

Optically Immersed 4.2 μm Photodiode

PD42Su, PD42Sr

TE cooled Optically Immersed 4.2 μm Photodiode

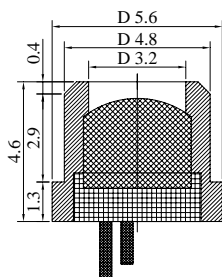
PD42TO8TEC

			PD42Su/Sr WB	PD42Su/Sr NB
Spectral range	$\lambda_{0.1}$	μm	2.75÷4.6	3.15÷4.75
Peak wavelength	λ_{max}	μm	4.1÷4.2 @22 °C	3.9÷4.0 @22 °C
Current sensitivity at λ_{max}	$S_I(\lambda_{\text{max}})$	A/W	≥0.85	≥1.15
Current sensitivity at 4.2 μm	$S_I(\lambda_{3.8 \mu\text{m}})$	A/W	≥0.8	≥0.9
Shunt Resistance	R_o	Ohm	≥70	≥50
Detectivity	$D^*_{\lambda_{\text{max}}}$	$\text{cmHz}^{1/2}\text{W}^{-1}$	≥1.7×10 ¹⁰	≥2.0×10 ¹⁰
Voltage sensitivity	S_U	V/W	≥60	≥60
Switching time	τ	ns	≤20	1

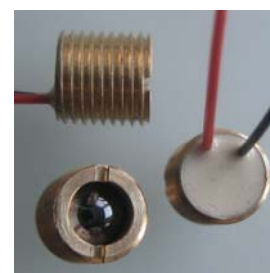
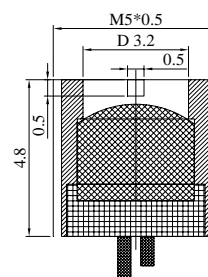
Code	Sensitive area, mm	Weight, g	Optical components	Field of view, deg.	Optical axis deviation, deg.	Detectivity deviation in lot, %	Operation conditions, °C	Lifetime, hrs
PD42Su PD42Sr	∅ 3.2	~0.4	Si lens	~15	≤5	±25	-60÷+85 ²	>80 000
PD42 TO8TEC		~10	Si lens and output sapphire window D=6mm				-60÷+85 ³	

Product view

PD42Su

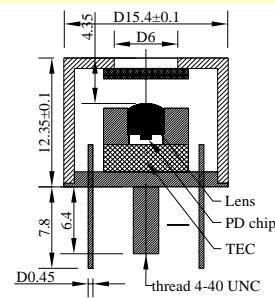
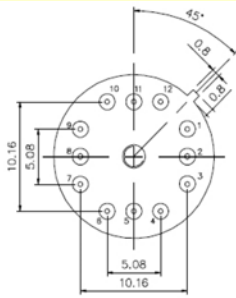
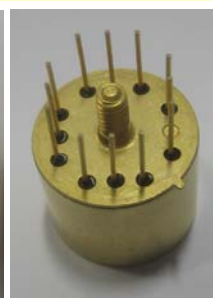


PD42Sr



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
PD42TO8TEC12

- 1 TEC negative;
- 3 TEC positive;
- 4 PD negative;
- 6 PD positive;
- 7, 9 thermosensor;
- 11 ⊥ (House);
- 12 ⊥ (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_o 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 - devices have passed through 15 thermo cycles : (20°C, 8 hrs) - transition period of 30 min - (+125°C, 8 hrs) without changes in specifications. Valid for devices produced since 01.2013

³ - devices have passed through 15 thermo cycles : (-60°C, 30 min) - transition period of 30 min - (+85°C, 30 min) without changes in specifications. Valid for devices produced since 01.2013

Product specifications are subject to change without prior notice due to improvements or other reasons. Updated 10.04.13

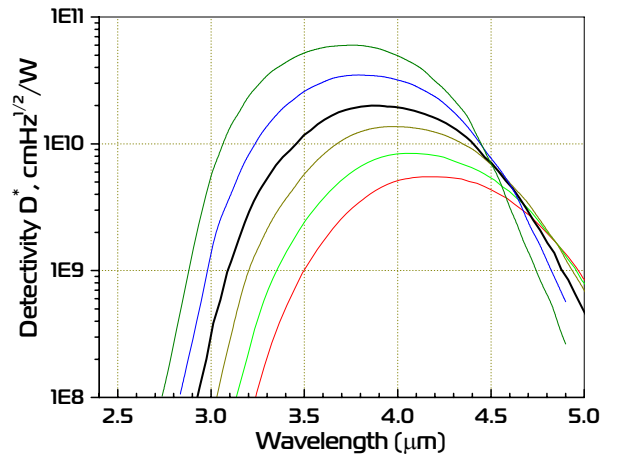
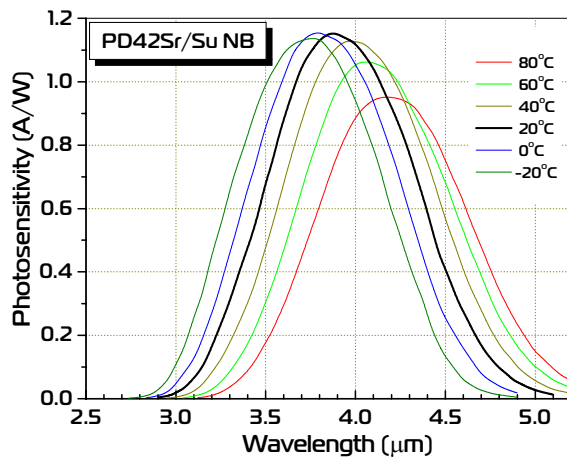
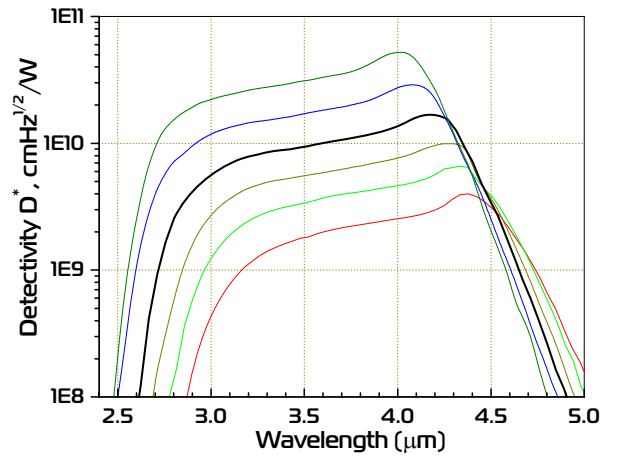
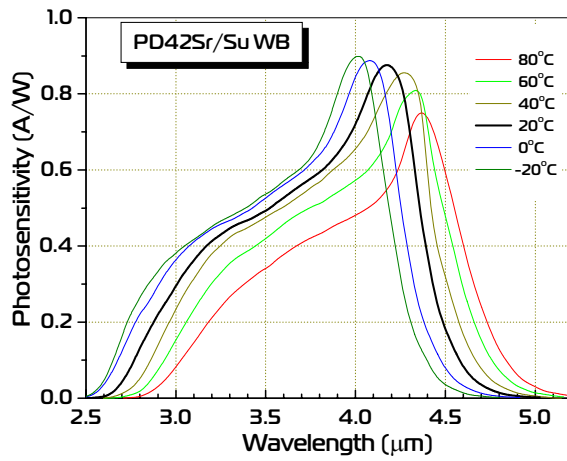
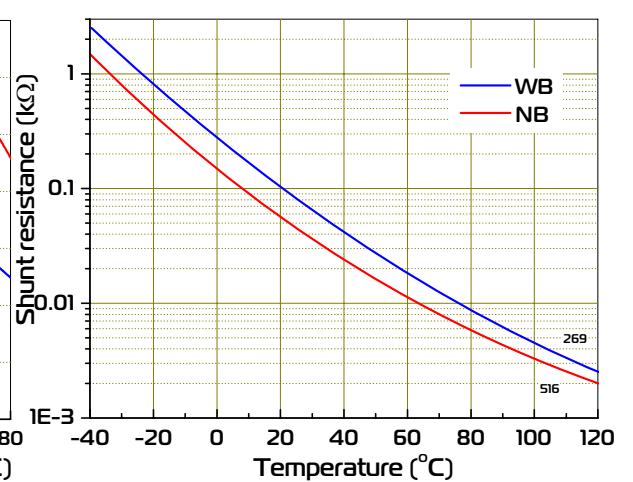
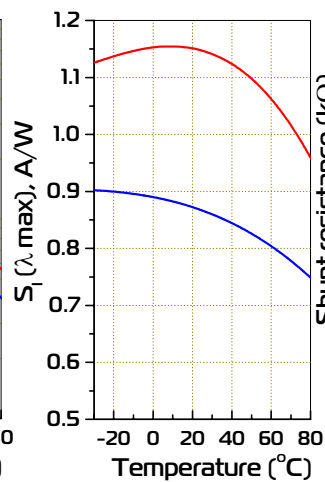
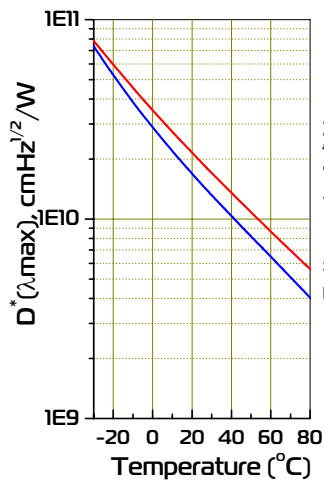


ООО «ИюффеЛЕД»
IoffeLED, Ltd

Politechnicheskaya 26,
St.Petersburg, 194021, RUSSIA

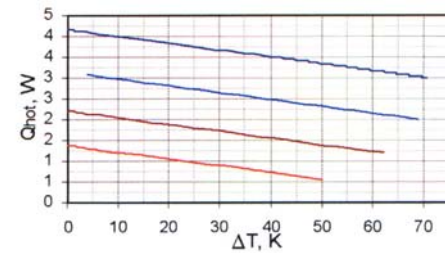
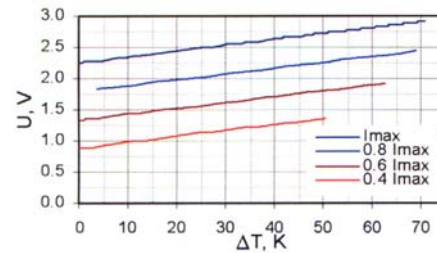
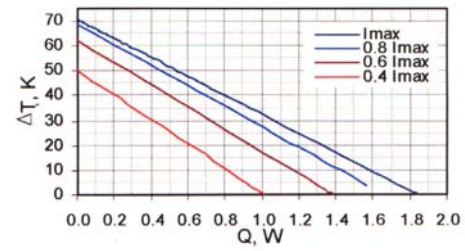
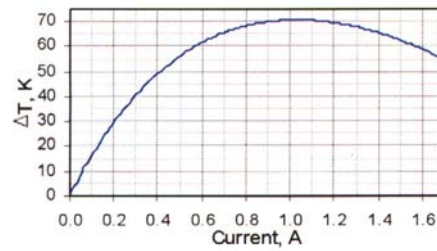
<http://www.ioffeled.com>; e-mail: Mremenny@mail.ioffe.ru
<http://www.mirdog.spb.ru>; e-mail: bmat@iropt3.ioffe.ru

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

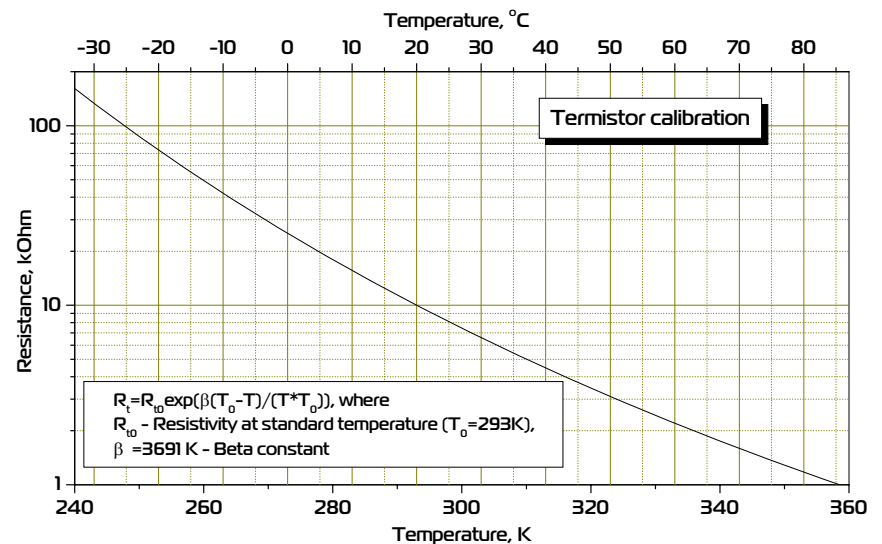


Data for $T_{hot}=300$ K, from www.tec-microsystems.com; www.rmtitd.ru

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

