

Optically Immersed 4.7 μm Photodiode

PD47 Sr/Cy

TE cooled Optically Immersed 4.7 μm Photodiode

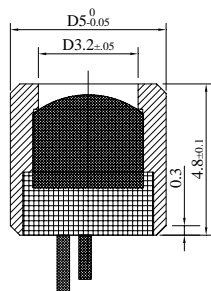
PD47T08TEC

			PD47 WB Sr/Cy	PD47 NB Sr/Cy
Spectral range	$\lambda_{0.1}$	μm	2.75÷5.25	3.7÷5.25
Reference process			878	877
Peak wavelength	λ_{max}	μm	4.6÷4.7	@22 °C
Current sensitivity at λ_{max}	$S_I(\lambda_{\text{max}})$	A/W	1.0÷1.3	
Shunt Resistance	R_o	Ohm	≥ 10	
Detectivity	$D^*_{\lambda_{\text{max}}}$	$\text{cmHz}^{1/2}\text{W}^{-1}$	$\geq 0.9 \times 10^{10}$	
Capacitance (V=5 mV, f=1 MHz)	C_p	pF	1000÷1200	600÷800
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
PD47 Sr/Cy ²	$\varnothing 3.2$	~0.4	Si lens	~15	≤ 5	± 25	-60÷+85
PD47 T08TEC		~10	Si lens and output sapphire window D=6mm				

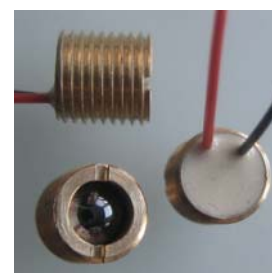
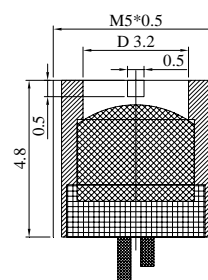
Product view

PD47Cy

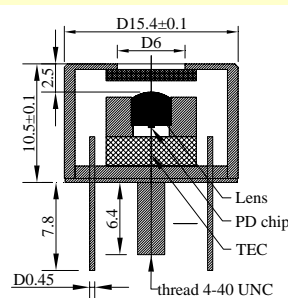
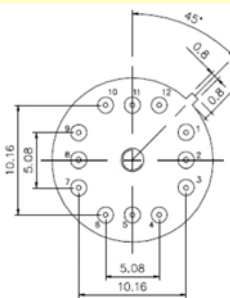
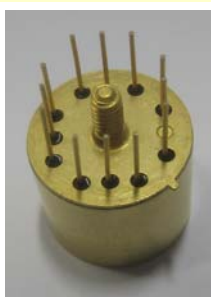


Pin assignment: red wire or long wire and red point on house - positive

PD47Sr



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



Pin assignment
PD47T08TEC12

- 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 $n^+-\text{InAs}$ 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 - Customized headers and caps can be fabricated

Product specifications are subject to change without prior notice due to improvements or other reasons. Updated 14.02.15

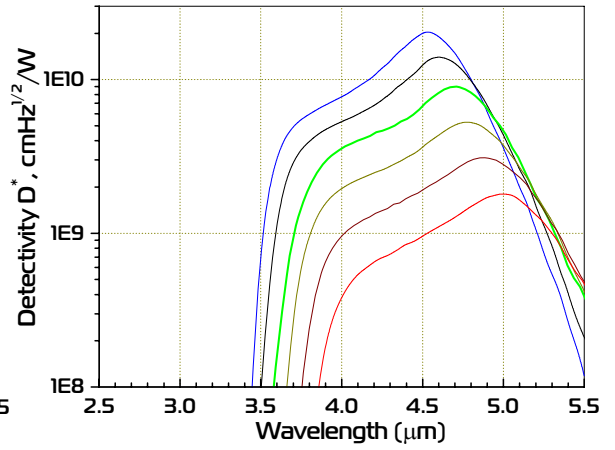
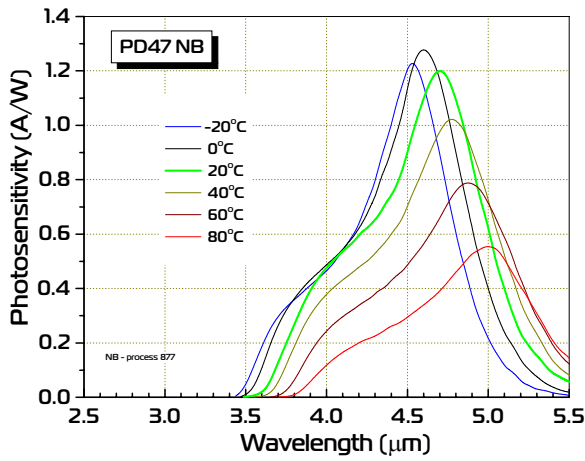
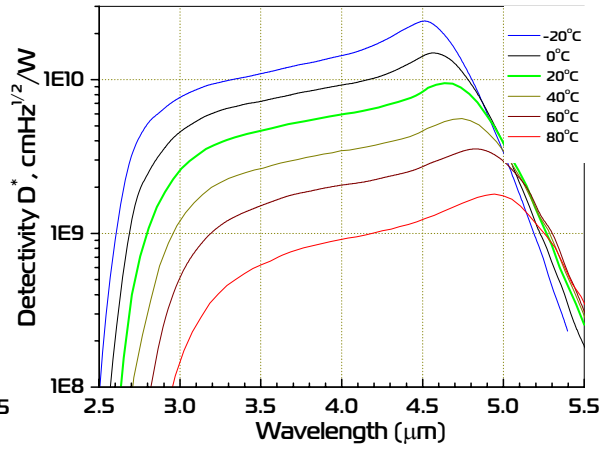
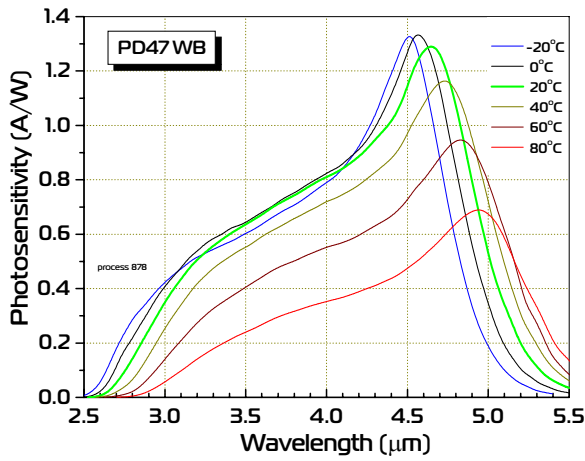


ООО «ИюффеЛЕД»
IoffeLED, Ltd

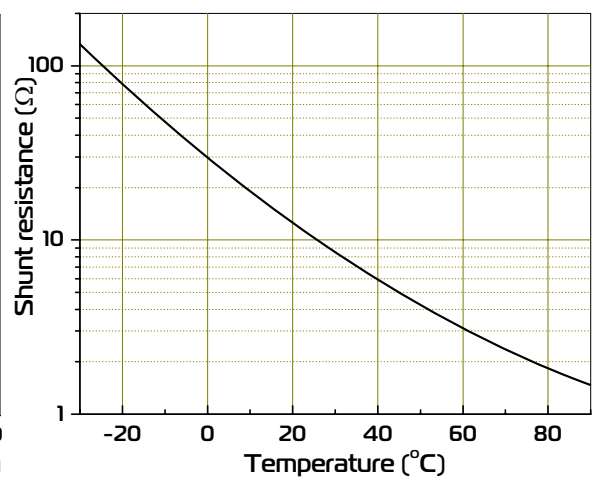
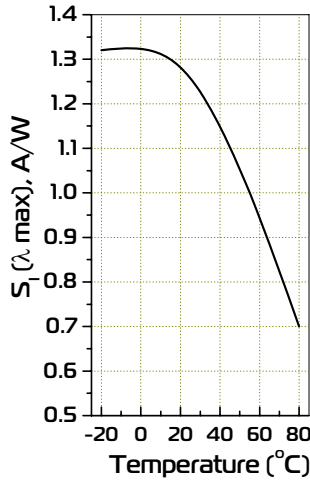
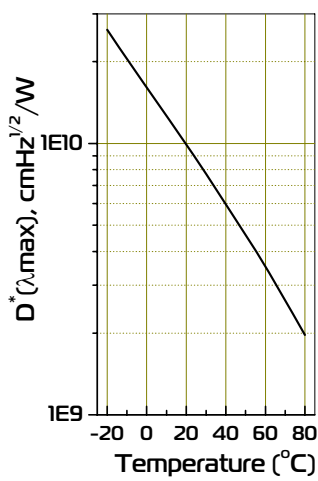
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<http://www.ioffeled.com>; e-mail: Mremenny@mail.ioffe.ru
<http://www.mirdog.spb.ru>; e-mail: bmat@iropt3.ioffe.ru

Spectral response

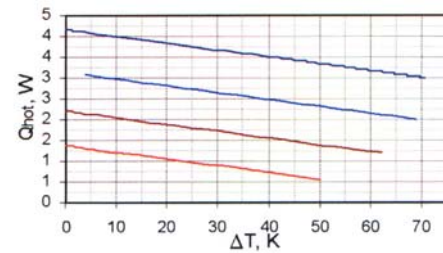
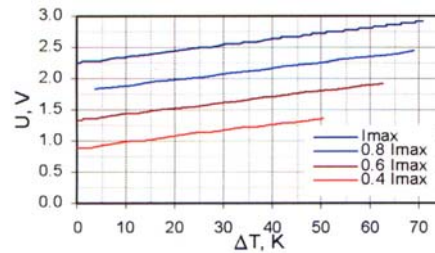
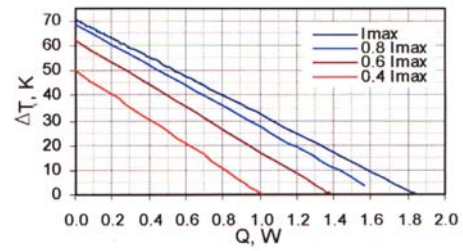
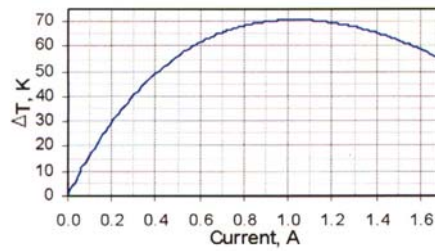


Detectivity, current sensitivity at λ_{max} and shunt resistance vs. temperature



Thermoelectric cooling module datasheet

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

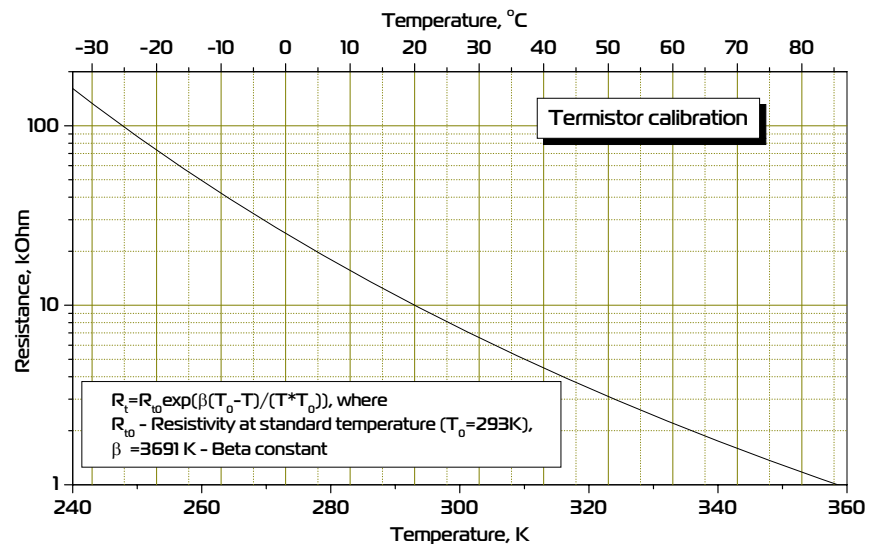


Data for $T_{hot}=300$ K, from www.tec-microsystems.com; www.rmtitd.ru

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

