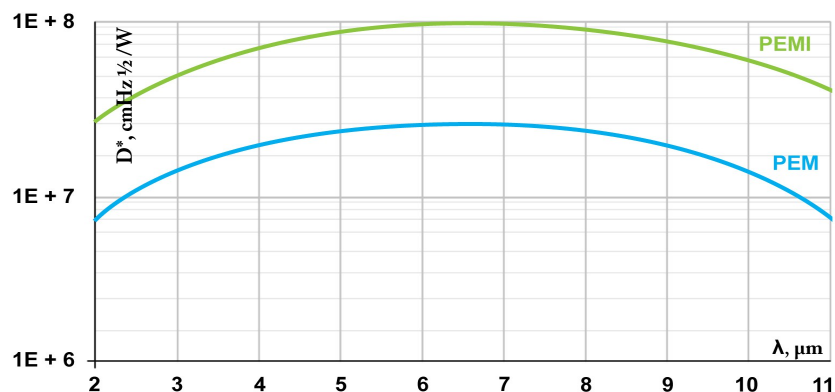




## FEATURES

- Ambient temperature operation
- No bias required
- 2 to 11  $\mu\text{m}$  spectral range
- Time constant of 1 ns or less
- No flicker noise
- Operation from DC to HF
- Lightweight, rugged and reliable
- Convenient to use
- Low cost
- Custom design upon request

- DEPRECATED

## 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  $\mu\text{m}$ . The PEMI devices optically immersed to high refractive index hyperhemispherical (standard) or hemispherical (option) lenses. The detector includes active element based on (Hg,Cd)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  $\mu\text{m}$  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  $\mu\text{m}$  spectral range. Custom detectors such as single elements of various sizes, quadrant cells and multielement arrays, various specialized packages and connectors are available upon request.

## SPECIFICATION

@20°C

| CHARACTERISTICS                       | UNITS                        | PEM-10.6             | PEMI-10.6            |
|---------------------------------------|------------------------------|----------------------|----------------------|
| $\lambda_{\text{opt}}$                | $\mu\text{m}$                | 10.6                 | 10.6                 |
| Detectivity <sup>1)</sup> :           |                              |                      |                      |
| @ $\lambda_{\text{peak}}$             | $\text{cmHz}^{1/2}/\text{W}$ | $\geq 3 \times 10^7$ | $\geq 1 \times 10^8$ |
| @ $\lambda_{\text{opt}}$              |                              | $\geq 1 \times 10^7$ | $\geq 5 \times 10^7$ |
| Responsivity @ $\lambda_{\text{opt}}$ | $\text{Vmm}/\text{W}$        | $\geq 0.1$           | $\geq 0.4$           |
| Time Constant                         | ns                           | $\leq 1$             | $\leq 1$             |
| Resistance                            | $\Omega$                     | 40 to 100            | 40 to 100            |
| Operating temperature                 | K                            | ~300                 |                      |
| Acceptance angle, F/#                 | deg, -                       | 48, 1.23             | 36, 1.62             |

<sup>1)</sup> Data sheet states minimum guaranteed  $D^*$  values for each detector model. Higher performance detectors can be provided upon request.

| Type      | Length [mm] |      |     |     |      |     |   |   |
|-----------|-------------|------|-----|-----|------|-----|---|---|
|           | 0.025       | 0.05 | 0.1 | 0.2 | 0.25 | 0.5 | 1 | 2 |
| PEM-10.6  |             |      | O   | O   | O    | O   | X | X |
| PEMI-10.6 |             |      |     |     | O    | O   | X | X |

X – standard detectors

O – detectors available on request, parameters may vary from these in data sheets.