



# Electro Optical Components, Inc.

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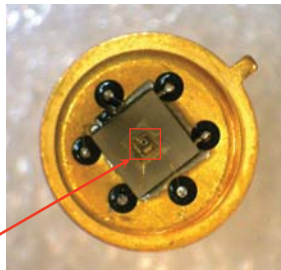
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## Features

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



LED chip

## Description

Light emitting diode **LED43-TEC-PRW** demonstrates typical maximum of emitting wavelength of  $\lambda_p = 4.15 \mu\text{m}$  ( $I = 150 \text{ mA}$ ,  $f = 0.5 \text{ KHz}$ , duty cycle: 50%) .

Light emitting diode **LED43-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) .

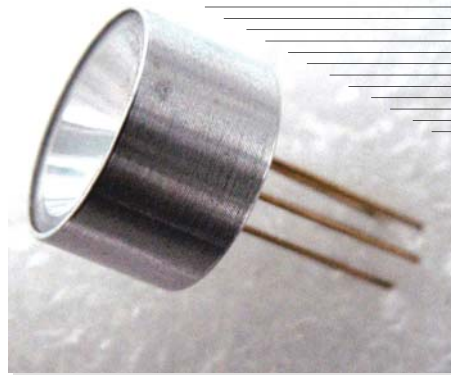
LED heterostructure is grown on InAs substrate.

Related products: **LED43-TEC-PRW** can be used in optical pair with our [PD48-05-WS](#) photodiodes.

LIGHT EMITTING DIODE

**LED43-TEC-PRW**

4.1 - 4.3  $\mu\text{m}$



## Applications

- Measuring equipment
- Gas analysis ( $\text{CO}_2$ ,  $\text{C}_2\text{H}_6$ )
- Analytical spectral devices

## Options

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

## 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	°C
	Operating temperature	$T_{opr}$	- 30...+ 50	°C
	Storage temperature	$T_{stg}$	- 55...+ 60	°C
	Weight	m	3.65	g
	Size	D	15.0	mm
H		23.0		

\* Quasi-CW mode: Repetition rate: 0.5 kHz, pulse duration: 1 ms, duty cycle: 50%

\*\* Pulse mode: Repetition rate: 0.5 kHz, pulse duration: 2  $\mu$ s, duty cycle: 0.1%

## Electrical and optical characteristics

Parameter	Symbol	Condition	Min	Max	Unit
Peak emission wavelength	$\lambda_p$	$I_F = 150$ mA	$\lambda_{typ} = 4.15$		$\mu$ m
			4.1	4.3	
Spectral FWHM	$\Delta\lambda$	$I_F = 150$ mA	700	1000	nm
Pulse optical power	$P_{QCW}^*$	$I_F = 200$ mA	8	26	$\mu$ W
	$P_{Pulsed}^{**}$	$I_F = 1000$ mA	35	120	
Forward voltage	$V_F$	(*)	0.2	0.8	V
Switching time	$\tau$		10	30	ns

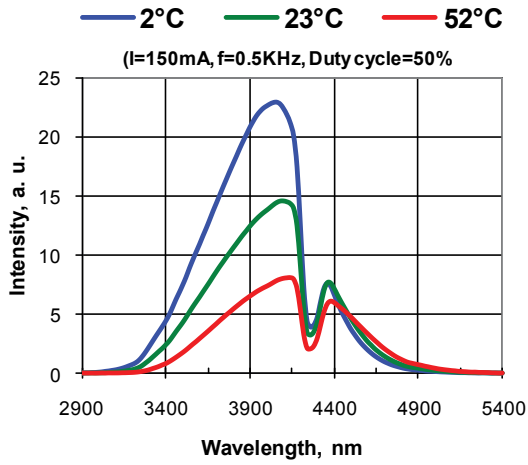
\* Quasi-CW mode: repetition rate: 0.5 kHz, pulse duration: 1 ms, duty cycle: 50%, current: 200 mA

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

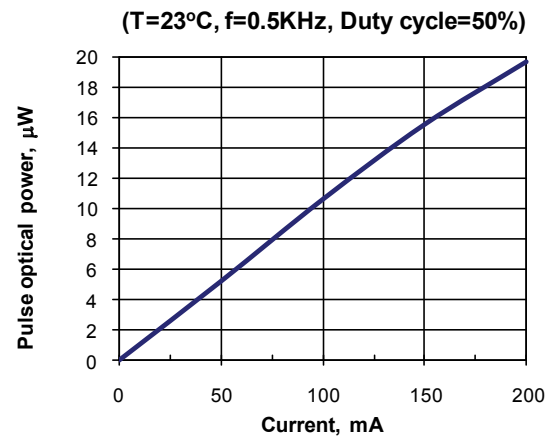
## TEC TO506.1MC0400710.TB103 parameters (without load)

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	$R_t$	$T = + 20$ °C	10.00	kOhm

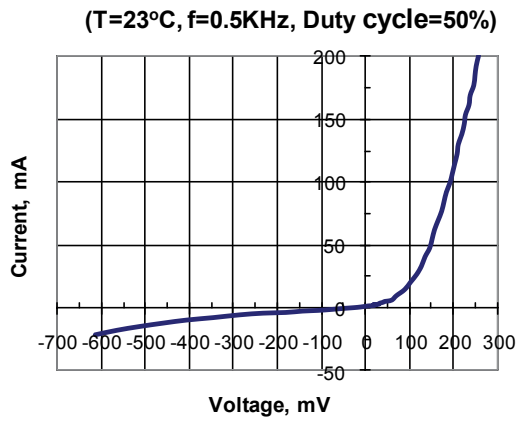
## Electroluminescence spectra



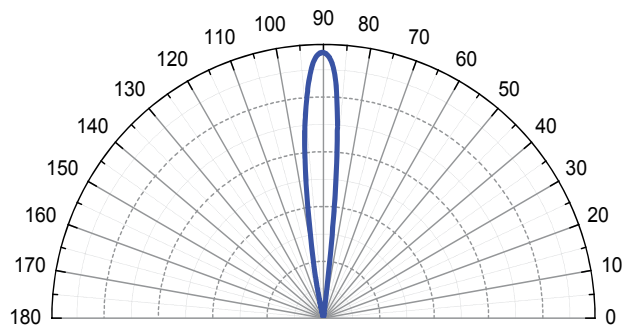
## Pulse optical power vs. current



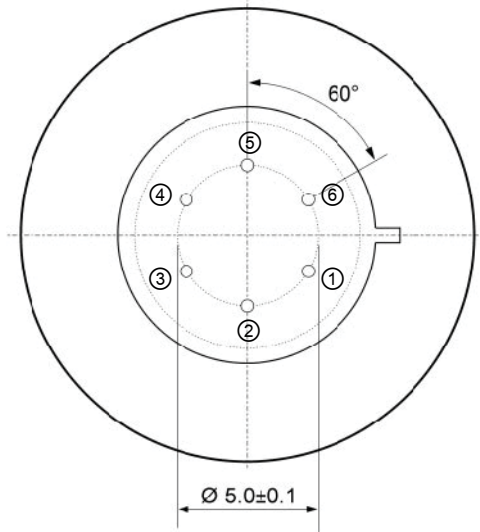
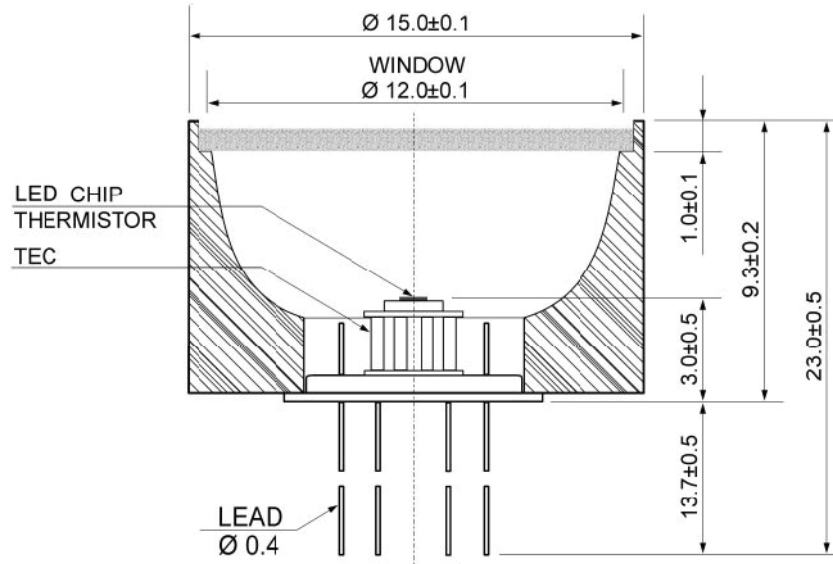
## Current vs. voltage



## Field pattern



## 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.