Optically Immersed 3.0 μm LED in heatsink optimized housing

LED30Su, LED30Sr

TE cooled Optically Immersed 3.0 μm LED

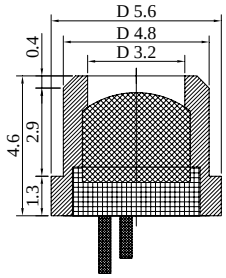
LED30TO8TEC

Peak wavelength	μm		2.97±0.05 [1]
Pulse power	mW	Drive current 1 A, 0.02 duty cycle	0.15÷0.18
Quasi-CW power	mW	Drive current 0.3 A, 0.5 duty cycle	0.05÷0.06
CW power	mW	Drive current 0.2 A	0.03÷0.04
Cut-off frequency	MHz		20 [2]

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
LED30Su LED30Sr	∅ 3.2	~0.4	Si lens	~15	≤5	±25	-60÷+120 [3]	>80 000 [5]
LED30 TO8TEC		~10	Si lens and output sapphire window D=6mm				-60÷+85 [4]	

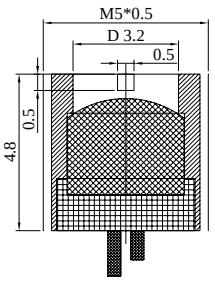
Product view

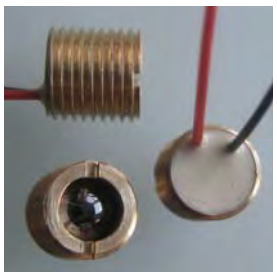
LED30Su



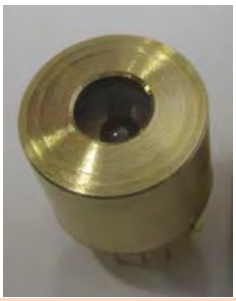
Pin assignment: red wire or long wire and red point on house - positive

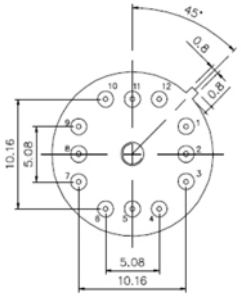
LED30Sr

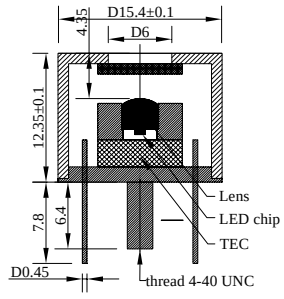




Pin assignment: red wire or long wire and red point on house - positive







Pin assignment LED30TO8TEC12

1 TEC negative;
3 TEC positive;
4 LED negative;
6 LED pozitive;
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!

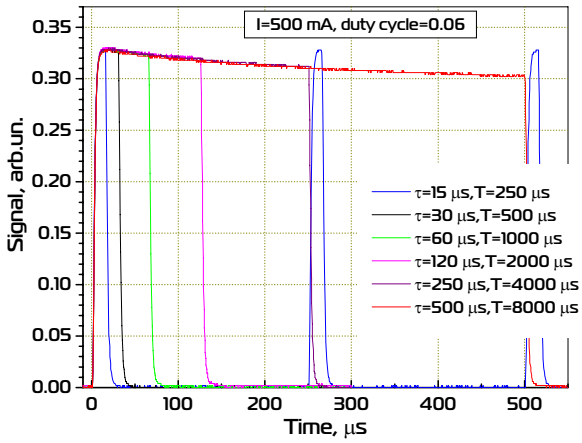
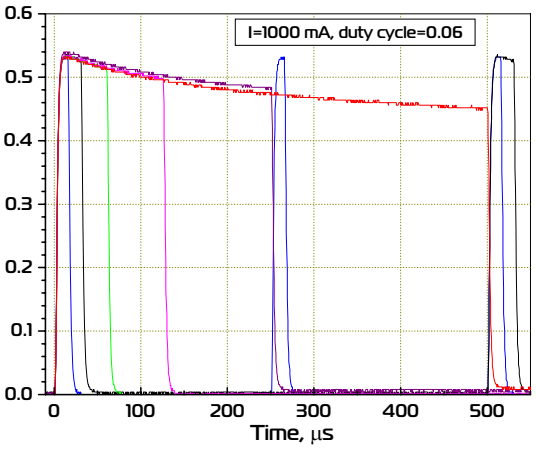
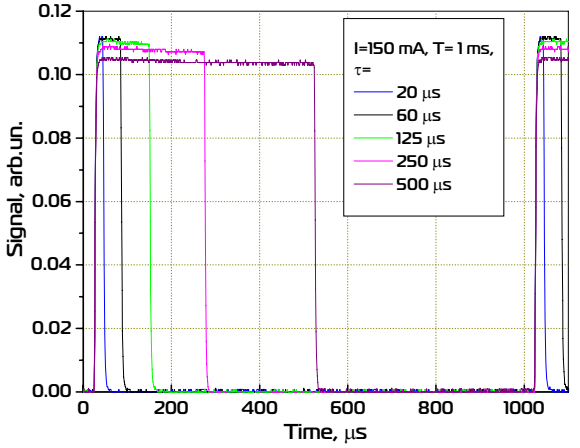
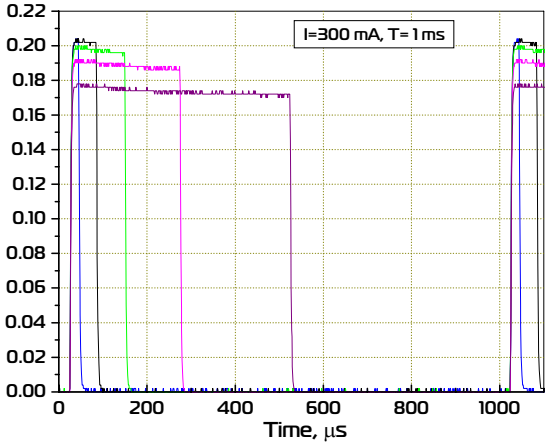
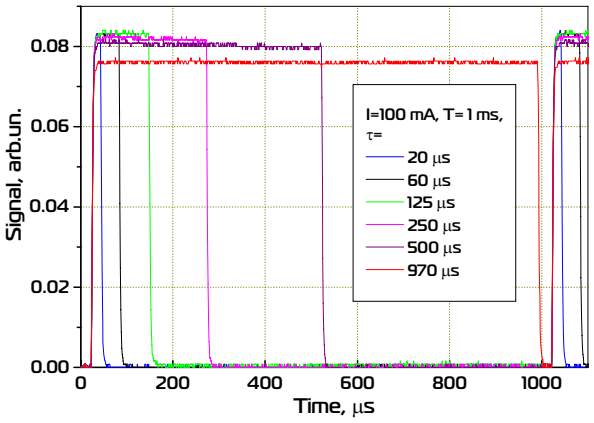
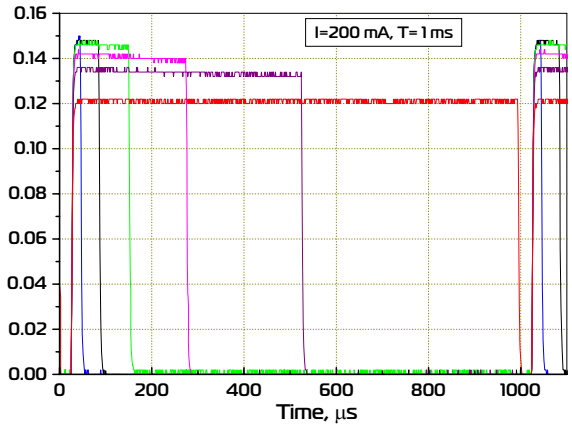
Notes

[1] - process 6189
[2] - according to estimation
[3] - 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
[4] - 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
[5] – 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 15.01.13

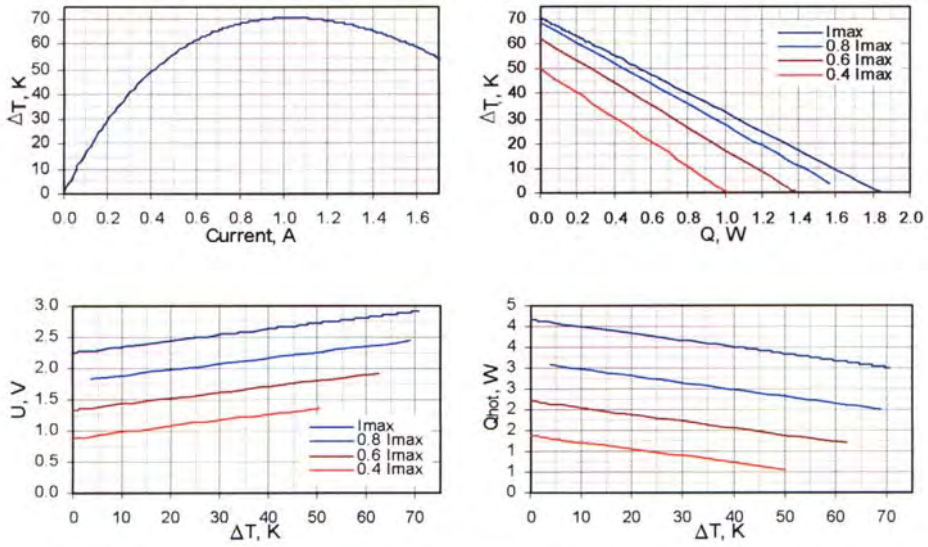
Time dependence of the output power for several values of d.c. and currents

(LED attached to a heatsink at room temperature).

	"Safe" operation mode	"Maximum current" operation mode
Pulse operation (d.c.=0.06)		
Quasi CW mode (d.c.=0.5)		
CW mode (d.c.=1)		

Thermoelectric cooling module datasheet

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

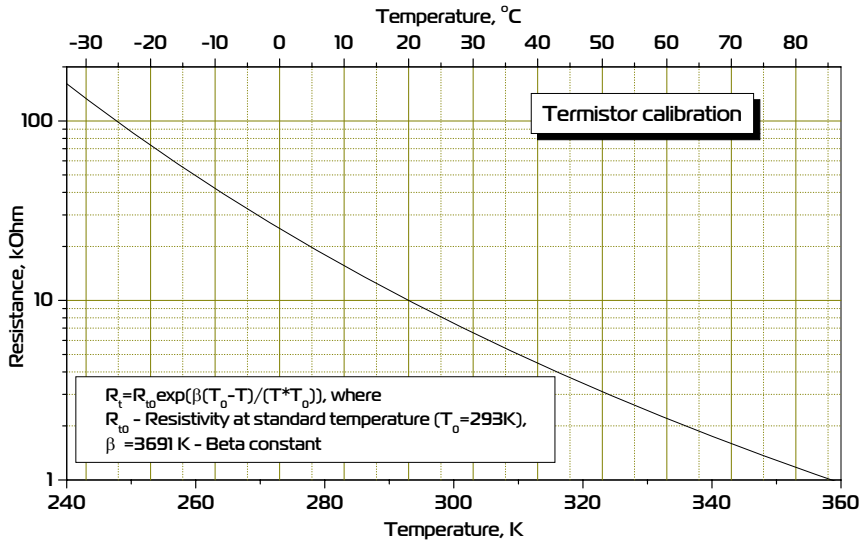


Data for T_{hot}=300 K, from www.tec-microsystems.com; www.rmtltd.ru

Thermistor specification

Type TB04-103

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



Possible TEC heatsink view