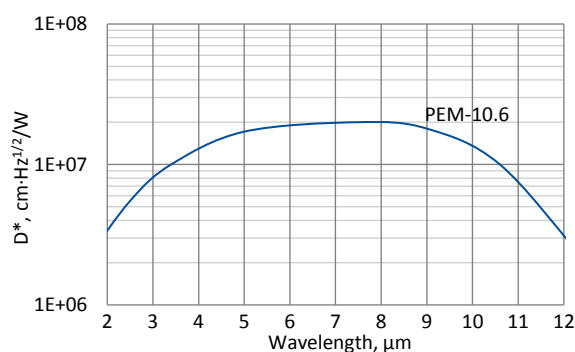


2.23 PEM series

2.23.1 2.0 – 12.0 μm HgCdTe ambient temperature photoelectromagnetic detectors

PEM series features uncooled HgCdTe photovoltaic IR detectors based on photoelectromagnetic effect in the semiconductor – spatial separation of optically generated electrons and holes in the magnetic field. The devices are designed for the maximum performance at 10.6 μm and especially useful as a large active area detectors to detect CW and low frequency modulated radiation. These devices are mounted in specialized packages with incorporated magnetic circuit inside. 3° wedged zinc selenide anti-reflection coated (wZnSeAR) window prevents unwanted interference effects and protects against pollution.

Spectral response ($T_a = 20^\circ\text{C}$)

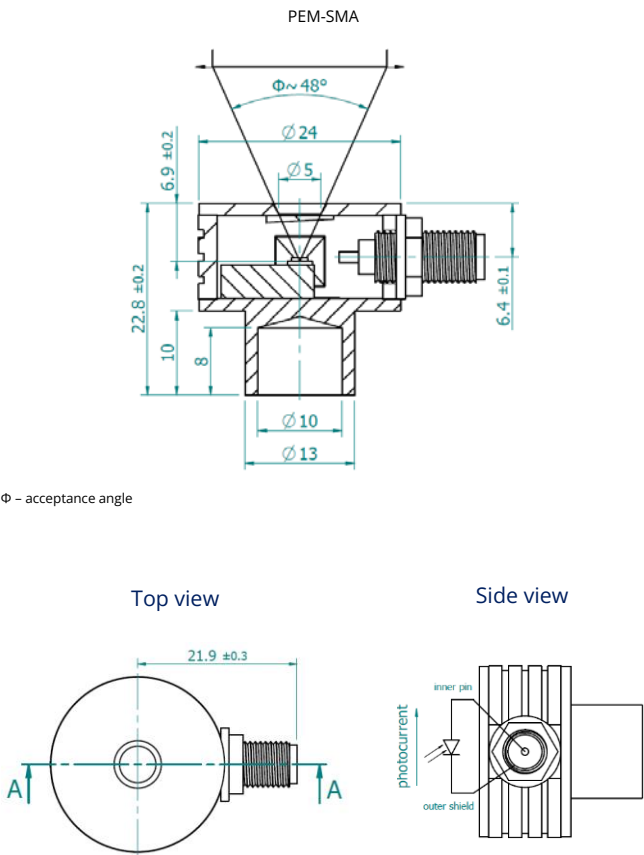


Exemplary spectral detectivity, the spectral response of delivered devices may differ.

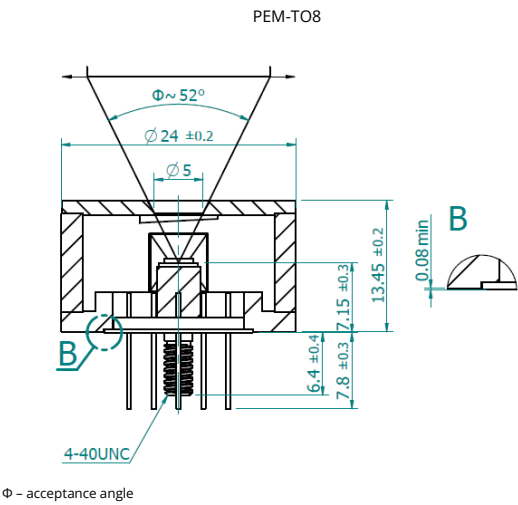
Specification ($T_a = 20^\circ\text{C}$)

Parameter	Detector type	
	PEM-10.6	
Active element material	epitaxial HgCdTe heterostructure	
Optimum wavelength λ_{opt} , μm	10.6	
Detectivity $D^*(\lambda_{\text{peak}})$, $\text{cm}\cdot\text{Hz}^{1/2}/\text{W}$	$\geq 2.0 \times 10^7$	
Detectivity $D^*(\lambda_{\text{opt}})$, $\text{cm}\cdot\text{Hz}^{1/2}/\text{W}$	$\geq 1.0 \times 10^7$	
Current responsivity-active area length product $R_i(\lambda_{\text{opt}}) \cdot L$, $\text{A}\cdot\text{mm}/\text{W}$	≥ 0.002	
Time constant τ , ns	≤ 1.2	
Resistance R , Ω	≥ 40	
Active area A , $\text{mm}\times\text{mm}$	1×1, 2×2	
Package	PEM-SMA	PEM-TO8
Acceptance angle Φ	$\sim 48^\circ$	$\sim 52^\circ$
Window	wZnSeAR	

Mechanical layout, mm



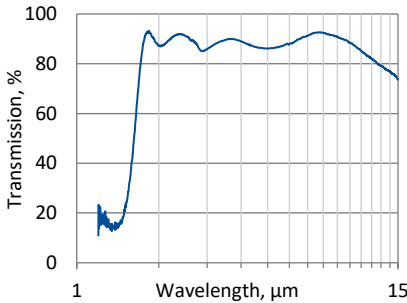
Φ - acceptance angle



Φ - acceptance angle

Function	Pin number
Detector	1, 3
Chassis ground	11
Not used	2, 4, 5, 6, 7, 8, 9, 10, 12

Spectral transmission of wZnSeAR window (typical example)



Dedicated preamplifier



standard MIP