

## Optically Immersed Dual Wavelength 3.4/4.2 $\mu\text{m}$ Photodiode PD34/42Sr(Su)

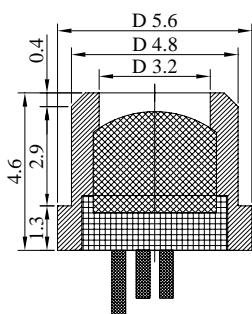
## TE cooled Optically Immersed Dual Wavelength 3.4/4.2 $\mu\text{m}$ Photodiode PD34/42TO8TEC

			34 Band		42 Band
Spectral range	$\lambda_{0,1}$	$\mu\text{m}$	2.8÷3.8	@22 °C	3.4÷4.8 @22 °C
Peak wavelength	$\lambda_{\text{max}}$	$\mu\text{m}$	3.3÷3.4		3.9÷4.0
Current sensitivity at $\lambda_{\text{max}}$	$S_i(\lambda_{\text{max}})$	A/W	$\geq 1$		$\geq 0.75$
Shunt Resistance	$R_0$	Ohm	$\geq 500$		$\geq 50$
Detectivity	$D^*_{\lambda_{\text{max}}}$	$\text{cmHz}^{1/2}\text{W}^{-1}$	$\geq 5 \times 10^{10}$		$\geq 1 \times 10^{10}$
Switching time	$\tau$	ns		$\leq 20$	

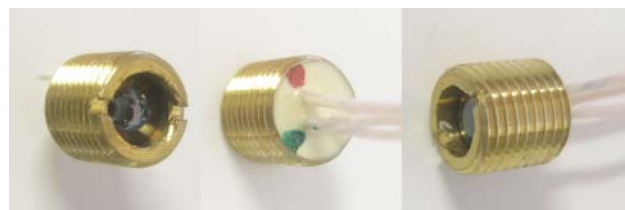
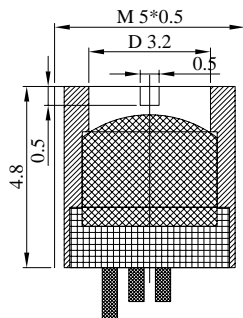
Code	Sensitive area, mm	Weight, g	Optical components	Field of view, deg.	Optical axis deviation, deg.	Detectivity deviation in lot, %	Operation conditions, °C	Lifetime, hrs
PD34/42 Sr(Su)	$\varnothing 3.2$	~0.4	Si lens	~18 (34 Band)	$\leq 5$	$\pm 25$	-60÷+80	>80 000
PD34/42 TO8TEC		~10	Si lens and output sapphire window D=6mm	~12 (42 Band)			-60÷+80	

### Product view

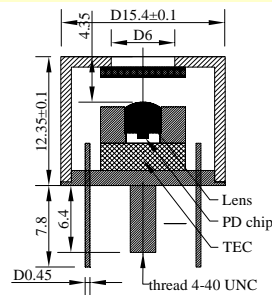
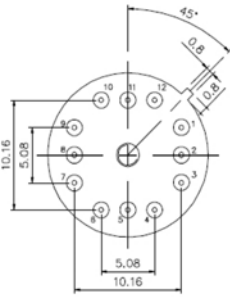
PD34/42Su



PD34/42Sr



Pin assignment: red wire (or wire near red point) – positive for 42 Band; white wire (or wire near green point) – positive for 34 Band; black wire – common negative



### TEC Pin assignment

- 1 TEC negative;
- 3 TEC positive;
- 4 PD negative;
- 5 34Band positive
- 6 42Band positive;
- 7, 9 thermosensor;
- 11  $\perp$  (House);
- 12  $\perp$  (PD)

### Features

- Original growth of narrow gap A3B5 semiconductor alloys onto  $n^+$ -InAs substrate;
- Dual detector sandwich 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

<sup>1</sup> - according to estimation

Product specifications are subject to change without prior notice due to improvements or other reasons. Updated 15.01.14

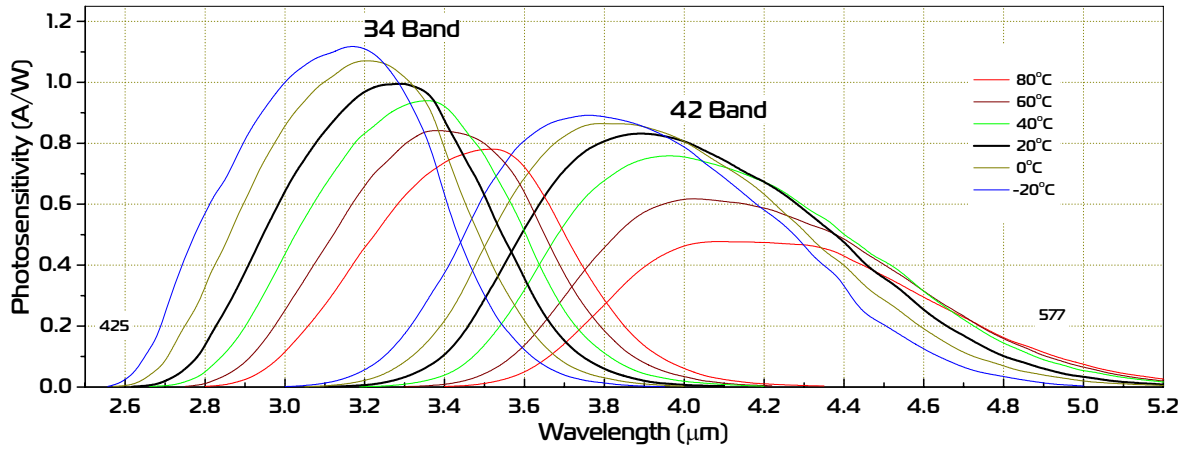
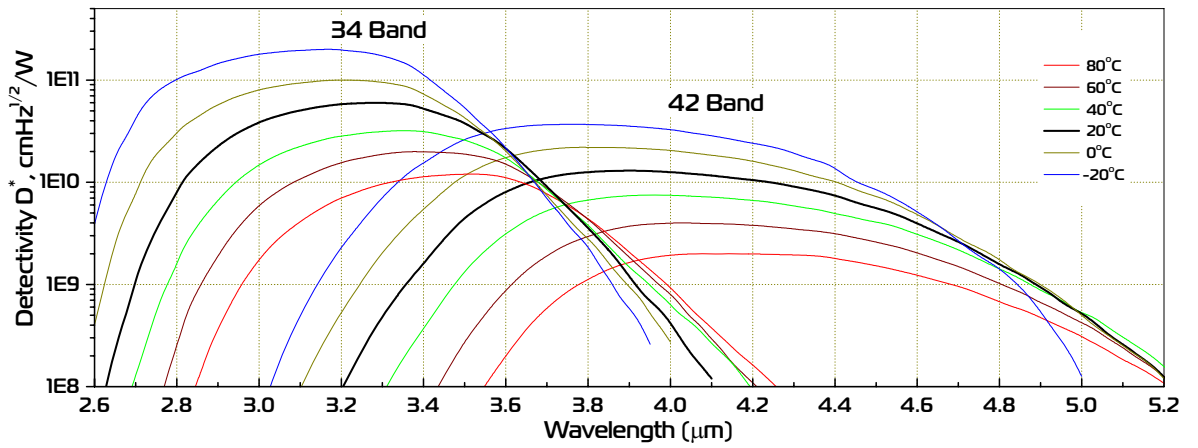


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IoffeLED, Ltd

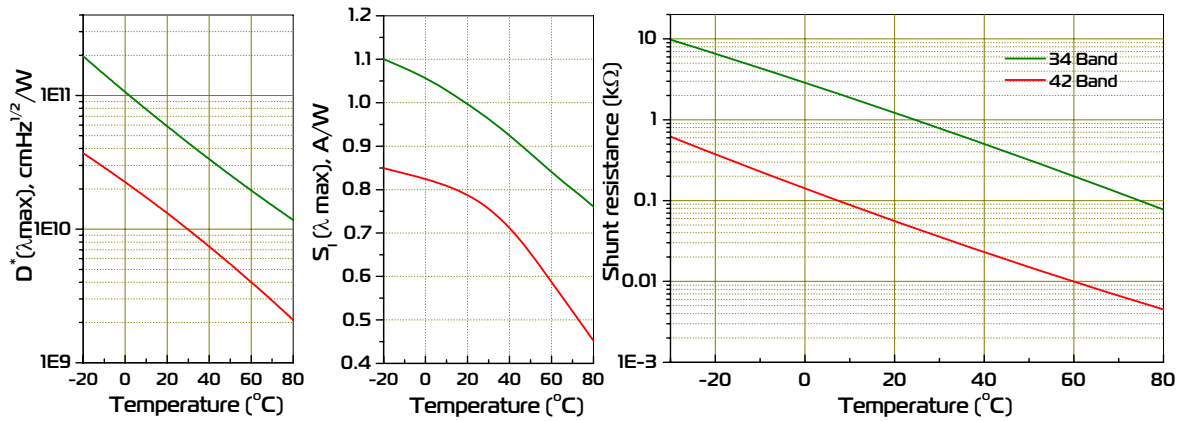
Politechnicheskaya 26,  
St.Petersburg, 194021, RUSSIA

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

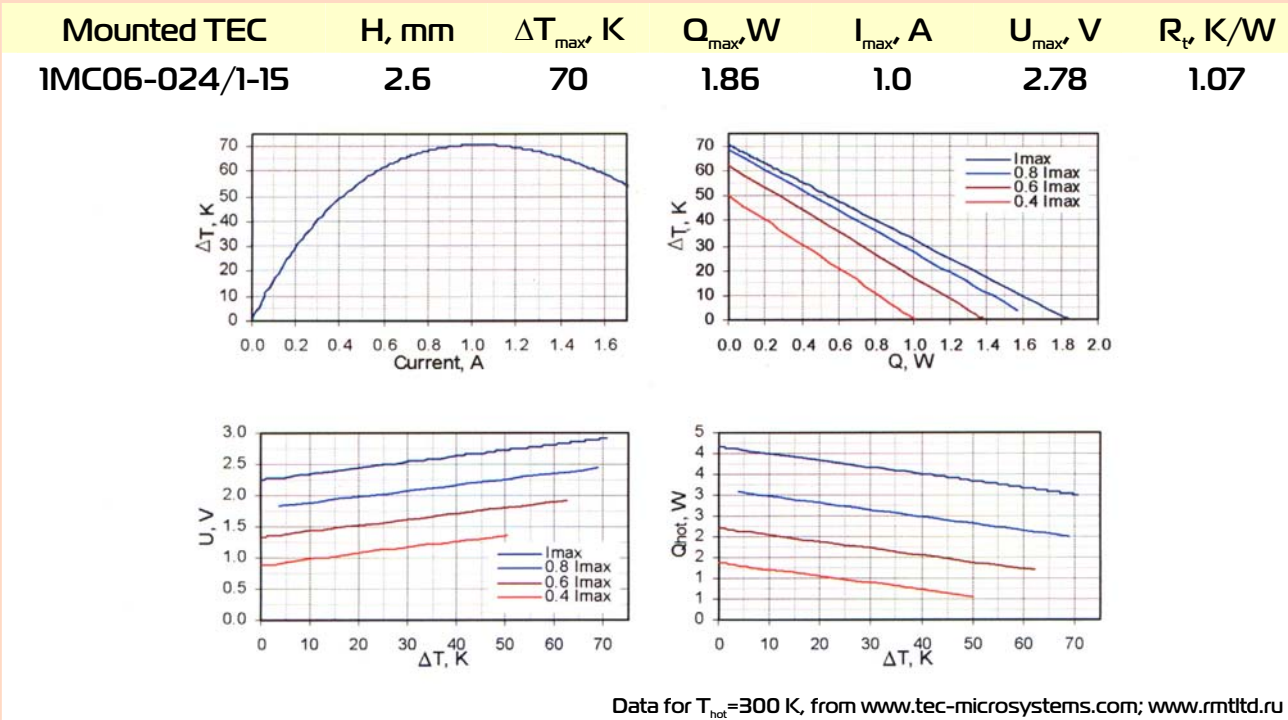
Spectral response



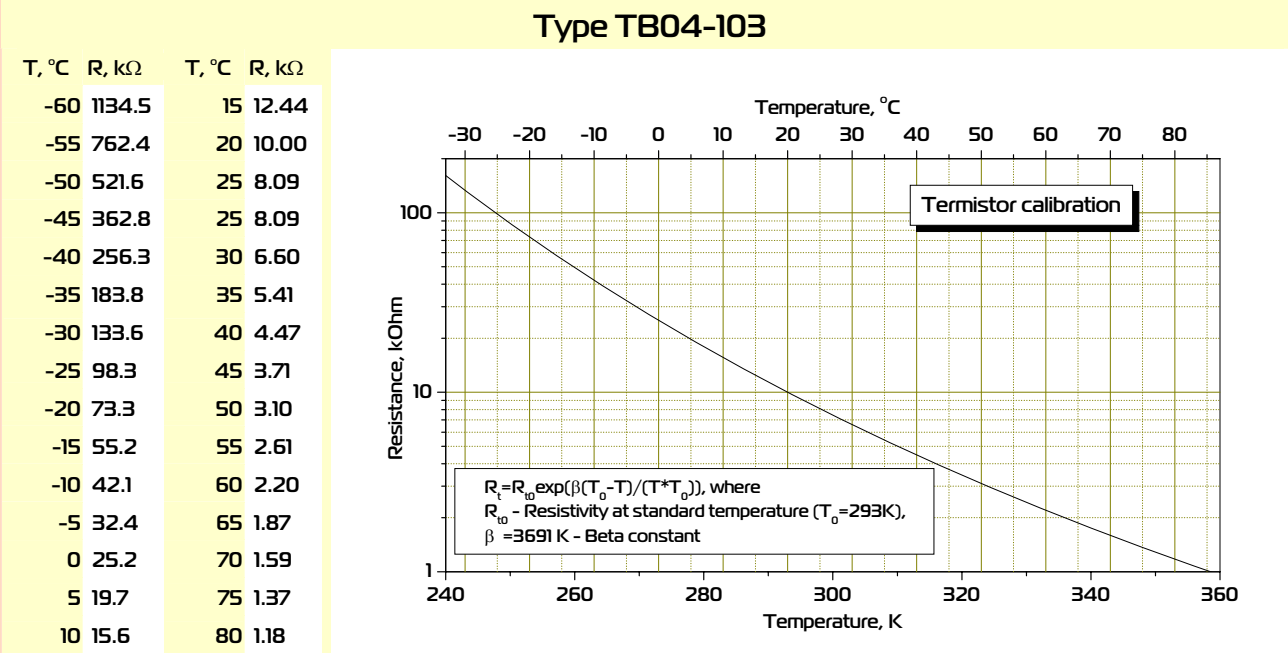
Detectivity, current sensitivity at  $\lambda_{\text{max}}$  and shunt resistance vs. temperature



Thermoelectric cooling module datasheet



Thermistor specification



Possible TEC heatsink view

