

4.7  $\mu\text{m}$  LED with microimmersion lens

LED47mIL

TE cooled 4.7  $\mu\text{m}$  LED with microimmersion lens

LED47mILTEC

4.7  $\mu\text{m}$  LED with parabolic reflector

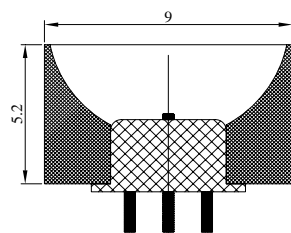
LED47PR

Peak wavelength	$\mu\text{m}$	4.65÷4.75		@22 °C
Immersion lens/Reflector			PR	mIL
Pulse power	$\mu\text{W}$	Drive current 1 A, 0.02 duty cycle	10÷12	20÷24
Quasi-CW power	$\mu\text{W}$	Drive current 0.3 A, 0.5 duty cycle	4.5÷5	9÷10
CW power	$\mu\text{W}$	Drive current 0.2 A	3.5÷4	7÷8
Cut-off frequency	MHz	50 (according to estimation)		

Code	Emission size, mm	Weight, g	Optical components	Far-field pattern FWHM, deg.	Optical power deviation in lot, %	Operation conditions, °C	Lifetime, hrs
LED47mIL TO18	$\varnothing 1.0$	~0.3	chalcogenide lens				
LED47mIL TO18c	$\varnothing 1.0$	~0.3	sapphire window, chalcogenide lens	~35		-60÷+60	
LED47mIL TO39TEC	$\varnothing 1.0$	~1.2	sapphire window, chalcogenide lens		$\pm 25$		>100 000
LED47PR TO18	0.35×0.35	~1	Metal or plastic parabolic or cone-shaped reflector				
LED47BS TO18	0.35×0.35	~0.3		~140		-60÷+85	
LED47BS TO18c	0.35×0.35	~0.3	sapphire window	~60			

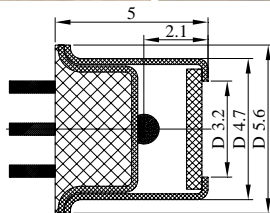
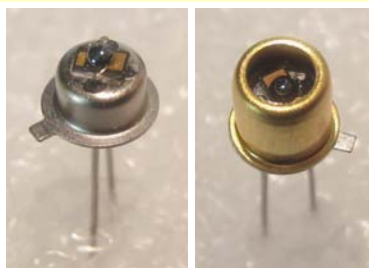
Product view

LED47BS TO18, LED47PR TO18



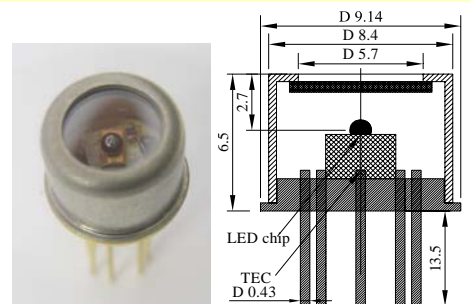
Leg near key is negative

LED47mIL TO18, LED47mIL TO18c

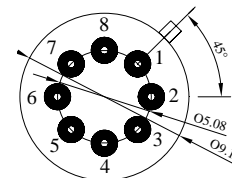


Leg near key is negative

LED47mIL TO39TEC



- 1 TEC negative;
- 2 TEC positive;
- 3 LED negative;
- 4 LED positive;
- 7, 8 thermosensor



Features

- Original growth of narrow gap semiconductor alloys onto  $n^+$ -InAs substrate;
- Flip-chip (or emission output through  $n^+$ -InAs substrate) design of LEDs;
- Optical coupling through the use of chalcogenide glasses (LED with microimmersion lens)
- 2-fold increased LED output power (with mIL);
- Beam collimation (with mIL or reflector);
- Small on-off time (tenths of ns);
- Low power consumption ( $\leq 0.1$  W);
- Highest brightness (for BS option)

We recommend if possible using low duty cycle mode of operation with  $I < 0.5 \times I_{\text{max}}$  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!

Product specifications are subject to change without prior notice due to improvements or other reasons. Updated 07.12.14

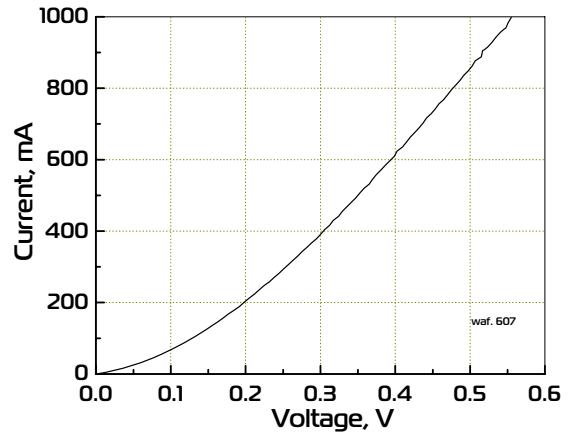
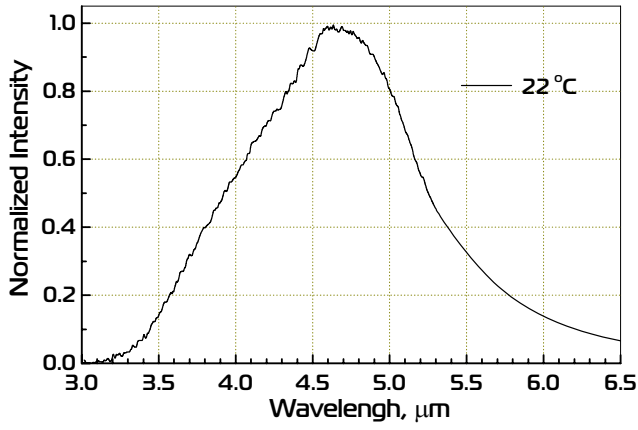


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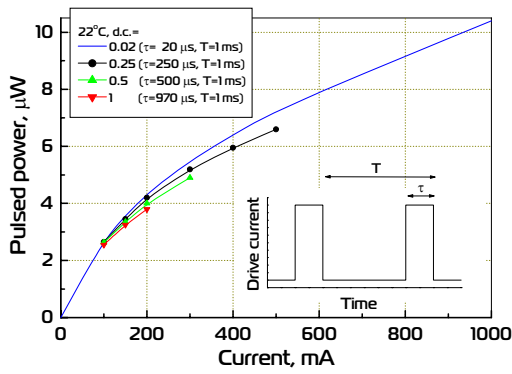
<http://www.ioffeled.com>; e-mail: Mremenny@mail.ioffe.ru  
<http://www.mirdog.spb.ru>; e-mail: bmat@iropt3.ioffe.ru

Emission spectra and I - V curve

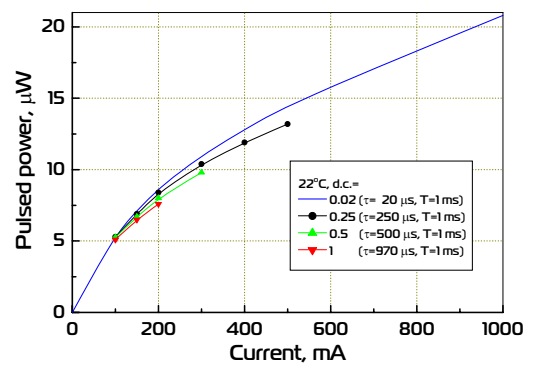


Power and peak wavelength vs. temperature; I - V curve

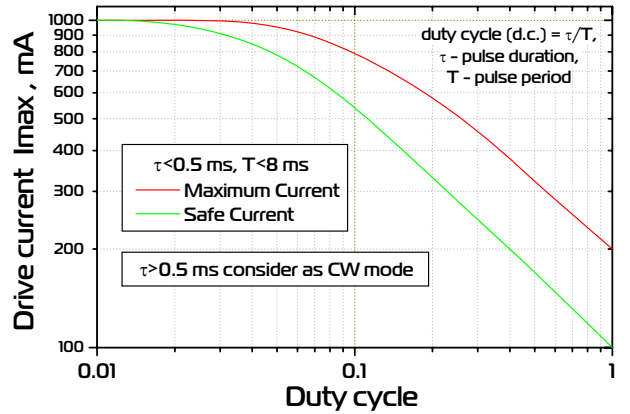
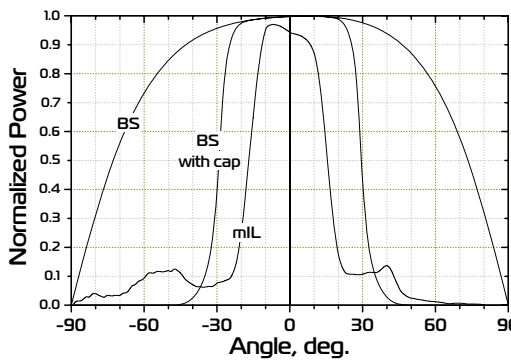
LED47BS, LED47PR



LED47mIL



Far-field characterization; drive current vs operation conditions



**Mounted TEC**

@ 27 °C, Vacuum

@ 50 °C, N2

**1MDO4-011/10**

$\Delta T_{max}$  K  
**69**

$Q_{max}$  W  
**0.54**

$I_{max}$  A  
**0.7**

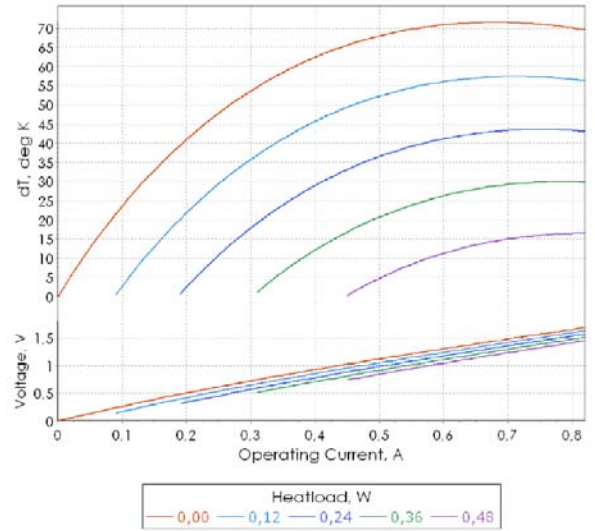
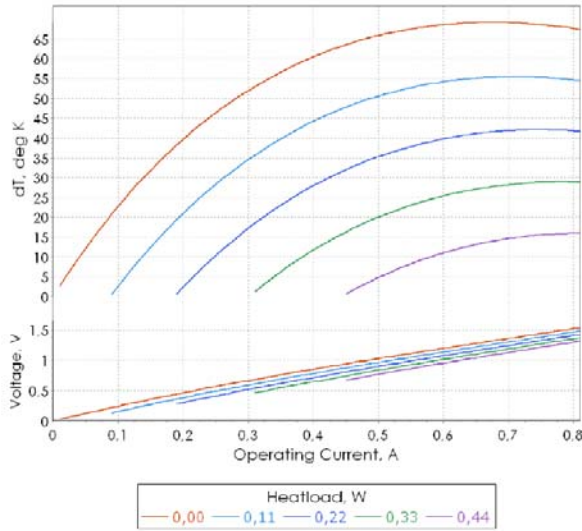
$U_{max}$  V  
**1.3**

$\Delta T_{max}$  K  
**72**

$Q_{max}$  W  
**0.6**

$I_{max}$  A  
**0.7**

$U_{max}$  V  
**1.4**



Data from www.tec-microsystems.com; www.rmtltd.ru

**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

