# PVM-2TE series

## 2 – 12 µm HgCdTe two-stage thermoelectrically cooled photovoltaic multiple junction detectors

**PVM-2TE series** features two-stage thermoelectrically cooled IR photovoltaic multiple junction detectors based on sophisticated HgCdTe heterostructures for the best performance and stability. The detectors are optimized for the maximum performance at $\lambda_{opt}$. They are especially useful as large active area detectors operating within 2 to 12 µm spectral range. 3° wedged zinc selenide anti-reflection coated (wZnSeAR) window prevents unwanted interference effects.

### Spectral response ($T_a$ = 20°C)
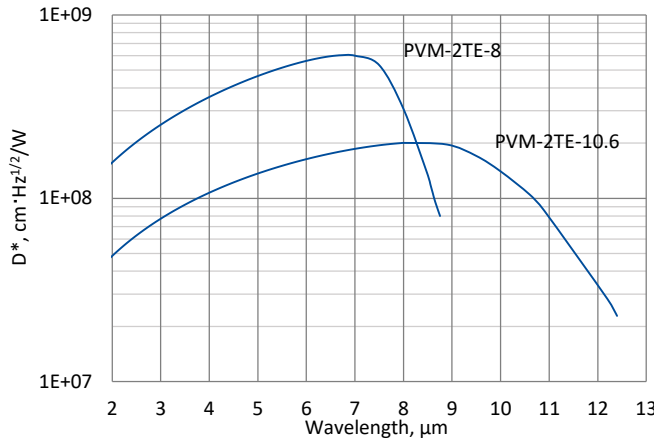


Exemplary spectral detectivity, the spectral response of delivered devices may differ.

2TE-TO66      2TE-TO8

### Specification ($T_a$ = 20°C)

| Parameter | Detector type | |
| --- | --- | --- |
| | PVM-2TE-8 | PVM-2TE-10.6 |
| Active element material | epitaxial HgCdTe heterostructure | |
| Optimal wavelength $\lambda_{opt}$, µm | 8.0 | 10.6 |
| Detectivity $D^*(\lambda_{peak})$, cm·Hz$^{1/2}$/W | ≥6.0×10$^8$ | ≥2.0×10$^8$ |
| Detectivity $D^*(\lambda_{opt})$, cm·Hz$^{1/2}$/W | ≥3.0×10$^8$ | ≥1.0×10$^8$ |
| Current responsivity-active area length product $R_i(\lambda_{opt})$·L, A·mm/W | ≥0.015 | ≥0.01 |
| Time constant $\tau$, ns | ≤4 | ≤4 |
| Resistance R, Ω | 150 to 1200 | 90 to 350 |
| Active element temperature $T_{det}$, K | ~230 | |
| Active area A, mm×mm | 1×1, 2×2, 3×3 | |
| Package | TO8, TO66 | |
| Acceptance angle Φ | ~70° | |
| Window | wZnSeAR | |

### Two-stage thermoelectric cooler parameters

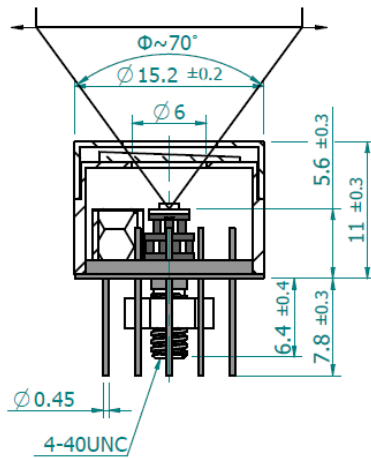| Parameter | Value |
| --- | --- |
| $T_{det}$, K | ~230 |
| $V_{max}$, V | 1.3 |
| $I_{max}$, A | 1.2 |
| $Q_{max}$, W | 0.36 |

### Thermistor characteristics
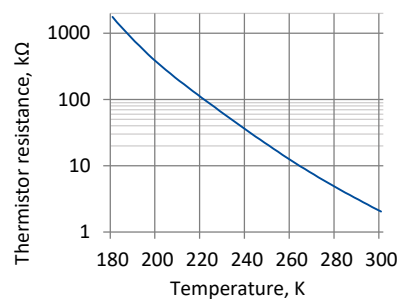


### Spectral transmission of wZnSeAR window (typical example)
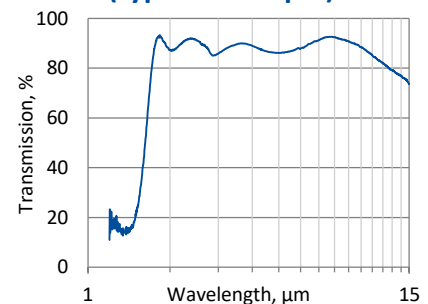
## Mechanical layout, mm
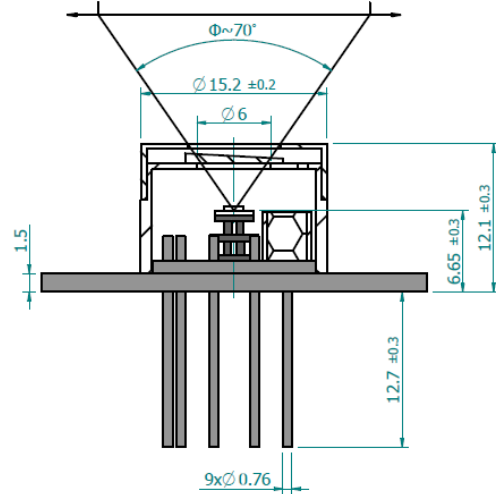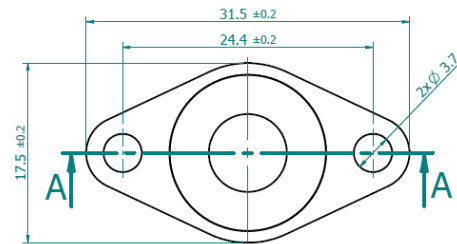
### 2TE-TO8 package



Φ – acceptance angle

Bottom view
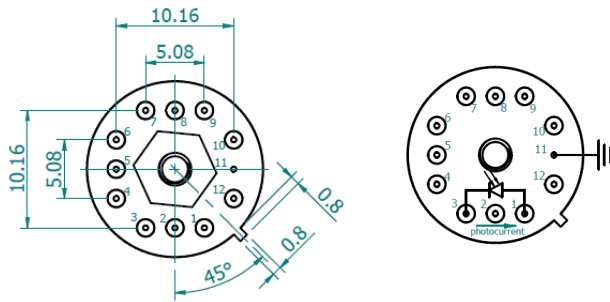


| Function | Pin number |
|---|---|
| Detector | 1, 3 |
| Thermistor | 7, 9 |
| TE cooler supply | 2(+), 8(−) |
| Chassis ground | 11 |
| Not used | 4, 5, 6, 10, 12 |

### 2TE-TO66 package



Φ – acceptance angle

Top view



Bottom view
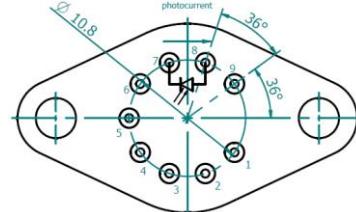


| Function | Pin number |
|---|---|
| Detector | 7, 8 |
| Thermistor | 5, 6 |
| TE cooler supply | 1(+), 9(−) |
| Not used | 2, 3, 4 |

## Dedicated preamplifiers



"all-in-one" AIP



programmable PIP



standard MIP



small SIP-TO8