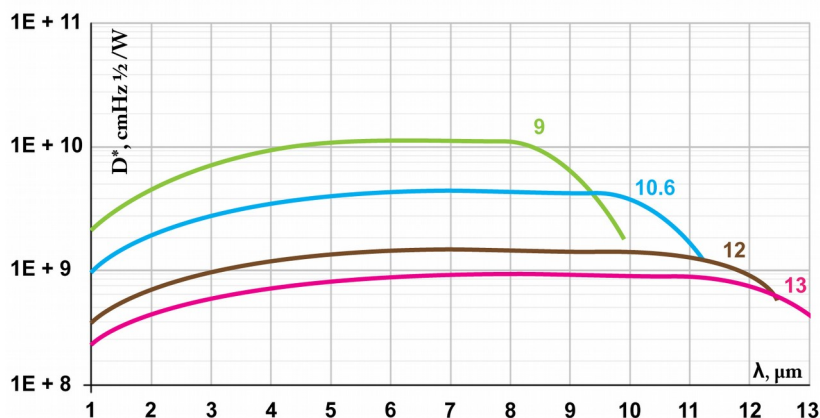
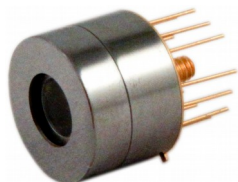


PCI-3TE Series

2 – 13 μm IR PHOTOCONDUCTORS THERMOELECTRICALLY COOLED OPTICALLY IMMERSED



Example of D^* vs Wavelength λ for PCI-3TE Series HgCdTe Detectors. Spectral Characteristics of individual detectors may vary from those shown on the chart.

Features

- High performance in the 2 to 13 μm spectral range
- Fast response
- Convenient to use
- Wide dynamic range
- Compact, rugged and reliable
- Low cost
- Prompt delivery
- Custom design upon request

Description

The **PCI-3TE- λ_{opt}** photodetectors series (λ_{opt} - optimal wavelength in micrometers) feature IR photoconductive detector on three-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.

The devices are optimized for the maximum performance at λ_{opt} . Cut-on wavelength is limited by GaAs transmittance (~0.9 μm). Bias is needed to operate photocurrent. Performance at low frequencies (<20 kHz) is reduced due to 1/f noise. Highest performance and stability are achieved by application of variable gap (**HgCdTe semiconductor**), optimized doping and sophisticated surface processing.

Custom devices with quadrant cells, multielement arrays, different windows, lenses and optical filters are available upon request.

Standard detectors are available in **TO8** packages with **wZnSeAR** windows. Other packages, windows and connectors are also available.

IR Detector Specification @20°C

| Parameter | Symbol | Unit | PCI-3TE-9 | PCI-3TE-10.6 | PCI-3TE-12 | PCI-3TE-13 |
|--|-----------------|--------------------------------|---|--|--|--|
| Optimal Wavelength ¹⁾ | λ_{opt} | μm | | | | |
| Detectivity ²⁾ : @ λ_{peak} , 20 kHz @ λ_{opt} , 20 kHz | D^* | $\frac{cm \cdot \sqrt{Hz}}{W}$ | $\geq 1.1 \times 10^{10}$ $\geq 6.0 \times 10^9$ | $\geq 4.5 \times 10^9$ $\geq 2.5 \times 10^9$ | $\geq 1.6 \times 10^9$ $\geq 9.0 \times 10^8$ | $\geq 9.0 \times 10^8$ $\geq 4.5 \times 10^8$ |
| Voltage Responsivity - Width Product @ λ_{opt} , 1×1mm | $R_v \cdot w$ | $\frac{V \cdot mm}{W}$ | ≥ 150 | ≥ 30 | ≥ 10 | ≥ 5 |
| Time Constant | τ | ns | ≤ 7 | ≤ 5 | ≤ 5 | ≤ 4 |
| Corner Frequency | 1/f | kHz | | | 1 to 20 | |
| Bias Current - Width Ratio | $\frac{I_b}{w}$ | $\frac{mA}{mm}$ | | | 3 to 5 | |
| Sheet Resistance | R_{sq} | Ω | 60 to 200 | 40 to 160 | 40 to 150 | 60 to 100 |
| Operating Temperature | T | K | | | ~210 | |
| Acceptance Angle, F/# | Φ , - | deg, - | | | 36, 1.62 | |

¹⁾ Other Optimal Wavelengths available upon request.

²⁾ 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 |
| PCI-3TE-9 | | | | | X | X | X | X | | |
| PCI-3TE-10.6 | | | | | X | X | X | X | | |
| PCI-3TE-12 | | | | | X | X | X | X | | |
| PCI-3TE-13 | | | | | X | X | X | X | | |

X – standard detectors