

Optically Immersed 5.5 μm Photodiode

PD55 Sr/Cy

TE cooled Optically Immersed 5.5 μm Photodiode

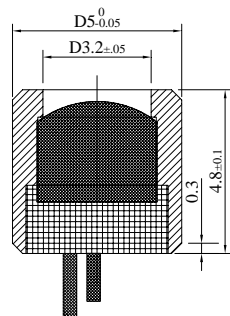
PD55TO8TEC

| | | | PD55 WB Sr/Cy | PD55 NB Sr/Cy |
|---|------------------------------|----------------------------------|----------------------|---------------|
| Spectral range | $\lambda_{0,1}$ | μm | 3.4÷6.0 | |
| Peak wavelength | λ_{max} | μm | 5.4÷5.5 | @22°C |
| Current sensitivity at λ_{max} | $S_1(\lambda_{\text{max}})$ | A/W | 0.8÷1 | |
| Shunt Resistance | R_0 | Ohm | ≥ 2 | |
| Detectivity | $D^*_{\lambda_{\text{max}}}$ | $\text{cmHz}^{1/2}\text{W}^{-1}$ | $\geq 3 \times 10^9$ | |
| Switching time | τ | ns | | ≤ 20 |

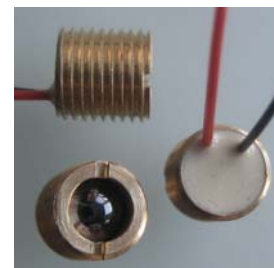
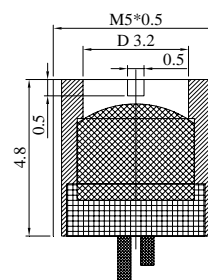
| Code | Sensitive area, mm | Weight, g | Optical components | Field of view, deg. | Optical axis deviation, deg. | Detectivity deviation in lot, % | Operation conditions, °C |
|-------------------------|--------------------|-----------|---|---------------------|------------------------------|---------------------------------|--------------------------|
| PD55 Sr/Cy ² | $\varnothing 3.2$ | ~0.4 | Si lens | ~15 | ≤ 5 | ± 25 | -60÷+85 |
| PD55 TO8TEC | | ~10 | Si lens and output sapphire window D=6mm | | | | |

Product view

PD55Cy

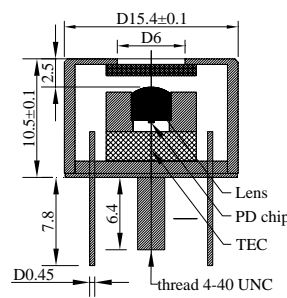
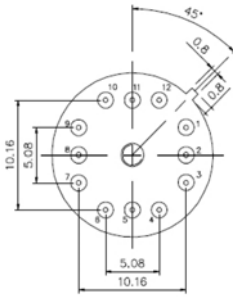
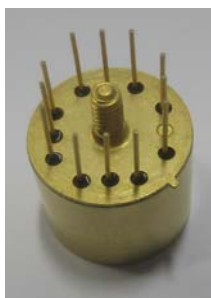


PD55Sr



Pin assignment: red wire or long wire and red point on house - positive

Pin assignment: red wire or long wire and red point on house - positive



Pin assignment
PD55TO8TEC12

- 1 TEC negative;
- 3 TEC positive;
- 4 PD negative;
- 6 PD positive;
- 7, 9 thermosensor;
- 11 \perp (House);
- 12 \perp (PD)

Features

- Original growth of narrow gap A3B5 semiconductor alloys onto n^+ -InAs substrate;
- Flip-chip design of PDs;
- Optical coupling through the use of chalcogenide glasses and Si lenses with antireflection coating
- Ambient and high temperature operation;
- No bias required;
- Operation from DC to VHF;
- Highest long term stability;
- High value of shunt resistance;

Photodiode could be equipped with preamplifier that is designed for conversion of PD photocurrent into a convenient output voltage and is adjusted for the particular PD taking into account the R_0 value and frequency range. Other packages are available upon request. Angle of view is small and thus we recommend adjusting PD position regarding to the emission system before final evaluation/use of the devices. Data are valid for PD thermostabilized at 22°C. Heatsink is essential for TEC operation!

Notes

¹ - according to estimation

² - Customized headers and caps can be fabricated

Product specifications are subject to change without prior notice due to improvements or other reasons. Updated 07.02.15

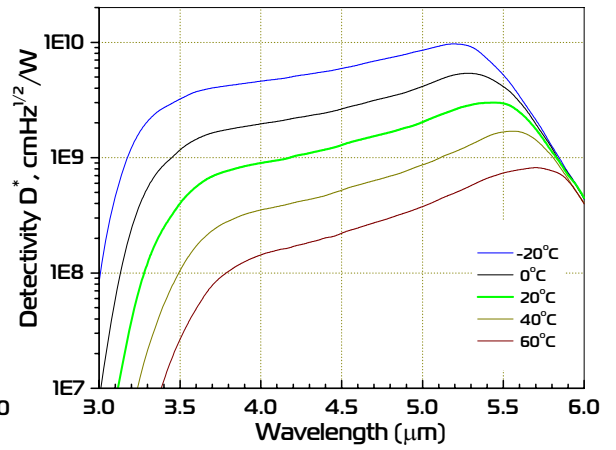
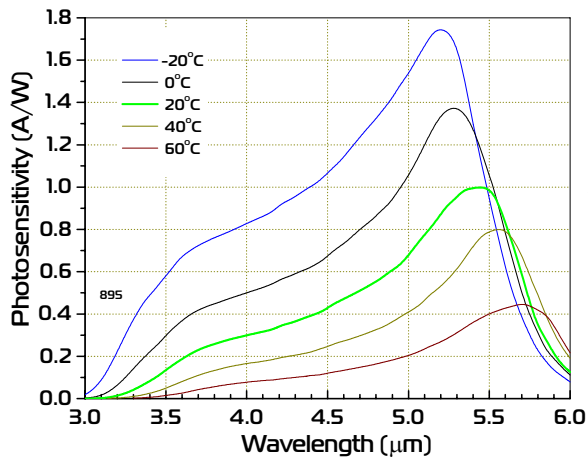
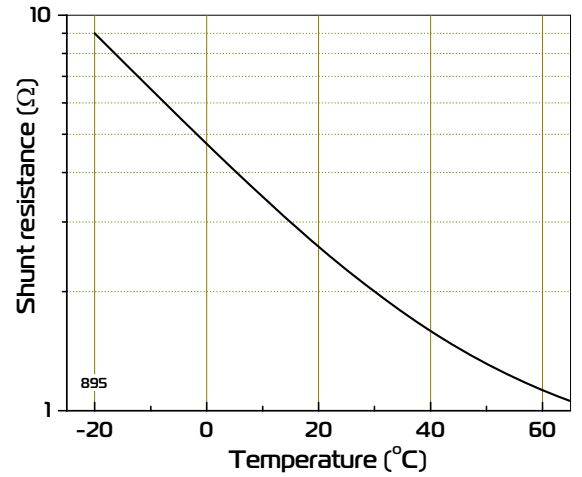
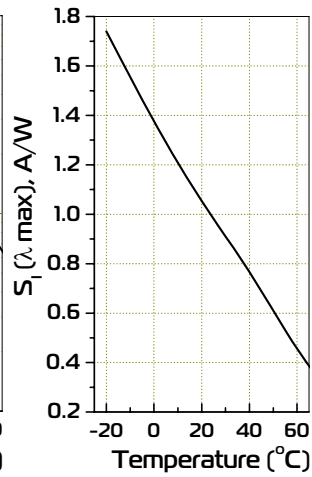
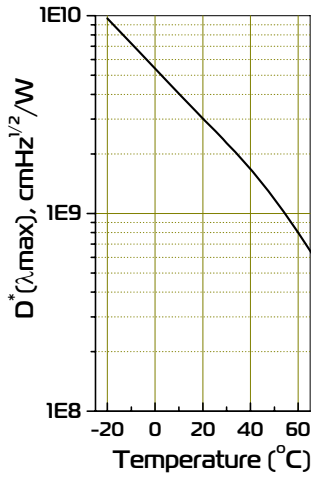


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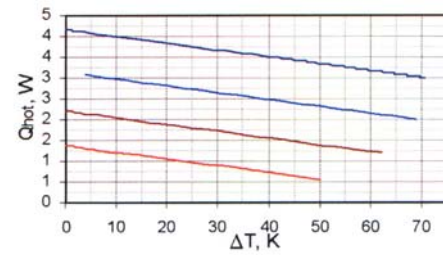
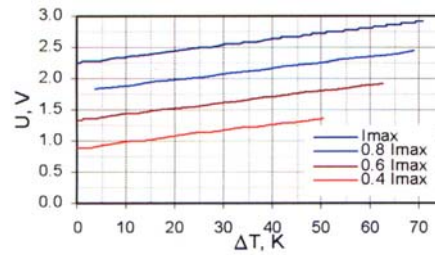
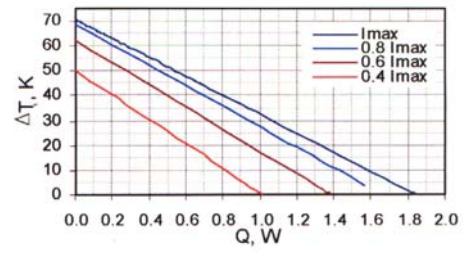
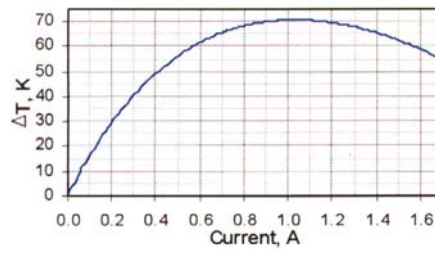
<http://www.ioffeled.com>; e-mail: Mremenny@mail.ioffe.ru
<http://www.mirdog.spb.ru>; e-mail: bmat@iropt3.ioffe.ru

Spectral response

Detectivity, current sensitivity at λ_{max} and shunt resistance vs. temperature

Thermoelectric cooling module datasheet

| Mounted TEC | H, mm | ΔT_{max} , K | Q_{max} , W | I_{max} , A | U_{max} , V | R_{θ} , K/W |
|----------------|-------|----------------------|---------------|---------------|---------------|--------------------|
| 1MC06-024/1-15 | 2.6 | 70 | 1.86 | 1.0 | 2.78 | 1.07 |

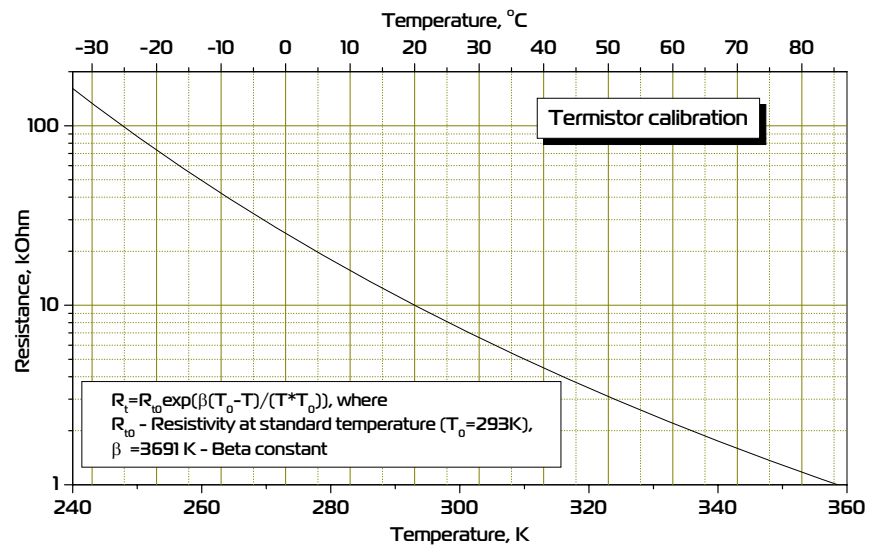


Data for $T_{hot}=300$ K, from www.tec-microsystems.com; www.rmtitd.ru

Thermistor specification

| T, °C | R, kΩ | T, °C | R, kΩ |
|-------|--------|-------|-------|
| -60 | 1134.5 | 15 | 12.44 |
| -55 | 762.4 | 20 | 10.00 |
| -50 | 521.6 | 25 | 8.09 |
| -45 | 362.8 | 25 | 8.09 |
| -40 | 256.3 | 30 | 6.60 |
| -35 | 183.8 | 35 | 5.41 |
| -30 | 133.6 | 40 | 4.47 |
| -25 | 98.3 | 45 | 3.71 |
| -20 | 73.3 | 50 | 3.10 |
| -15 | 55.2 | 55 | 2.61 |
| -10 | 42.1 | 60 | 2.20 |
| -5 | 32.4 | 65 | 1.87 |
| 0 | 25.2 | 70 | 1.59 |
| 5 | 19.7 | 75 | 1.37 |
| 10 | 15.6 | 80 | 1.18 |

Type TB04-103



Possible TEC heatsink view

