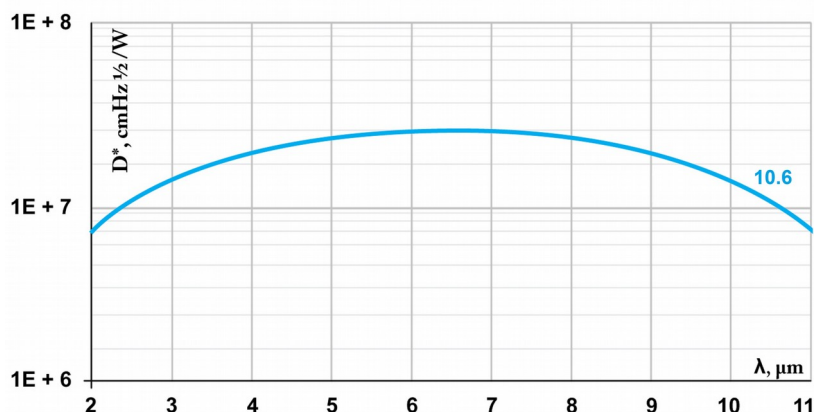


# PEM Series 2 – 11 μm IR PHOTOELECTROMAGNETIC DETECTORS



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

## Features

- Ambient temperature operation
- No bias required
- 2 to 11 μm spectral range
- Time constant of 1 ns or less
- No flicker noise
- Operation from DC to VHF
- Lightweight, rugged and reliable
- Convenient to use
- Low cost
- Custom design upon request

## Description

The **PEM** series detectors operate on the **photoelectromagnetic effect** in the semiconductors. The devices are typically optimized for the best performance at 10.6 μm.

The detector includes active element based on **(HgCd)Te** band gap engineered with selected composition and doping profiles, and miniature permanent magnets to produce a magnetic field.

The **PEM** detectors are well suited for heterodyne detection of 10.6 μm radiation. Exhibiting no flicker noise, they can be at the same time used for detection of CW and low frequency modulated radiation in the whole 2 to 11 μm spectral range.

Standard detectors are available in specialized **PEM** packages (with SMA connectors) with **wZnSeAR** windows.

Custom devices such as single elements of various sizes, quadrant cells and multielement arrays, various specialized packages and connectors are available upon request.

## IR Detector Specification @20°C

Parameter	Symbol	Unit	PEM-10.6
Optimal Wavelength	$\lambda_{opt}$	μm	10.6
Detectivity <sup>1)</sup> : @ $\lambda_{peak}$ , 20 kHz @ $\lambda_{opt}$ , 20 kHz	$D^*$	$\frac{cm \cdot \sqrt{Hz}}{W}$	 ≥3.0×10 <sup>7</sup> ≥1.0×10 <sup>7</sup>
Voltage Responsivity - Width Product @ $\lambda_{opt}$ 1×1mm	$R_v \cdot w$	$\frac{V \cdot mm}{W}$	≥0.1
Time Constant	$\tau$	ns	≤1
Resistance	R	Ω	40 to 100
Operating Temperature	T	K	~300
Acceptance Angle, F/#	$\Phi_1$ , -	deg, -	51, 1.16

<sup>1)</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
PEM-10.6			○	○	○	○	X	X		

X – standard detectors

○ – detectors available upon request, parameters may vary from these in Data Sheet