rev. 2.0, 18.10.2018

LED16 series

- Mid-IR LED Series
- 1.65 µm, >7 mW QCW

RoHS COMPLIANT   Pb Pb-Free

Description

LED16 series are fabricated from narrow band-gap GaInAsSb/AlGaAsS-based heterostructures lattice matched to GaSb substrate. This Mid-IR LEDs provide a typical peak wavelength of 1.65 µm, an optical power of typ. 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 Temperature [1]	T_{CASE}	-60	+ 90	°C
Storage Temperature [1]	T_{STG}	-60	+ 90	°C
Lead Solder Temperature [2]	T_{SLD}		+ 180	°C

[1] Temperature range may vary for different packaging types.
[2] must be completed within 5 seconds

LED Characteristics (T_{CASE}=25°C)

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Peak Wavelength	λ_P	I_F=25mA QCW [1]	1.60		1.69	µm
Half Width (FWHM)	$\Delta\lambda$	I_F=25mA QCW [1]	120		150	nm
Optical Output Power, QCW *	P_O	I_F=200mA QCW [1]	7	9		mW
Optical Output Power, pulsed [2]	P_O	I_F=1A Pulse [2]	20	24		mW
Operating Current	I_{QCW}	QCW Mode [1]			200	mA
	I_{pulse}	Pulse Mode [2]			1	A
	I_{DC}	DC Mode [3]			100	mA
Operating Voltage	V_{OP}	I_F=200mA QCW [1]	0.7		1.1	V
Switching Time	ts					ns

[1] repetition rate: 0.5 KHz, pulse duration: 1 ms, duty cycle: 50%.
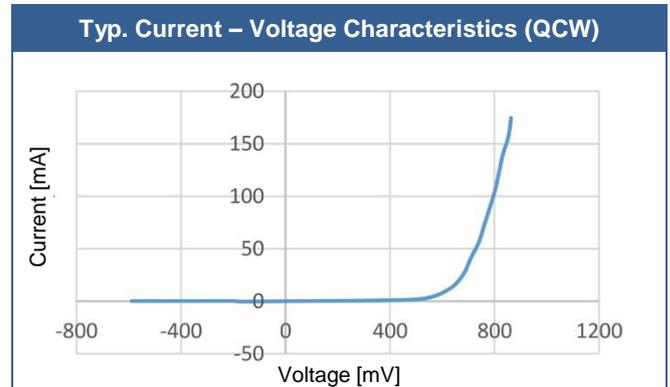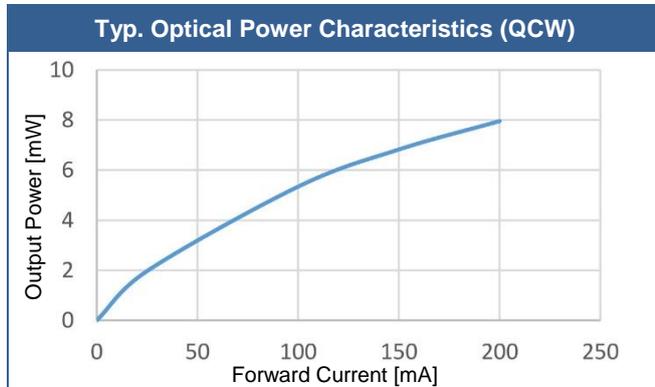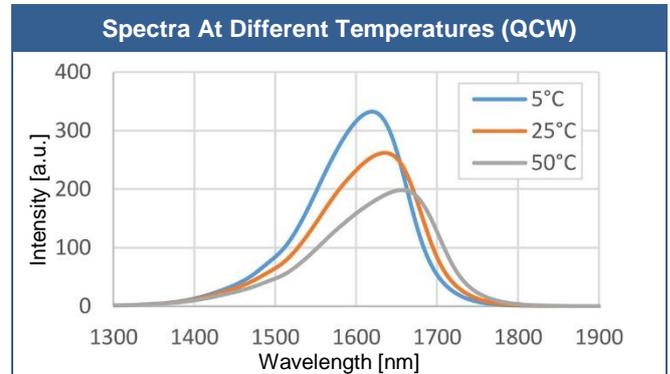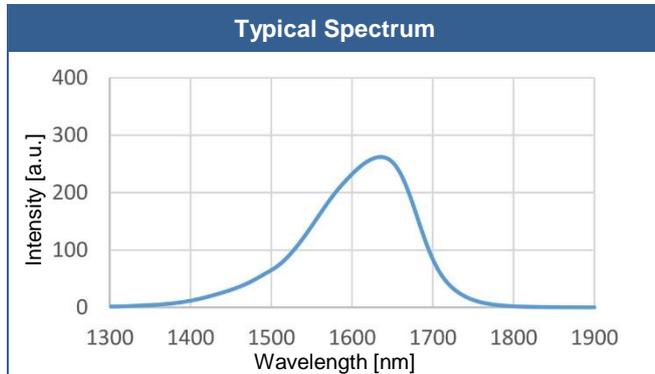[2] repetition rate: 0.5 KHz, pulse duration: 20 µs, duty cycle: 1%.
[3] repetition rate: direct current.
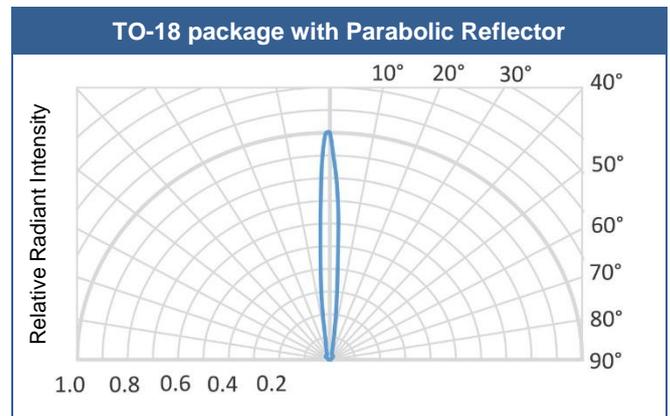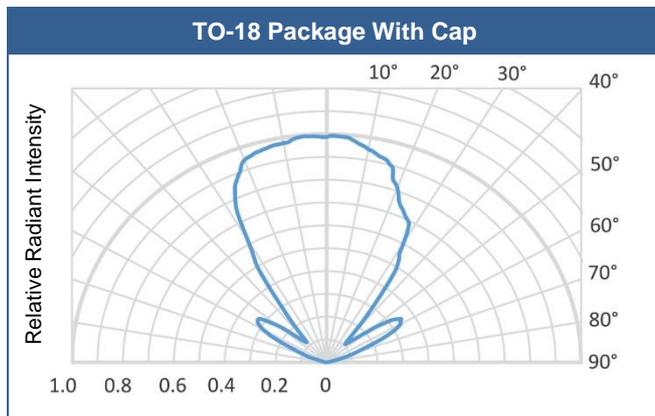
Package Options

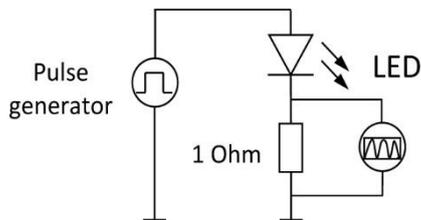| Part Number	Description
LED16	TO-18 with cap with glass window
LED16-R	TO-18 with parabolic reflector without glass window
LED16-RW	TO-18 with parabolic reflector with glass window
LED16-TW	TO-5 with built-in thermocooler and thermoresistor, covered by cap with glass window
LED16-TRW	TO-5 with built-in thermocooler and thermoresistor, covered by parabolic reflector with glass window

Performance Characteristics

Typical Spectrum

Spectra At Different Temperatures (QCW)

Typ. Optical Power Characteristics (QCW)

Typ. Current – Voltage Characteristics (QCW)

Radiant Characteristics (Far-Field Pattern)

TO-18 Package With Cap

TO-18 package with Parabolic Reflector

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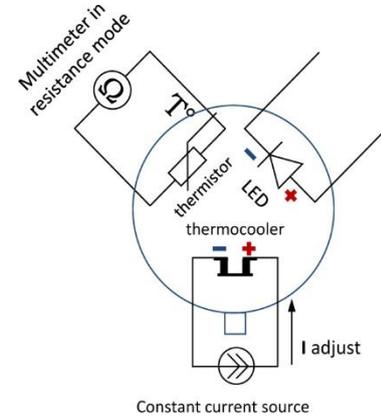
Operating Regime

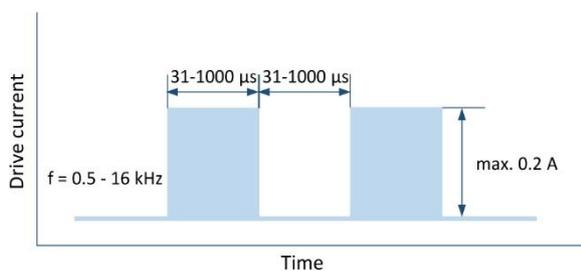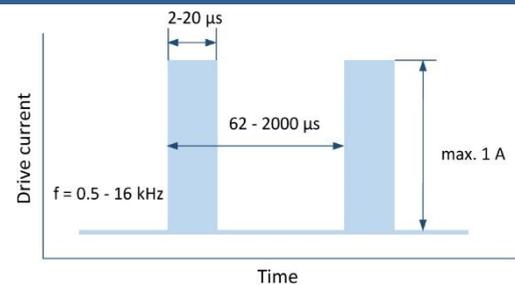| LED Basic Circuit Connection	LED With Thermoelectric Module

We recommend using **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.

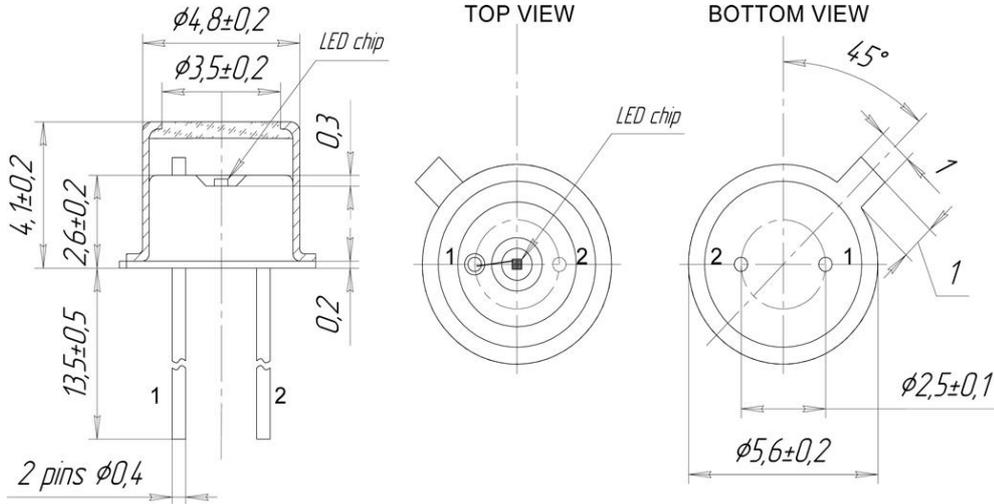| Quasi Continuous Wave (QCW) mode	Pulse Mode

Important 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.

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Outline Dimensions

LED16 — TO-18, cap, glass window
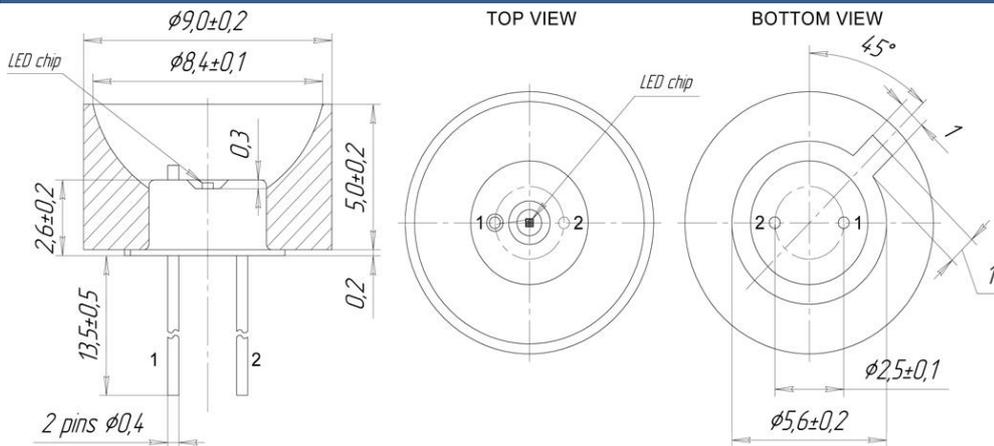

Lead	Description
PIN 1	LED Anode
PIN 2	LED Cathode

All Dimensions in mm

LED16-R — TO-18, parabolic reflector, without glass window

Lead	Description
PIN 1	LED Anode
PIN 2	LED Cathode

All Dimensions in mm

LED16-RW — TO-18, parabolic reflector, glass window

Lead	Description
PIN 1	LED Anode
PIN 2	LED Cathode

All Dimensions in mm
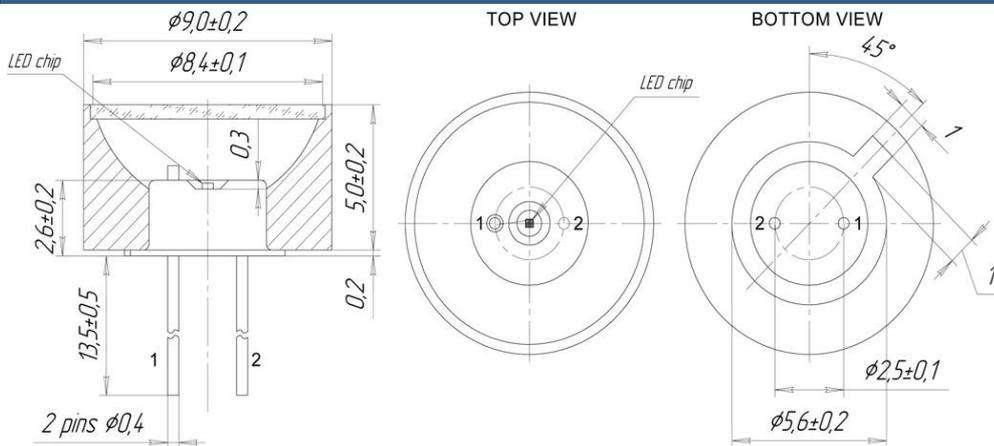
ROITHNER LASERTECHNIK GmbH
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LED16-TW   TO-5 built-in thermocooler and thermoresistor, cap, glass window
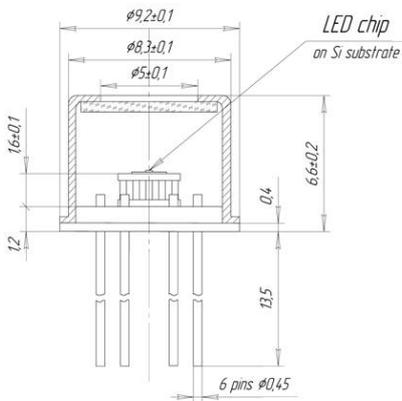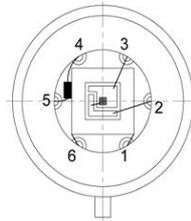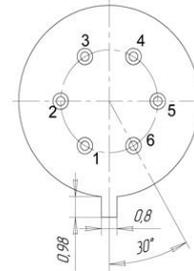
Lead	Description
PIN 1	TEC +
PIN 2	LED Anode
PIN 3	LED Cathode
PIN 4	Thermistor
PIN 5	Thermistor
PIN 6	TEC -

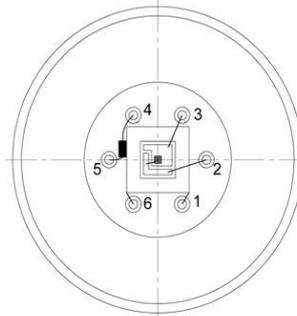*All Dimensions in mm*

LED16-TRW   TO-5, built-in thermocooler and thermoresistor, parabolic reflector, glass window
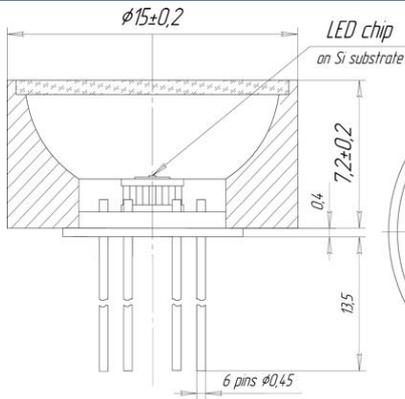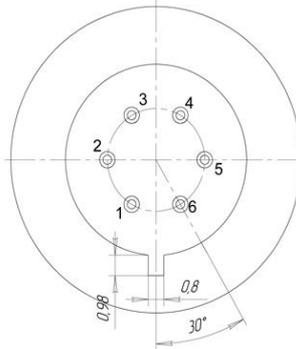
Lead	Description
PIN 1	TEC +
PIN 2	LED Anode
PIN 3	LED Cathode
PIN 4	Thermistor
PIN 5	Thermistor
PIN 6	TEC -

All Dimensions in mm

Precautions

Soldering:

- Do avoid overheating of the PD
- 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.

CAUTION
ELECTROSTATIC
SENSITIVE
DEVICES
DO NOT OPEN OR HANDLE
EXCEPT AT A
STATIC-FREE WORKSTATION

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.