



Electro Optical Components, Inc.

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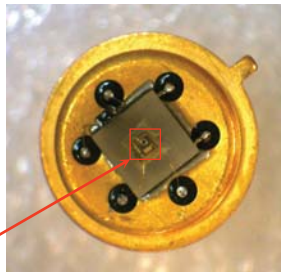
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Features

- High reliability
- Spectral Selectivity
- Easy to use in lock-in circuits
- Temperature stabilization



LED chip

Description

Light emitting diode **LED46-TEC** 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** 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.

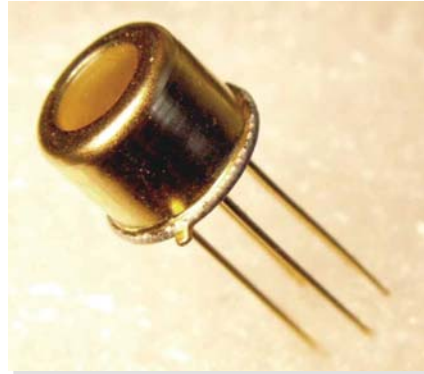
LED heterostructure is grown on InAs substrate.

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

LIGHT EMITTING DIODE

4.4 - 4.7 μm

LED46-TEC



Applications

- Measuring equipment
- Gas analysis (CO, N₂O, HCN)
- 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	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	1.15	g
	Size	D	9.2	mm
H		20.2		

* 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 μ s, duty cycle: 0.1%

Electrical and optical characteristics

Parameter	Symbol	Condition	Min	Max	Unit
Peak emission wavelength	λ_p	$I_F = 150 \text{ mA}$	$\lambda_{typ} = 4.6$		μm
			4.4	4.66	
Spectral FWHM	$\Delta\lambda$	$I_F = 150 \text{ mA}$	800	1000	nm
Pulse optical power	P_{QCW}^*	$I_F = 200 \text{ mA}$	4	12	μW
	P_{Pulsed}^{**}	$I_F = 1000 \text{ mA}$	20	55	
Forward voltage	V_F	(*)	0.3	0.8	V
Switching time	τ		10	30	ns

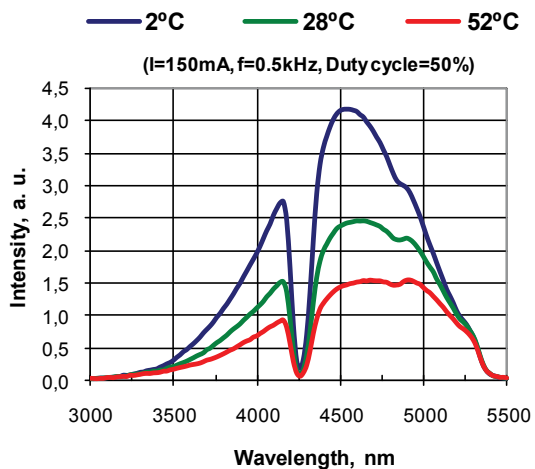
* Quasi-CW mode: repetition rate: 0.5 kHz, pulse duration: 1 ms, duty cycle: 50%, current: 200 mA

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

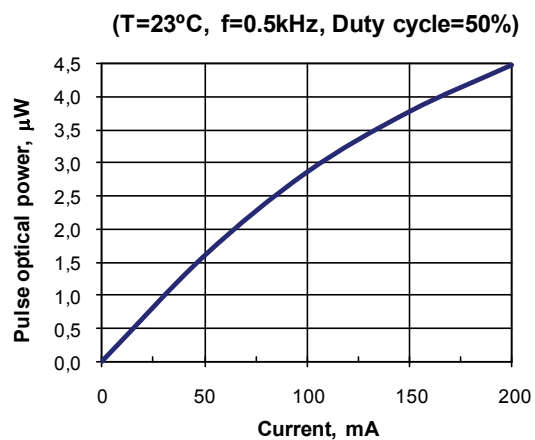
TEC TO506.1MC0400710.TB103 parameters (without load)

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

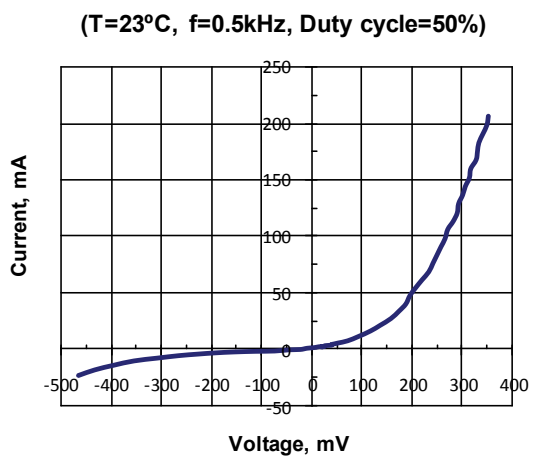
Electroluminescence spectra



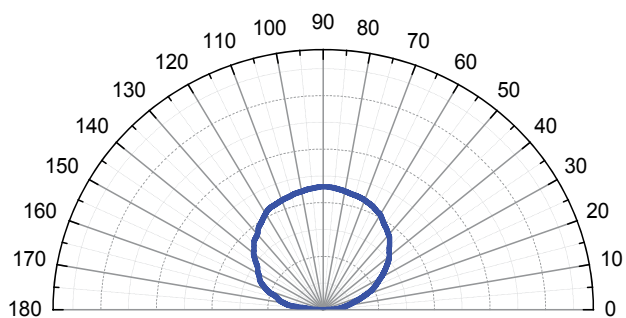
Pulse optical power vs. current



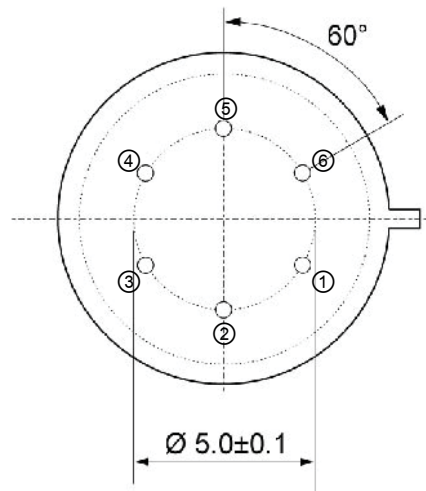
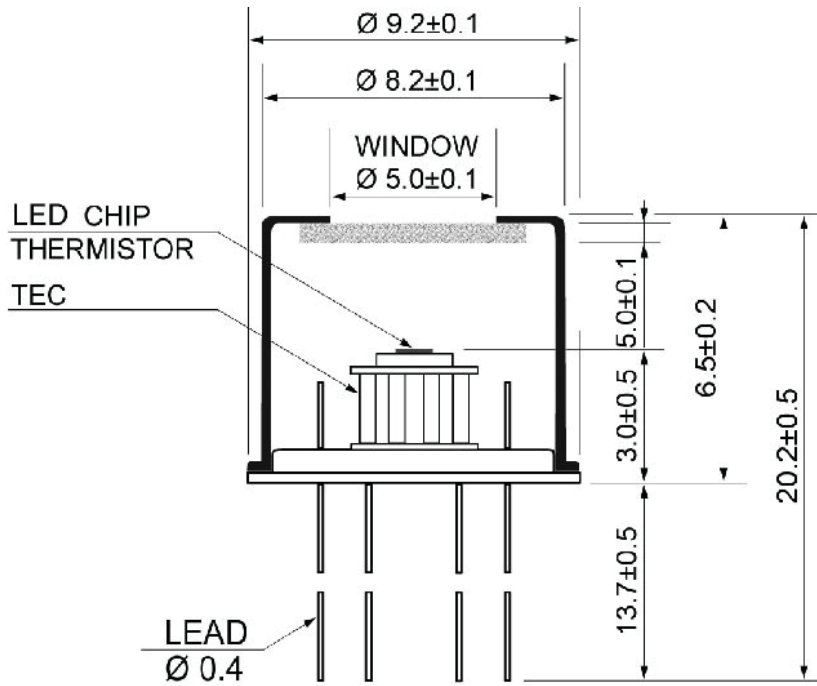
Current vs. voltage



Field pattern



TO-5 package — 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.