



LED11 series

- Mid-IR LED Series
- 1.09 – 1.15 μm
- 0.8 – 1.2 mW QCW



Description

LED11 series contain one LED chip die with a typical peak wavelength of **1.10 μm** , an optical power of up to **9 mW QCW**. There are different options of packaging available, as you can choose between TO-can, with parabolic reflector (R), window (W), and containing thermoelectric cooler and thermoresistor (T).

Maximum Ratings

Parameter	Symbol	Values		Unit
		Min.	Max.	
Operating Current, QCW mode	$I_{QCW\ max}$		150	mA
Operating Current, pulsed mode	$I_{PULSE\ max}$		1.5	A
Storage Temperature	I_{STR}	-30	+50	$^{\circ}\text{C}$
Operating Temperature	T_{CASE}	-55	+60	$^{\circ}\text{C}$
Lead Solder Temperature *	T_{SLD}		+230	$^{\circ}\text{C}$

* must be completed within 3 seconds

LED Characteristics

($T_{CASE}=25^{\circ}\text{C}$)

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Peak Wavelength	λ_P	$I_F=100\text{mA QCW}$	1.09	1.10	1.15	μm
Half Width (FWHM)	$\Delta\lambda$	$I_F=100\text{mA QCW}$	60		80	nm
Optical Output Power, QCW *	P_O	QCW mode *	4.5		9.0	mW
Optical Output Power, pulsed * ²	P_O	Pulse mode * ²	28		55	mW
Operating Voltage	V_{OP}	$I_F=100\text{mA QCW}$	1.2		1.7	V
Switching Time	t_s		10		30	ns

* Repetition rate: 0.5 kHz, pulse duration: 1 ms, duty cycle: 50%, current: 200 mA

*² Repetition rate: 0.5 kHz, pulse duration: 2 μs , duty cycle: 0.1%, current: 1 A

Packages

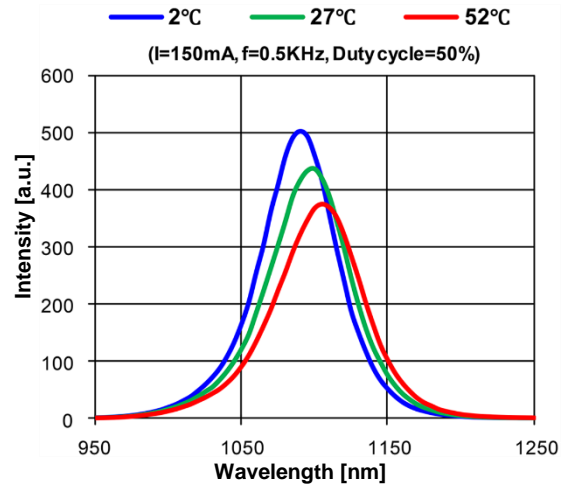
Part Number	Package
LED11	TO-18 with cap without glass window
LED11-R	TO-18 with parabolic reflector without glass window
LED11-RW	TO-18 with parabolic reflector with glass window
LED11-TW	TO-5 with built-in thermocooler and thermoresistor, covered by cap with glass window
LED11-TRW	TO-5 with built-in thermocooler and thermoresistor, covered by parabolic reflector with glass window

All parameters refer to LEDs in TO18 package with a cavity and operation at ambient temperature 25 $^{\circ}\text{C}$ unless otherwise stated.



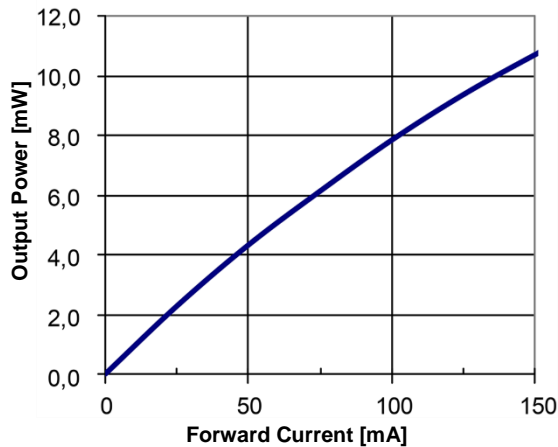
Performance Characteristics

Spectra At Different Temperatures (QCW)



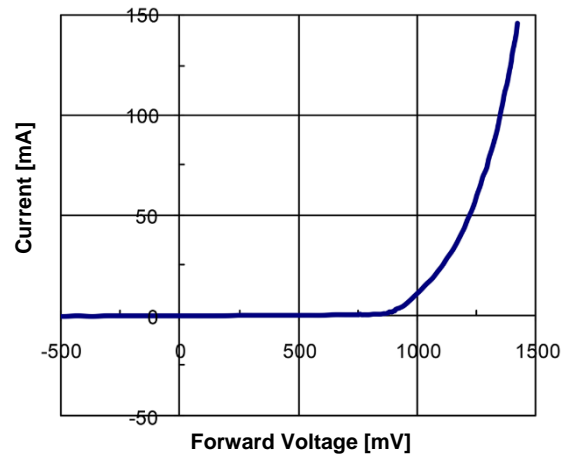
Typ. Optical Power Characteristics (QCW)

(T=23°C, f=0.5KHz, Duty cycle=50%)



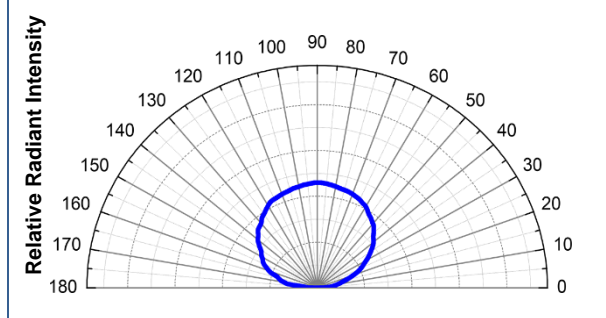
Typ. Current – Voltage Characteristics (QCW)

(T=23°C, f=0.5KHz, Duty cycle=50%)

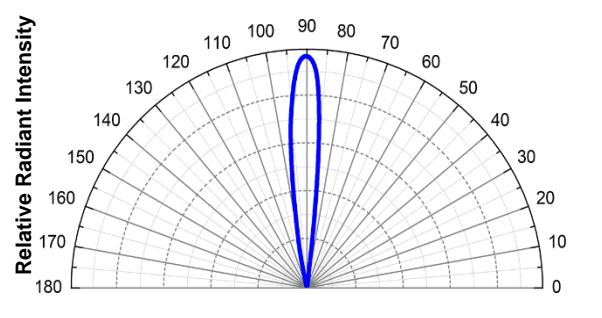


Radiant Characteristics (Far-Field Pattern)

Package With Cap



Package with Parabolic Reflector

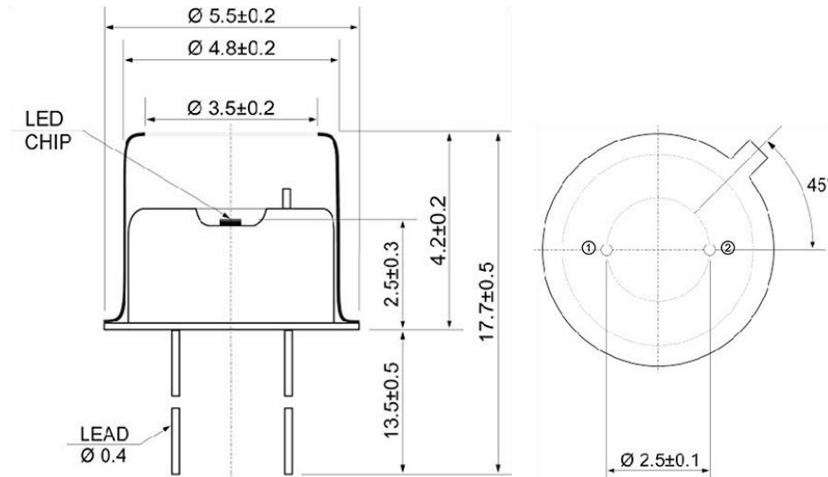




Outline Dimensions

LED11

TO-18, with cap, without window



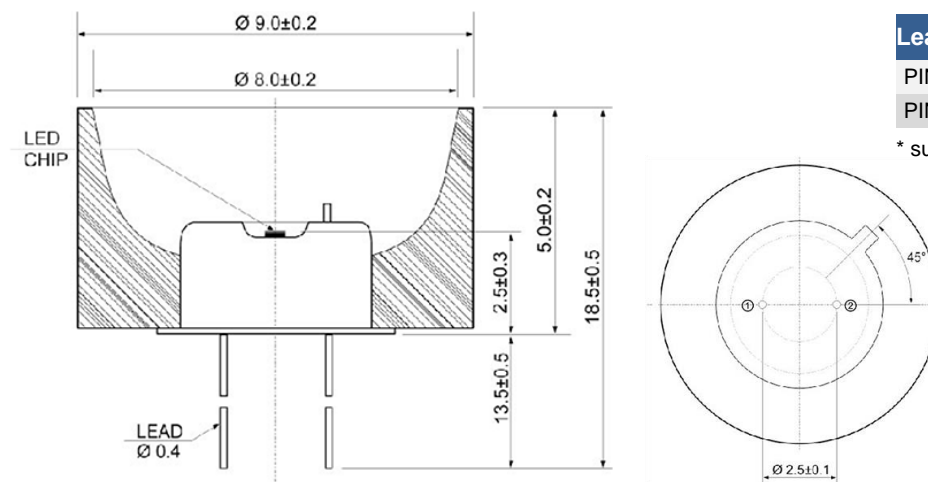
Lead	Description
PIN 1	LED Cathode *
PIN 2	LED Anode *

* subject to change

All Dimensions in mm

LED11-R

TO-18, with parabolic reflector, without window



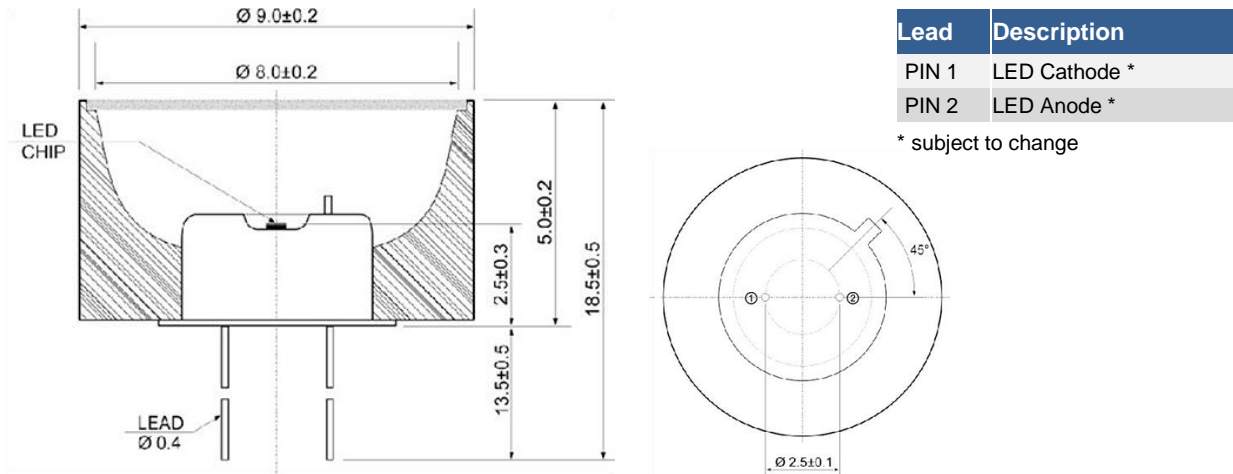
Lead	Description
PIN 1	LED Cathode *
PIN 2	LED Anode *

* subject to change

All Dimensions in mm

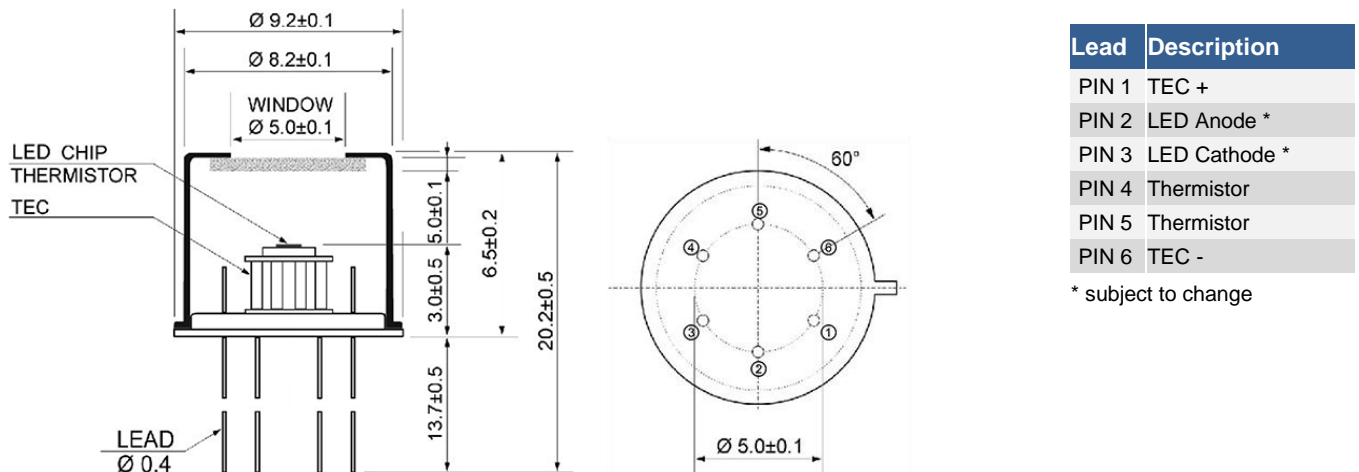


LED11-RW **TO-18, with parabolic reflector and window**



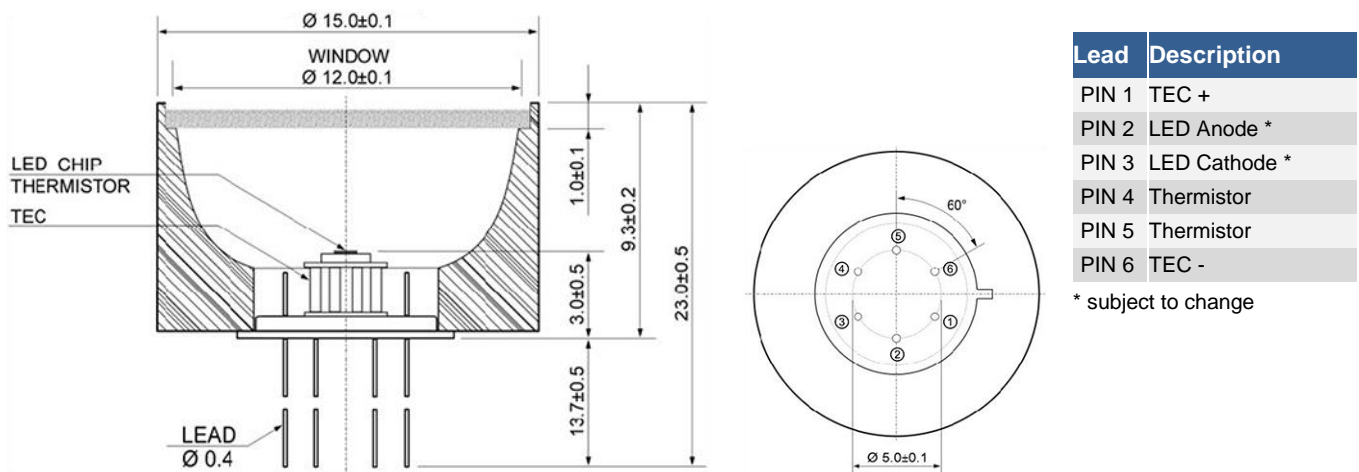
All Dimensions in mm

LED11-TW **TO-5, thermocooler and thermoresistor, cap and window**



All Dimensions in mm

LED11-TRW **TO-5, thermocooler and thermoresistor, cap and window**

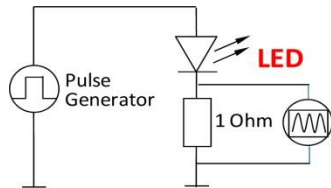


All Dimensions in mm

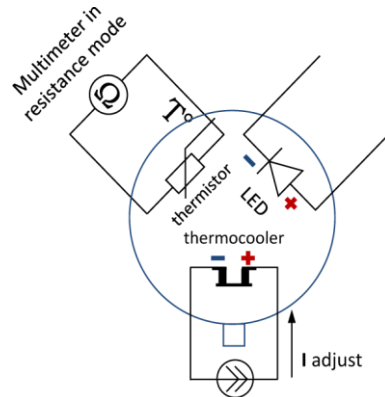


Operating Regime

LED Basic Circuit Connection



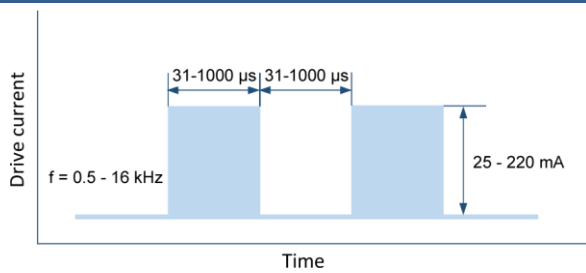
LED With Thermoelectric Module



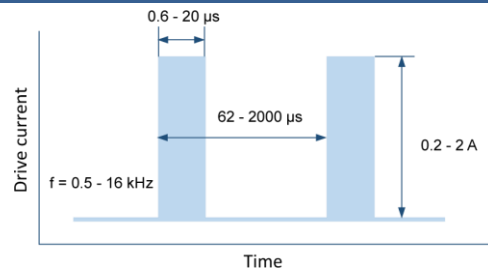
Constant current source

We recommend to use **Quasi Continuous Wave (QCW) mode** with duty cycle 50% or 25% to obtain maximum average optical power and **Pulse mode** to obtain maximum peak power. Hard CW (continuous wave) mode is **NOT** recommended.

Quasi Continuous Wave (QCW) mode



Pulse Mode





Precautions

Cautions:

- Check your connection circuits before turning on the LED.
- Mind the LED polarity: LED anode is marked with a RED dot.
Reverse voltage applying is FORBIDDEN!
- DO NOT connect the LED to the multimeter.
- Control the current applied to the LED in order not to exceed the maximum allowable values.

Soldering:

- Do avoid overheating of the LED
- Do avoid electrostatic discharge (ESD)
- Do avoid mechanical stress, shock, and vibration
- Do only use non-corrosive flux
- Do not apply current to the LED until it has cooled down to room temperature after soldering

Static Electricity:

LEDs are **sensitive to electrostatic discharge (ESD)**. Precautions against ESD must be taken when handling or operating these LEDs. Surge voltage or electrostatic discharge can result in complete failure of the device.



Operation:

Do only operate LEDs with a current source.

Running these LEDs from a voltage source will result in complete failure of the device.

Current of a LED is an exponential function of the voltage across it. Usage of current regulated drive circuits is mandatory.



Revisions History

Rev.	Rel. Date	Chapter	Modification	Page
A1	2020-07-09	-	Initial release	-

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The above specifications are for reference purpose only and subjected to change without prior notice