

Optically Immersed 4.2 μm LED in heatsink optimized housing

LED42Su, LED42Sr

TE cooled Optically Immersed 4.2 μm LED

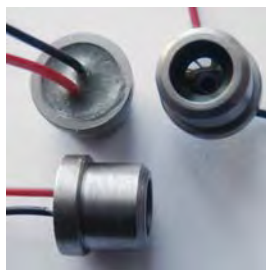
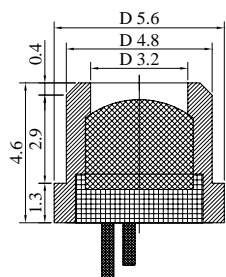
LED42TO8TEC

| | | | |
|-------------------|-----|-------------------------------------|--------------|
| Peak wavelength | μm | 4.15÷4.2 | @22 °C |
| Pulse power | mW | Drive current 1 A, 0.02 duty cycle | 0.08÷0.10 |
| Quasi-CW power | mW | Drive current 0.3 A, 0.5 duty cycle | 0.04÷0.05 |
| CW power | mW | Drive current 0.2 A | 0.03÷0.04 |
| Cut-off frequency | MHz | 50 | ¹ |

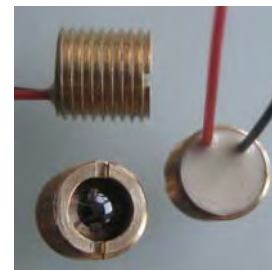
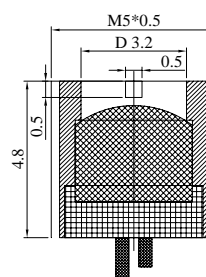
| Code | Emission size, mm | Weight, g | Optical components | Far-field pattern FWHM, deg. | Optical axis deviation, deg. | Optical power deviation in lot, % | Operation conditions, °C | Lifetime, hrs |
|--------------------|-------------------|-----------|--|------------------------------|------------------------------|-----------------------------------|--------------------------|-----------------------|
| LED42Su LED42Sr | ∅ 3.2 | ~0.4 | Si lens | ~15 | ≤5 | ±25 | -60÷+120 ² | >100 000 ⁴ |
| LED42 TO8TEC | | ~10 | Si lens and output sapphire window D=6mm | | | | | |

Product view

LED42Su

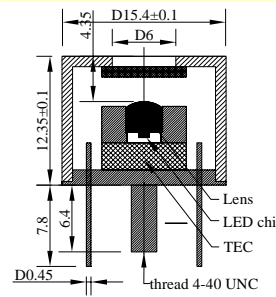
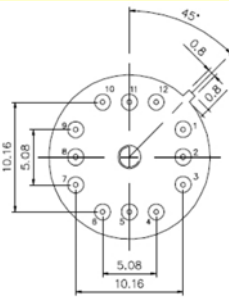
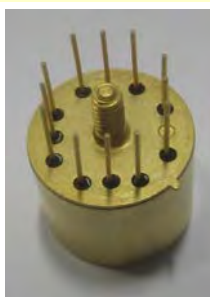


LED42Sr



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 LED42TO8TEC12

- 1 TEC negative;
- 3 TEC positive;
- 4 LED negative;
- 6 LED positive;
- 7, 9 thermosensor;
- 11 ⊥ (House)

Features

- Original growth of narrow gap semiconductor alloys onto n⁻-InAs substrate;
- Flip-chip design of LEDs;
- Optical coupling through the use of chalcogenide glasses and Si lenses with antireflection coating
- 3-fold increased LED output power;
- Beam collimation;
- Small on-off time (tenths of ns);
- Low power consumption (≤0.1 W)

Emission beam divergence is small and thus we recommend adjusting LED position regarding to the detector system before final evaluation/use of the devices. We recommend if possible using low duty cycle mode of operation with I<0.5×Imax so that higher efficiency and long term stability of a LED are achieved. Data are valid for LED attached to a heatsink and 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. Operation conditions: -25÷+60 °C for old version LEDs.
- 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. Operation conditions: -25÷+60 °C for old version LEDs.
- ⁴ - according to accelerated degradation stress at CW drive current 0.2 A

Product specifications are subject to change without prior notice due to improvements or other reasons. Updated 04.09.13

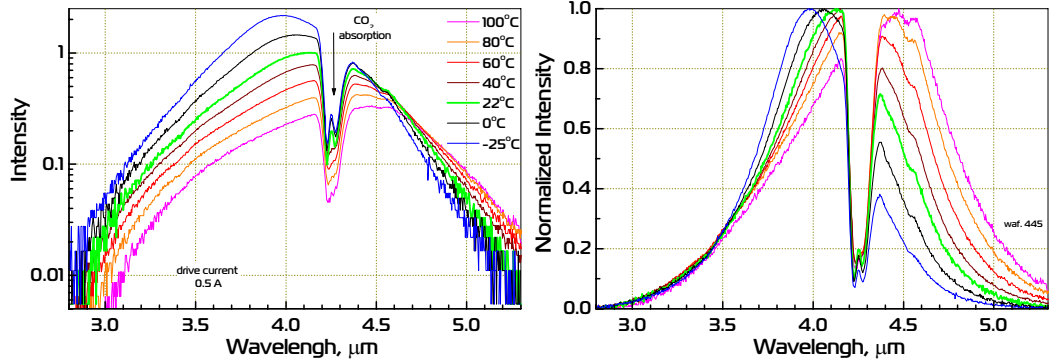


ООО «ИюффеЛЕД»
IoffeLED, Ltd

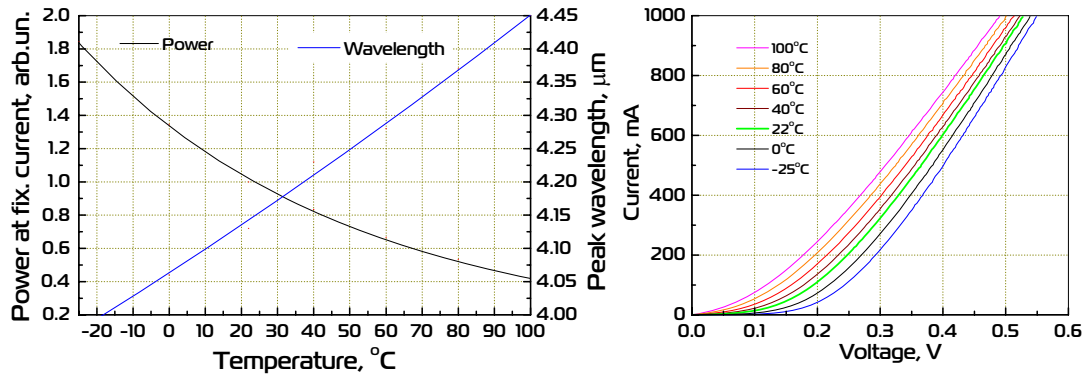
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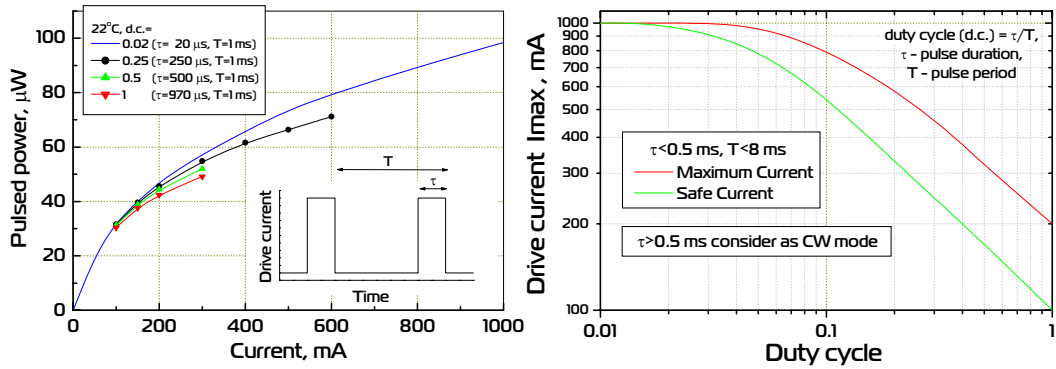
Emission spectra



Power and peak wavelength vs. temperature; I - V curve

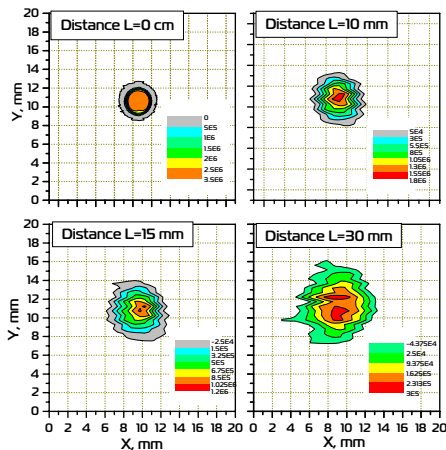


Output power and drive current vs operation conditions

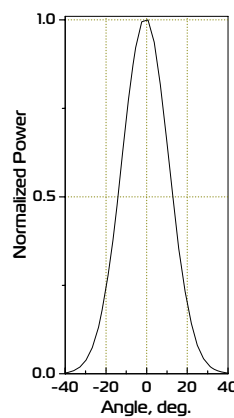


Far-field characterization

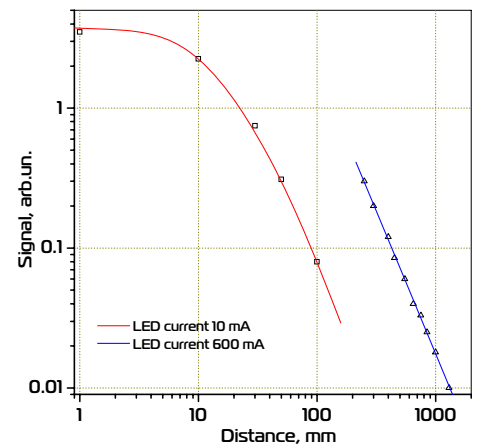
Radiation beam pattern in plane orthogonal to beam axis at several distances from LED



Angle distribution of output power



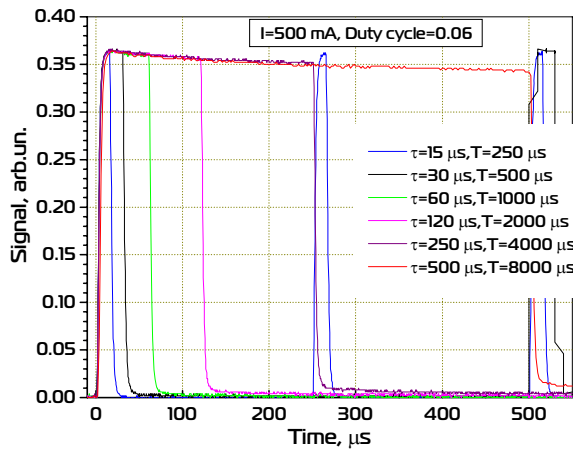
PD signal (PDxxSr/Su) vs. distance from activated LED



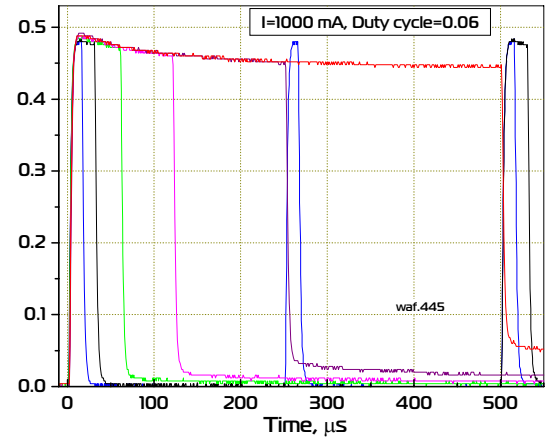
Time dependence of the output power for several values of d.c. and currents
(LED attached to a heatsink at room temperature).

Pulse operation (d.c.=0.06)

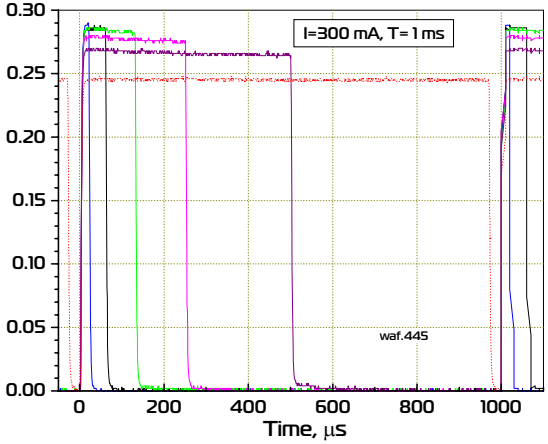
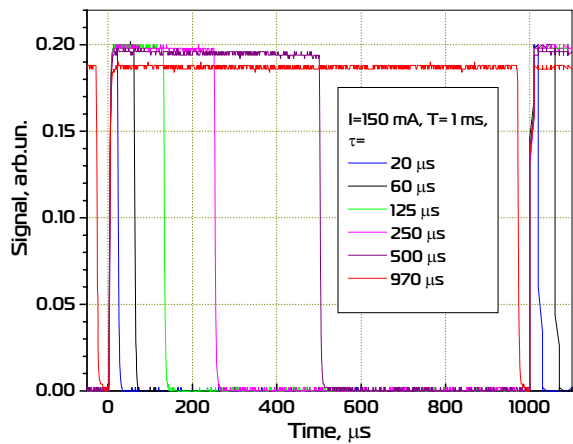
“Safe” operation mode



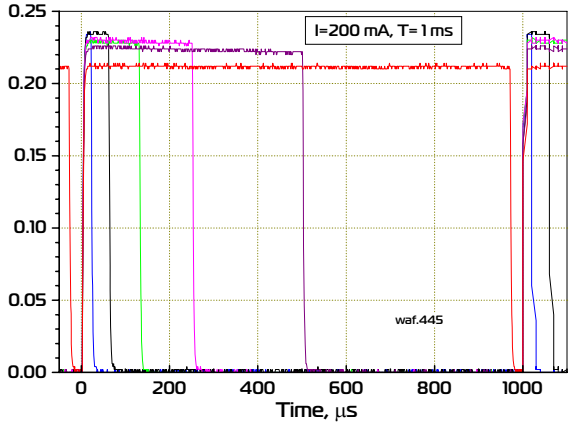
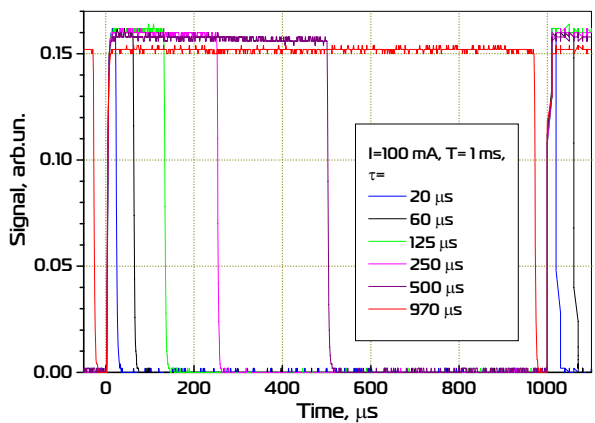
“Maximum current” operation mode



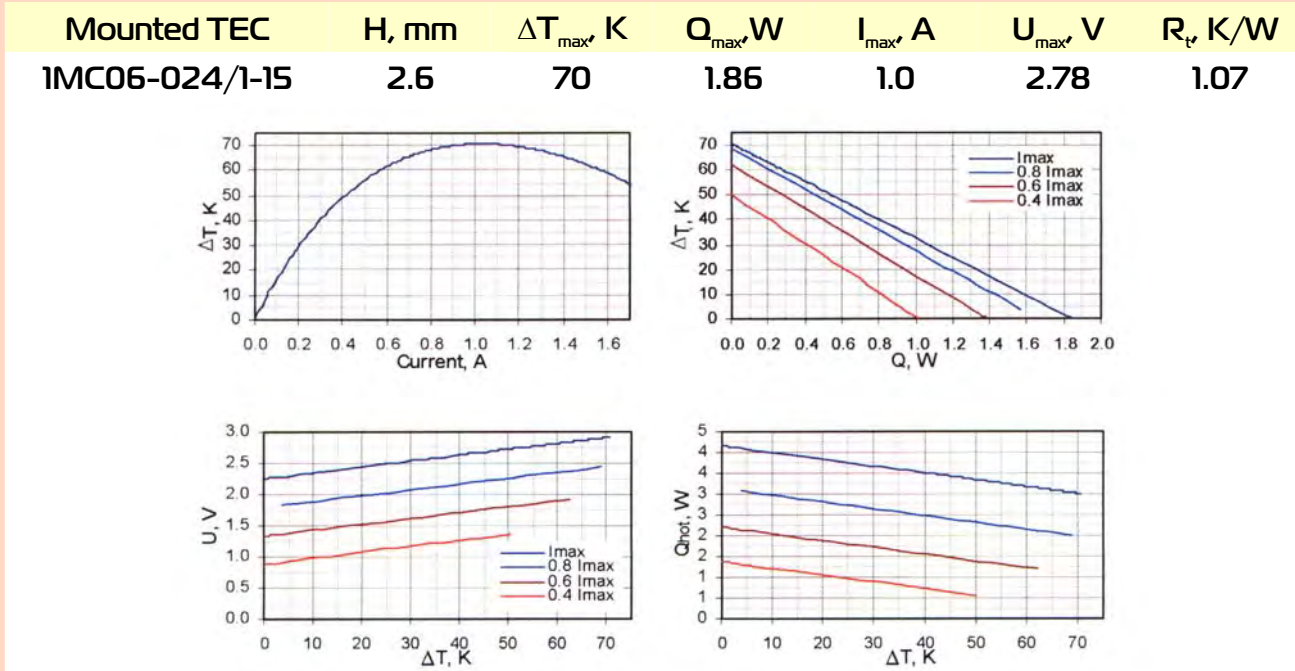
Quasi CW mode (d.c.=0.5)



CW mode (d.c.=1)

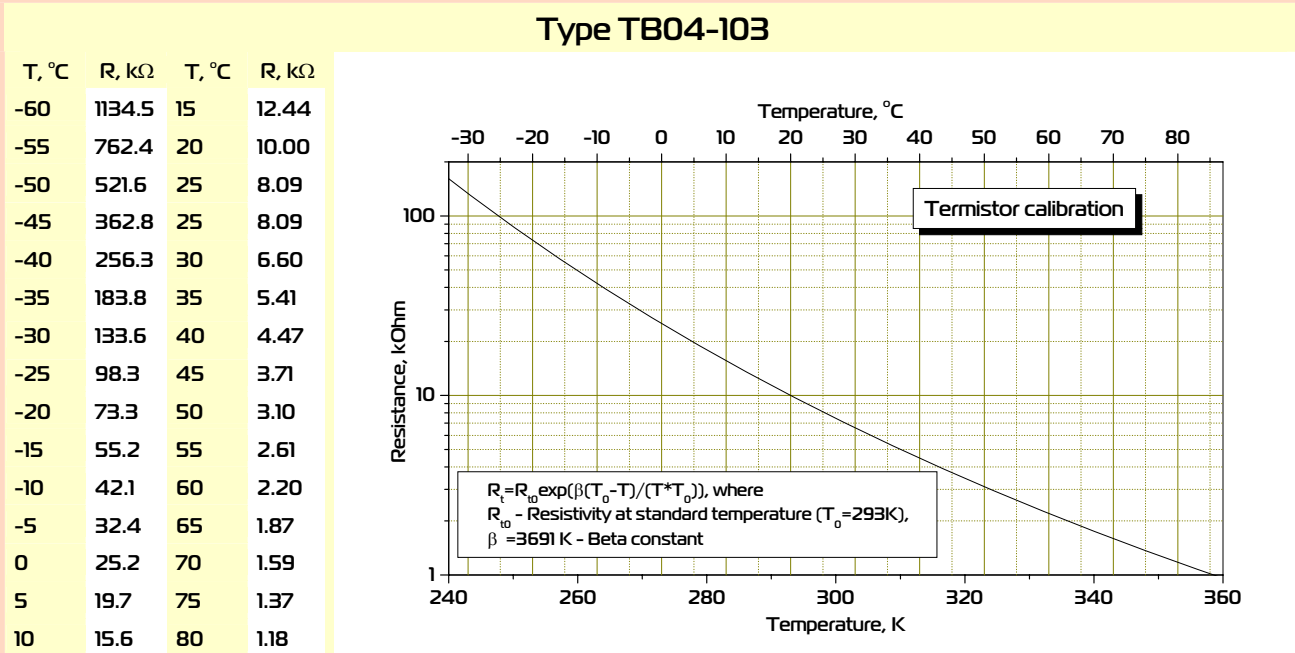


Thermoelectric cooling module datasheet



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

Thermistor specification



Possible TEC heatsink view

