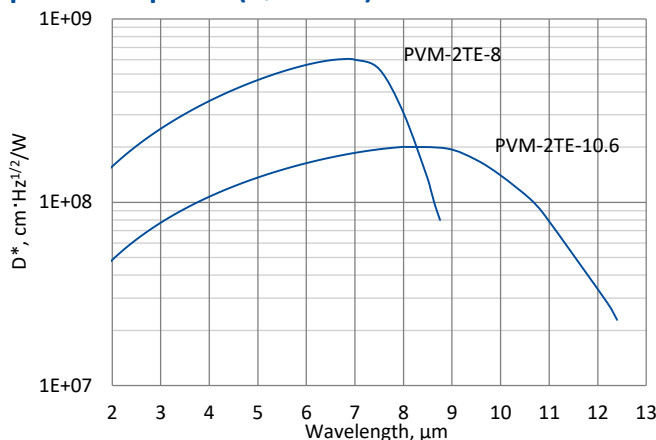


## PVM-2TE series

### 2 – 12 $\mu\text{m}$ 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  $\lambda_{\text{opt}}$ . They are especially useful as large active area detectors operating within 2 to 12  $\mu\text{m}$  spectral range. 3° wedged zinc selenide anti-reflection coated (wZnSeAR) window prevents unwanted interference effects.

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



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

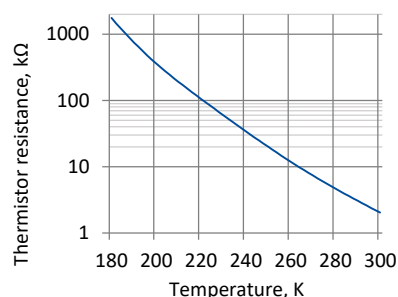
#### Specification ( $T_a = 20^\circ\text{C}$ )

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

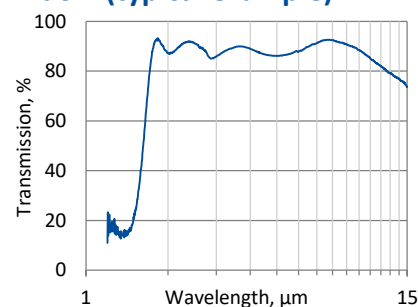
#### Two-stage thermoelectric cooler parameters

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

#### Thermistor characteristics

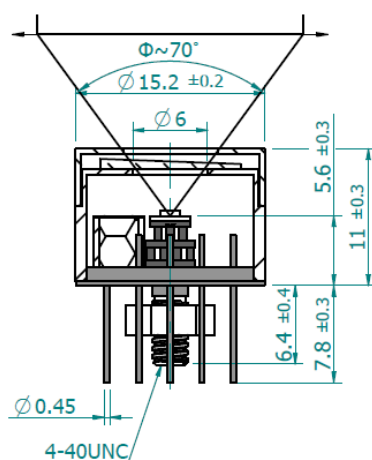


#### Spectral transmission of wZnSeAR window (typical example)



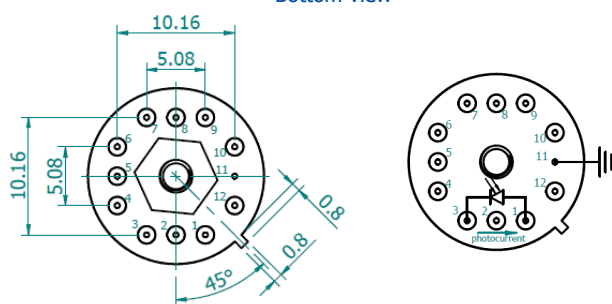
## Mechanical layout, mm

### 2TE-TO8 package



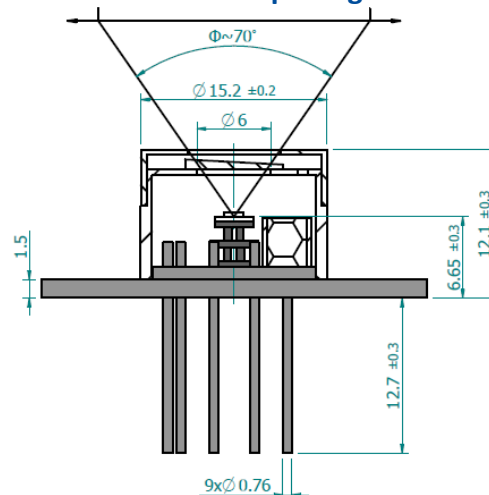
$\Phi$  – acceptance angle

#### Bottom view



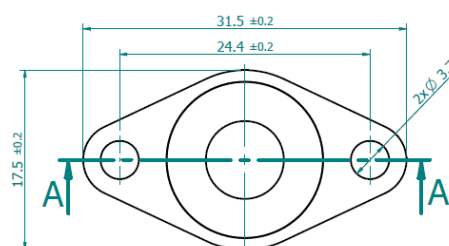
| Function         | Pin number      |
|------------------|-----------------|
| Detector         | 1, 3            |
| Thermistor       | 7, 9            |
| TE cooler supply | 2(+), 8(-)      |
| Chassis ground   | 11              |
| Not used         | 4, 5, 6, 10, 12 |

### 2TE-TO66 package

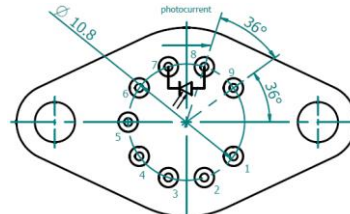


$\Phi$  – acceptance angle

#### 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