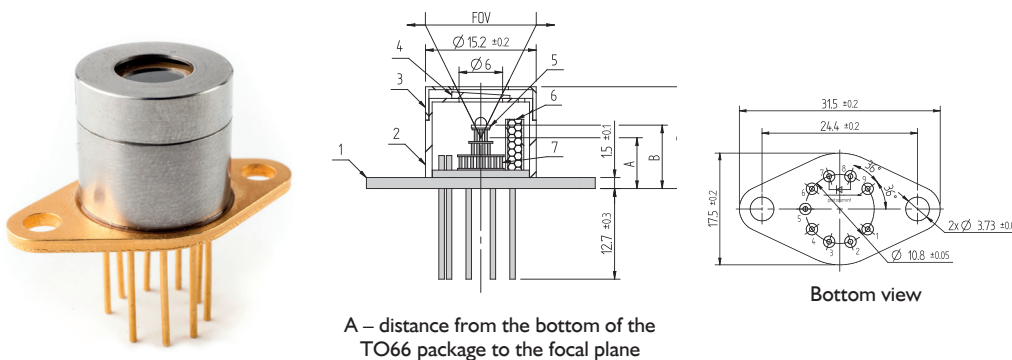
Pin number	Function
1, 3	signal
7, 9	thermistor
2(+), 8(-)	TE cooler supply
11	chassis ground
4, 5, 6, 10, 12,	not used

A – distance from the bottom, of the TO8 package to the focal plane

#### Dimensions [mm]

Lens shape	Four-stage thermoelectric cooler (4TE)				
	Hyperhemisphere			Hemisphere	Flat
Optical area [mm x mm]	0.5x0.5	1x1	2x2	0.5x0.5 - 2x2	0.01x0.01 - 4x4
R [mm]	0.5	0.8	1.25	0.5 - 1.6	infinity
A [mm]	7.3±0.4	6.4±0.4	5.0±0.4	8.8±0.4	8.8±0.4
B [mm]	8.8±0.4	8.8±0.4	8.8±0.4	8.8±0.4	8.8±0.4
C [mm]	14.0±0.3	14.0±0.3	14.0±0.3	14.0±0.3	14.0±0.3
FOV [°]	~36	~36	~36	~70	~70

### TO66 detector package



Pin number	Function
7, 8	signal
5, 6	thermistor
1(+), 9(-)	TE cooler supply
11	chassis ground
2, 3, 4	not used

A – distance from the bottom of the TO66 package to the focal plane

#### Dimensions [mm]

Lens shape	Four-stage thermoelectric cooler (4TE)				
	Hyperhemisphere			Hemisphere	Flat
Optical area [mm x mm]	0.5x0.5	1x1	2x2	0.5x0.5 - 2x2	0.01x0.01 - 4x4
R [mm]	0.5	0.8	1.25	0.5 - 1.6	infinity
A [mm]	8.3±0.4	7.4±0.4	6.1±0.4	9.8±0.4	9.8±0.4
B [mm]	9.8±0.4	9.8±0.4	9.8±0.4	9.8±0.4	9.8±0.4
C [mm]	15.2±0.3	15.2±0.3	15.2±0.3	15.2±0.3	15.2±0.3
FOV [°]	~36	~36	~36	~70	~70