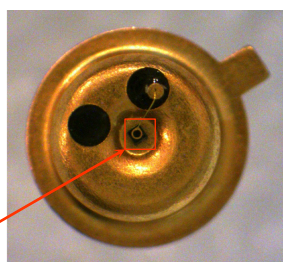


## Features

- High reliability
- Spectral Selectivity
- Easy to use in lock-in circuits
- Parabolic reflector



LED chip

## Description

Light emitting diode **LED39-PR** demonstrates typical maximum of emitting wavelength of  $\lambda_p = 3.92 \mu\text{m}$  ( $I = 150 \text{ mA}$ ,  $f = 0.5 \text{ KHz}$ , duty cycle: 50%).

The components is mounted in a standard 5.5 mm TO-18 package with parabolic reflector (PR).

LED heterostructure is grown on InAs substrate.

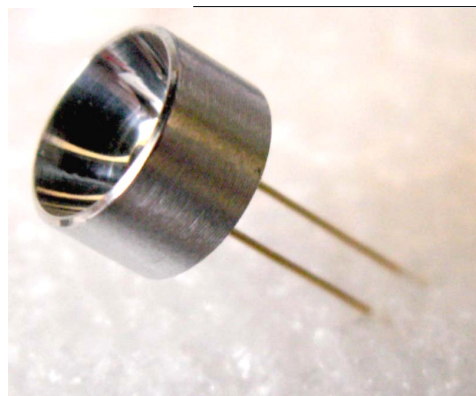
Related products: **LED39-PR** can be used in optical pair with our [PD48-05-WS](#) photodiodes.

## General characteristics

| Package          | Parameter                 | Symbol            | Value       | Unit               |
|------------------|---------------------------|-------------------|-------------|--------------------|
| TO-18<br>with PR | 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                 | 0.68        | g                  |
|                  | Size                      | D                 | 9.0         | mm                 |
|                  |                           | H                 | 18.5        |                    |

\* 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  $\mu\text{s}$ , duty cycle: 0.1%



## Applications

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

## Options

- Power supply: [LED Driver D-31M](#)

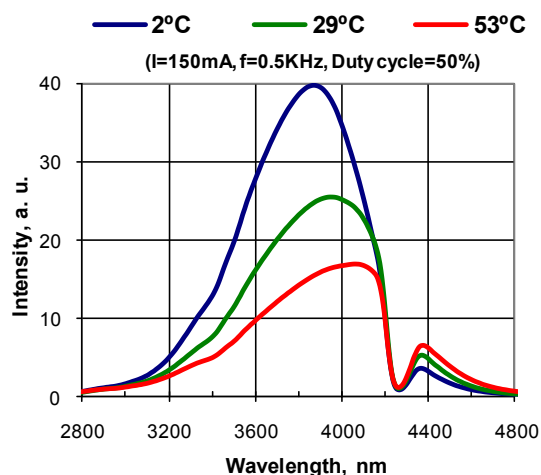
## Electrical and optical characteristics

| Parameter                | Symbol            | Condition               | Min                    | Max  | Unit          |
|--------------------------|-------------------|-------------------------|------------------------|------|---------------|
| Peak emission wavelength | $\lambda_p$       | $I_F = 150 \text{ mA}$  | $\lambda_{typ} = 3.92$ |      | $\mu\text{m}$ |
|                          |                   |                         | 3.85                   | 3.95 |               |
| Spectral FWHM            | $\Delta\lambda$   | $I_F = 150 \text{ mA}$  | 550                    | 750  | nm            |
| Pulse optical power      | $P^*_{QCW}$       | $I_F = 200 \text{ mA}$  | 15                     | 35   | $\mu\text{W}$ |
|                          | $P^{**}_{Pulsed}$ | $I_F = 1000 \text{ mA}$ | 70                     | 135  |               |
| Forward voltage          | $V_F$             | (*)                     | 0.5                    | 0.8  | V             |
| Switching time           | $\tau$            |                         | 10                     | 30   | ns            |

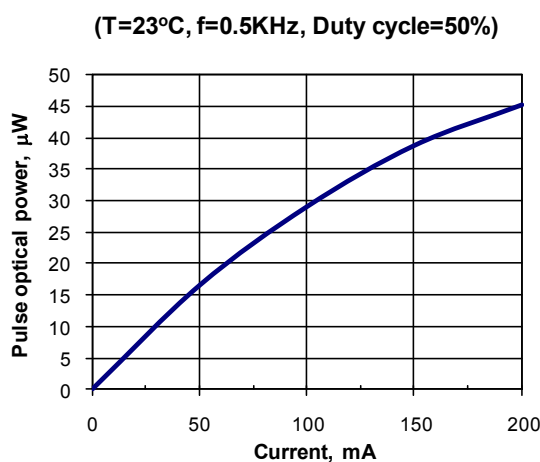
\* Quasi-CW mode: repetition rate: 0.5 kHz, pulse duration: 1 ms, duty cycle: 50%, current: 200 mA

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

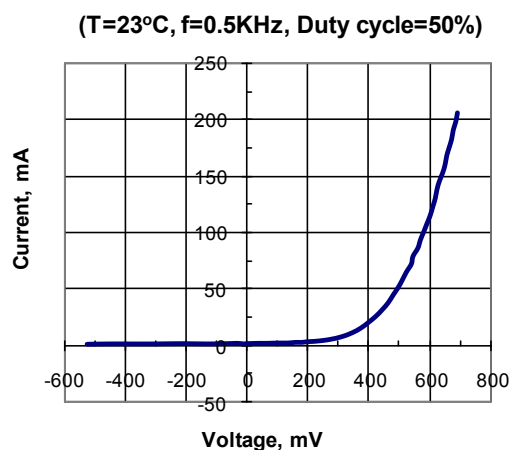
## Electroluminescence spectra



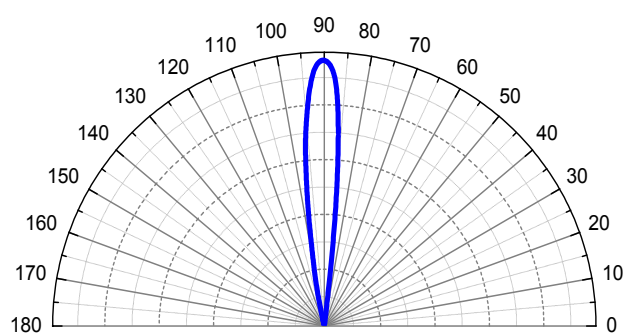
## Pulse optical power vs. current



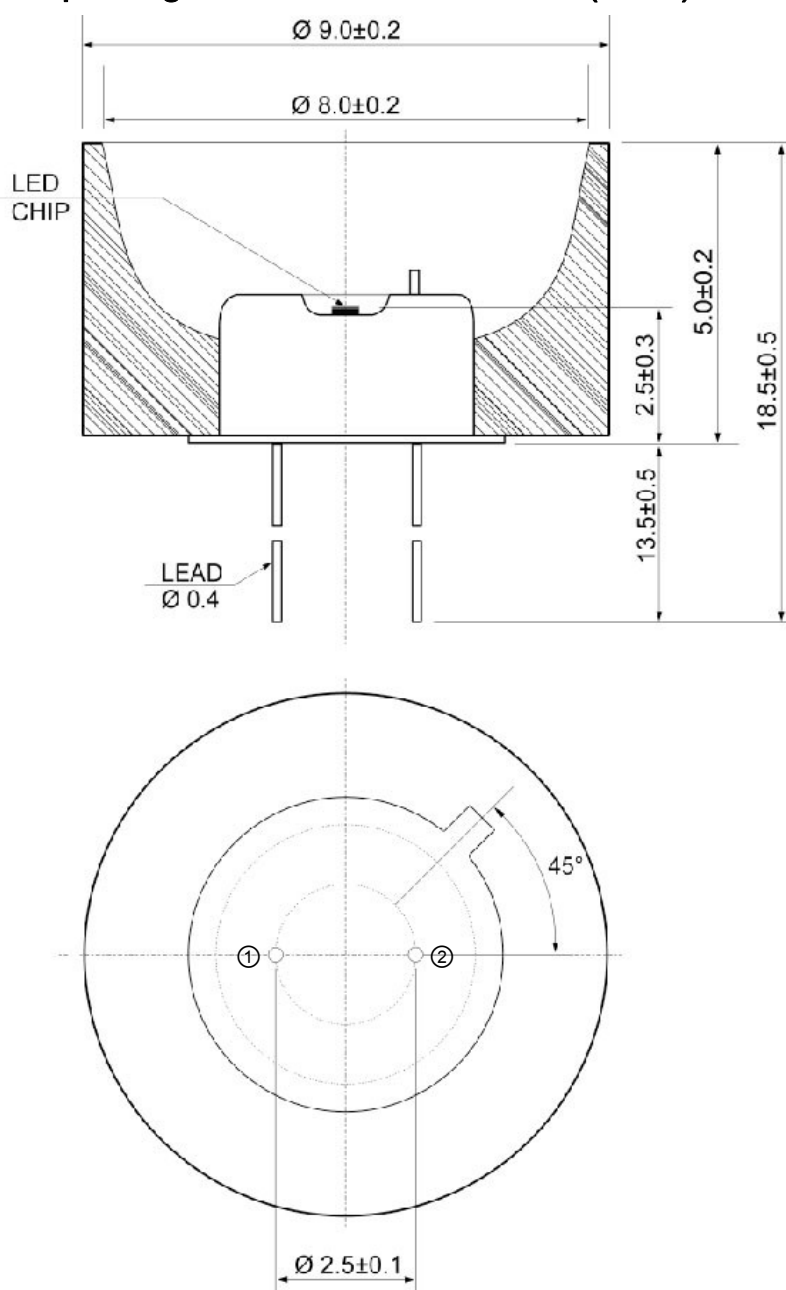
## Current vs. voltage



## Field pattern



▼ TO-18 package with PR - dimensions (mm)



| Pin                    | Description         |
|------------------------|---------------------|
| ①<br>Common to<br>case | Diode<br>(cathode)* |
| ②                      | Diode<br>(anode)*   |

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