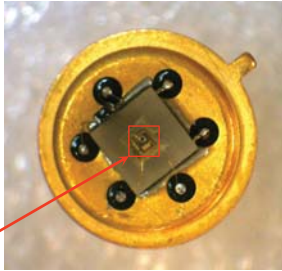




## Features

- High reliability
- Spectral Selectivity
- Easy to use in lock-in circuits
- Temperature stabilization
- Parabolic reflector with window



LED chip

## Description

Light emitting diode **LED46-TEC-PRW** demonstrates typical maximum of emitting wavelength of  $\lambda_p = 4.6 \mu\text{m}$  ( $I = 150 \text{ mA}$ ,  $f = 0.5 \text{ KHz}$ , duty cycle: 50%) .

Light emitting diode **LED46-TEC-PRW** is equipped with sapphire window, thermo-electrical cooler (TEC) and thermistor for stabilizing of temperature.

The components is mounted in a standard 9.2 mm TO-5 package with parabolic reflector (PR) .

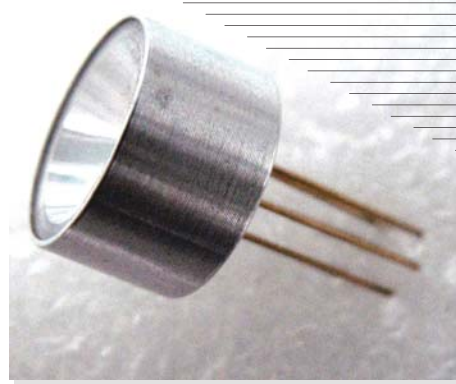
LED heterostructure is grown on InAs substrate.

Related products:**LED46-TEC-PRW** can be used in optical pair with our [PD48-05-WS](#) photodiodes.

## General characteristics

Package	Parameter	Symbol	Value	Unit
TO-5 with TEC-PRW	Maximum operating current	$I_{QCW}^*$	220	mA
		$I_{Pulsed}^{**}$	2000	
	Soldering temperature	$T_s$	+ 230	$^{\circ}\text{C}$
	Operating temperature	$T_{opr}$	- 30...+ 50	$^{\circ}\text{C}$
	Storage temperature	$T_{stg}$	- 55...+ 60	$^{\circ}\text{C}$
	Weight	m	3.65	g
	Size		D	15.0
H			23.0	

\* Quasi-CW mode: Repetition rate: 0.5 kHz, pulse duration: 1 ms, duty cycle: 50%  
SUNSTAR 自助网 http://www.sensor-ic.com/ TEL: 0755-83376489 FAX: 0755-83376182 E-MAIL: szss20@163.com  
\*\* Pulse mode: Repetition rate: 0.5 kHz, pulse duration: 2  $\mu\text{s}$ , duty cycle: 0.1%



## Applications

- Measuring equipment
- Gas analysis ( $\text{CO}$ ,  $\text{N}_2\text{O}$ ,  $\text{HCN}$ )
- Analytical spectral devices

## Options

- Power supply: [LED Driver DLT-27M](#)
- Power supply: [LED Driver DLT-37M](#)



### Electrical and optical characteristics

Parameter	Symbol	Condition	Min	Max	Unit
Peak emission wavelength	$\lambda_p$	$I_F = 150 \text{ mA}$	$\lambda_{typ} = 4.6$		$\mu\text{m}$
			4.4	4.66	
Spectral FWHM	$\Delta\lambda$	$I_F = 150 \text{ mA}$	800	1000	nm
Pulse optical power	$P^*_{OCW}$	$I_F = 200 \text{ mA}$	4	12	$\mu\text{W}$
	$P^{**}_{Pulsed}$	$I_F = 1000 \text{ mA}$	20	55	
Forward voltage	$V_F$	(*)	0.3	0.8	V
Switching time	$\tau$		10	30	ns

\* Quasi-CW mode: repetition rate: 0.5 kHz, pulse duration: 1 ms, duty cycle: 50%, current: 200 mA

\*\* Pulse mode: repetition rate: 0.5 kHz, pulse duration: 2  $\mu\text{s}$ , duty cycle: 0.1%, current: 1 A

### TEC TO506.1MC0400710.TB103 parameters (without load)

Parameter	Symbol	Condition	Value	Unit
Maximum Current	$I_{max}$	$\Delta T_{max}$	1.50	A
Maximum Voltage	$U_{max}$	$\Delta T_{max}$	0.80	V
Cooling power	$q_{max}$	-	1.30	W
Temperature range	$\Delta T_{max}$	vacuum	70	K
Thermistor resistance	$R_t$	$T = + 20 \text{ }^\circ\text{C}$	10.00	kOhm



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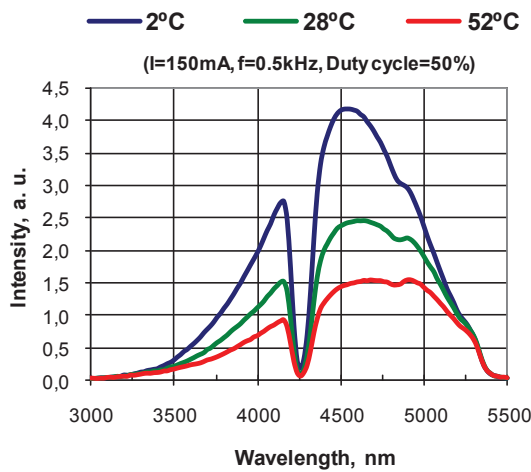
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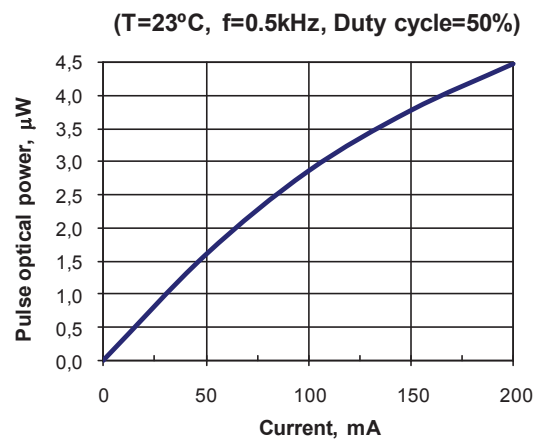
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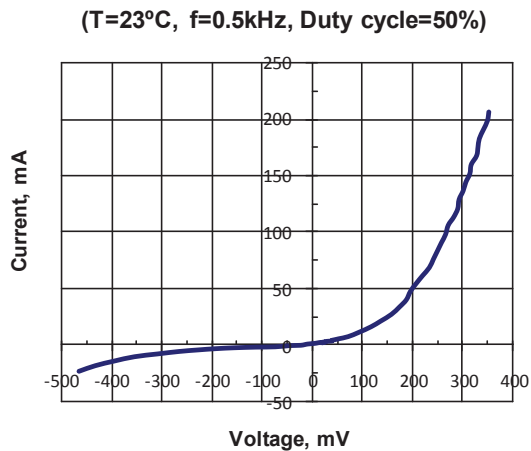
### Electroluminescence spectra



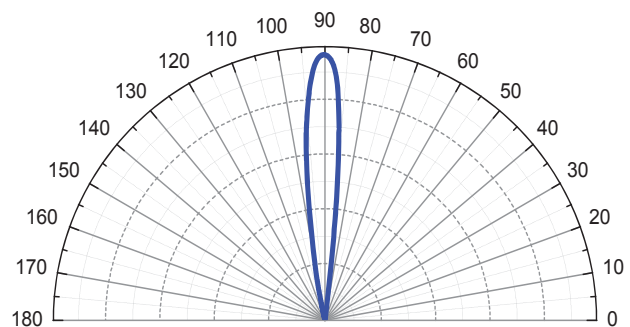
### Pulse optical power vs. current



### Current vs. voltage



### Field pattern



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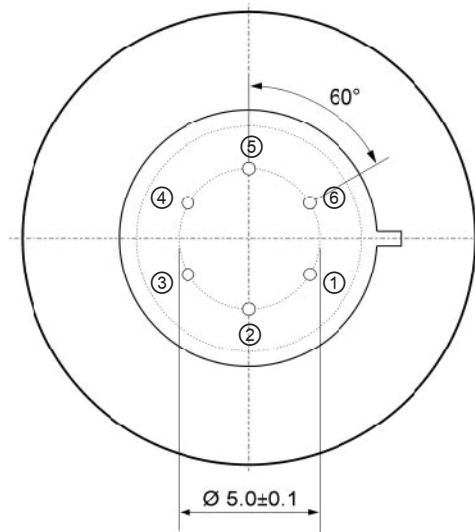
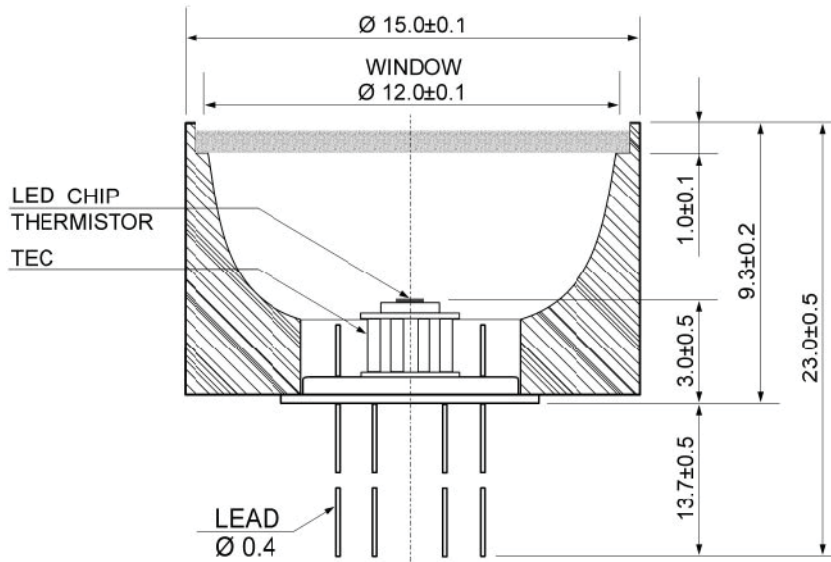
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▼ TO-5 package with PR — dimensions (mm)



Pin	Description
①	TEC (anode)
②	Diode (anode)*
③	Diode (cathode)*
④	Thermistor TC103
⑤	
⑥	TEC (cathode)

\* Attention: Pin polarity can be changed on request.



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