LED Microsensor NT

Near-Infrared (NIR) Light-Emitting Diode

2.20 - 2.29 µm

Lms22LED series

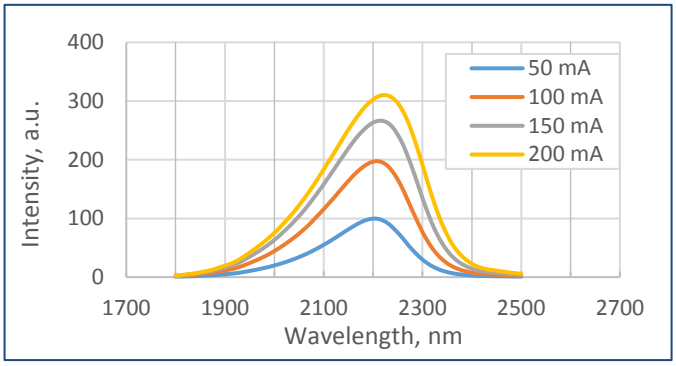
Device parameters	Symbol	Value	Units
Operating/ storage temperature	T_{stg}	-60..+90*	°C
Soldering temperature (can be applied for not more than 5 secs)	T_{sol}	+180	°C

*Temperature range may vary for different packaging types.

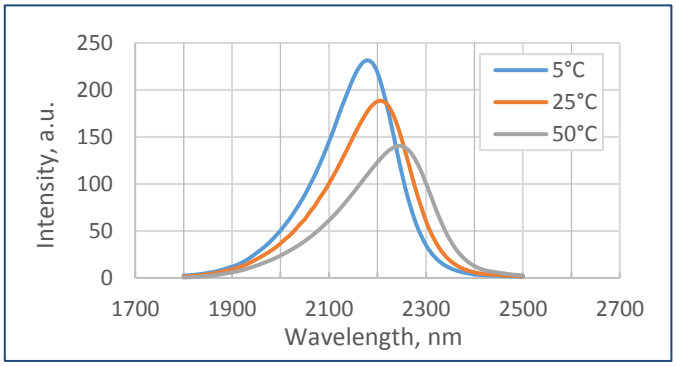
All parameters refer to LEDs in TO18 package with a cavity and operation at ambient temperature 25°C unless otherwise stated.

LED parameters	Conditions	Symbol	Value	Units
Peak emission wavelength[1]	qCW mode[3] I = 150 mA	λ_p	2.20 - 2.29	µm
FWHM of the emission band[1]	qCW mode[3] I = 150 mA	FWHM	150 - 250	nm
Average optical power (minimal / typical)[1]	qCW mode[3] I = 200 mA	P_{qCW}	min 0.8 / typ 1	mW
Peak optical power (minimal / typical)[2]	Pulse mode[4] I = 1 A	P_{pul}	min 7.5 / typ 9	mW
Maximum operating current	qCW mode[3]	I_{qCW}	250	mA
	Pulse mode[4]	I_{pul}	2	A
Forward voltage[1]	qCW mode[3] I = 200 mA	V	0.5 - 2.5	V

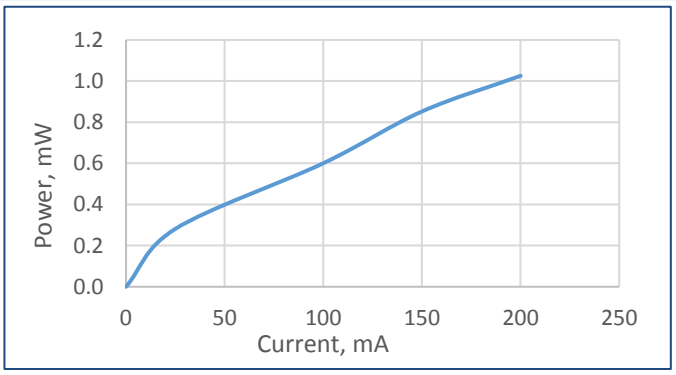
Typical spectra (qCW[3])



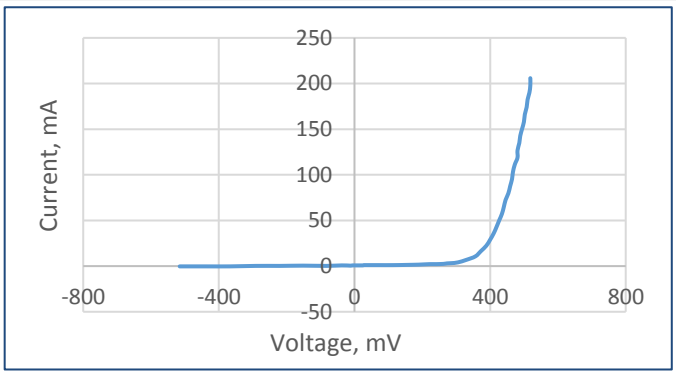
Spectra at different temperatures (qCW[3], 150 mA)



Typical optical power characteristic (qCW[3])



Typical current-voltage characteristic (qCW[3])



[1] Parameter tested for each device.

[2] Parameter tested for representative sampling.

[3] qCW mode: repetition rate: 0.5 KHz, pulse duration: 1 ms, duty cycle: 50%.

[4] Pulse mode: repetition rate: 0.5 KHz, pulse duration: 20 µs, duty cycle: 1%.

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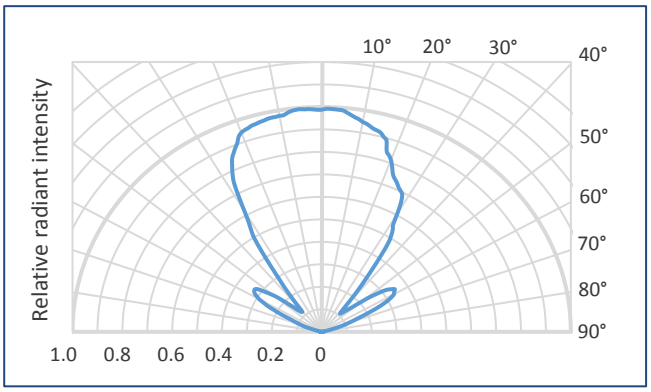
10, A, Kurchatova str., 1N, St-Petersburg, 194223, Russia; info@lmsnt.com; www.lmsnt.com

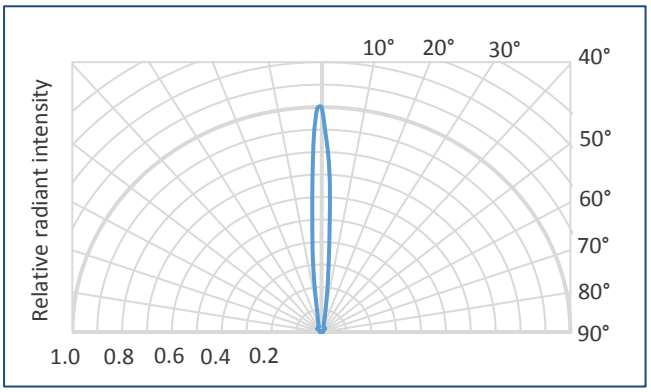
Packages	Model
TO-18 with a cap without a glass window	Lms22LED
TO-18 with a parabolic reflector without a glass window	Lms22LED-R
TO-18 with a parabolic reflector with a glass window	Lms22LED-RW
TO-5 with a built-in thermocooler and thermoresistor, covered by a cap with a glass window	Lms22LED-TEM
TO-5 with a built-in thermocooler and thermoresistor, covered by a parabolic reflector with a glass window	Lms22LED-TEM-R

Radiant characteristics (far-field pattern)

TO-18 package with a cap



TO-18 package with a parabolic reflector



Related products:

- **Photodiodes Lms24PD, Lms25PD series** - detectors of mid-infrared radiation;
- **LED drivers (D-41i, D-51i, minidrivers mD-1c, mD-1p)** - provide LED power supply in pulse modes.

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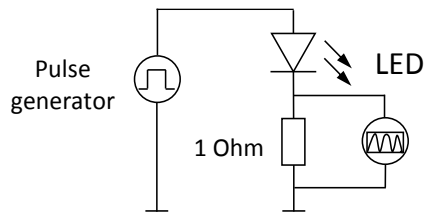
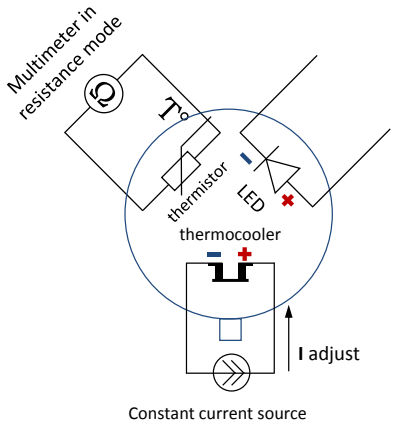
To drive the LED we recommend the following basic circuit connections:

LED basic circuit connection

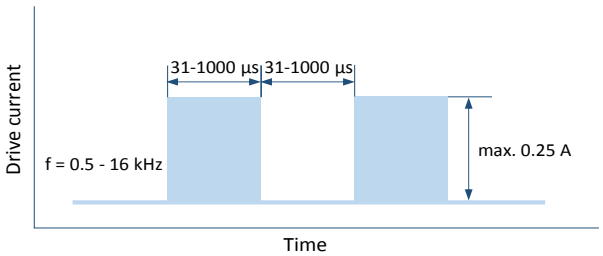


LED with thermoelectric module basic circuit connection

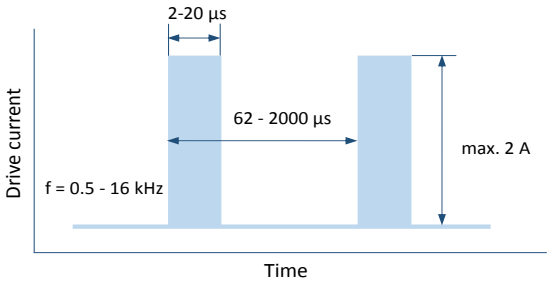


We recommend using **Quasi Continuous Wave (qCW) mode** with a duty cycle 50% or 25% to obtain maximum average optical power and short **Pulse modes** to obtain maximum peak power. Hard CW (continius wave) mode is NOT recommended.

Quasi Continuous Wave (qCW) mode



Pulse mode



IMPORTANT CAUTIONS:

- please check your connection circuit before turning on the LED;
- please mind the LED polarity: anode is marked with a RED dot; REVERSE voltage applying is FORBIDDEN;
- please do not connect the LED to the multimeter;
- please control the CURRENT applied to the LED in order NOT to EXCEED the maximum allowable values.

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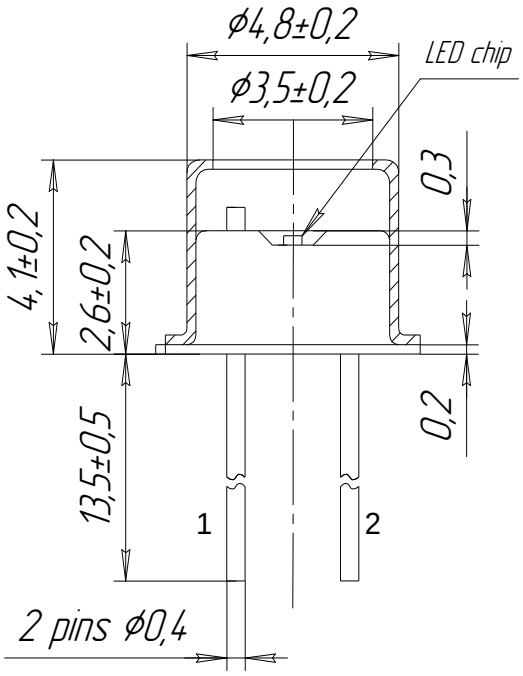
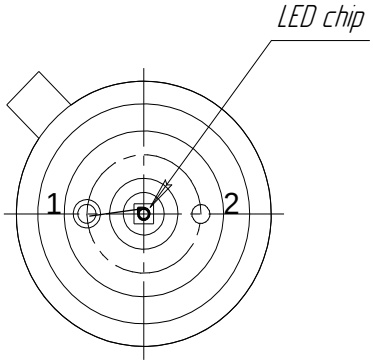
Technical Drawings

Lms22LED

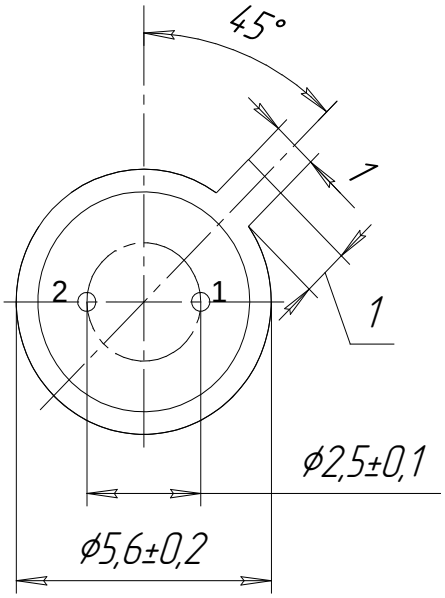


1 – LED cathode
2– LED anode

TOP VIEW



BOTTOM VIEW



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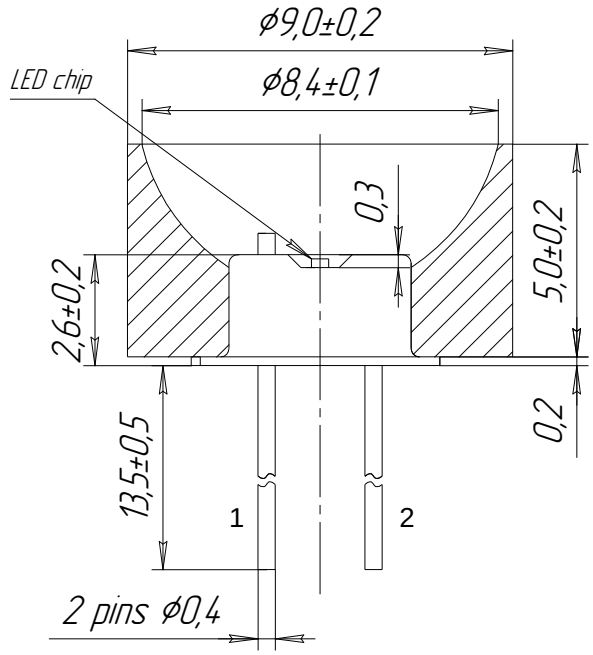
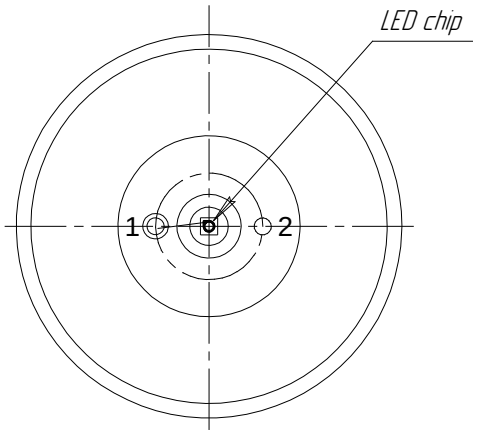
Technical Drawings

Lms22LED-R

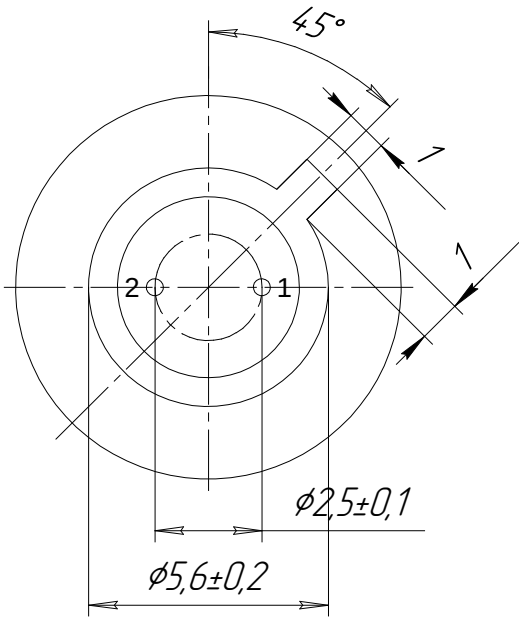


1 – LED cathode
2– LED anode

TOP VIEW



BOTTOM VIEW



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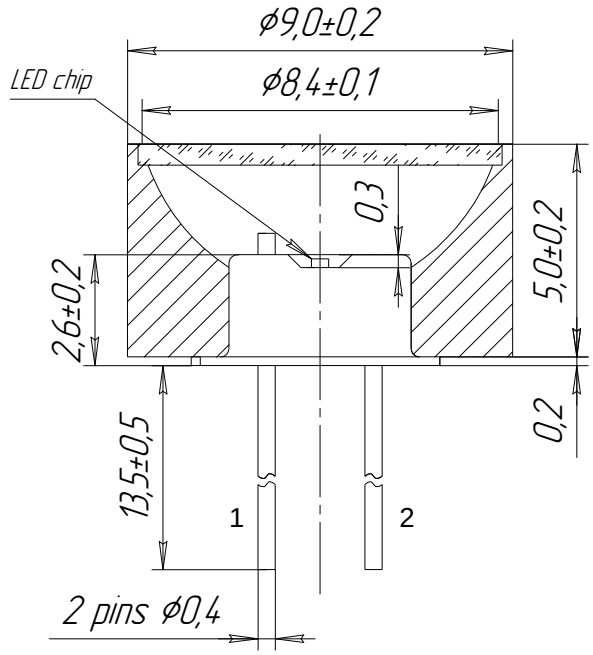
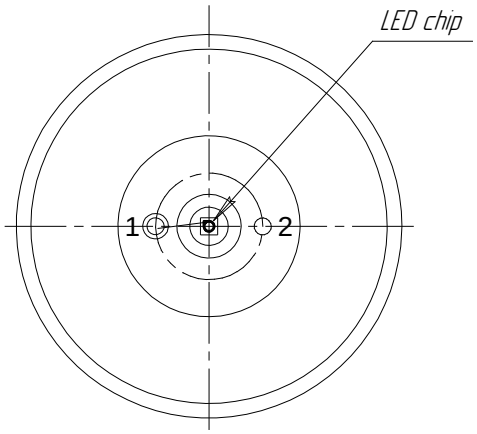
Technical Drawings

Lms22LED-RW

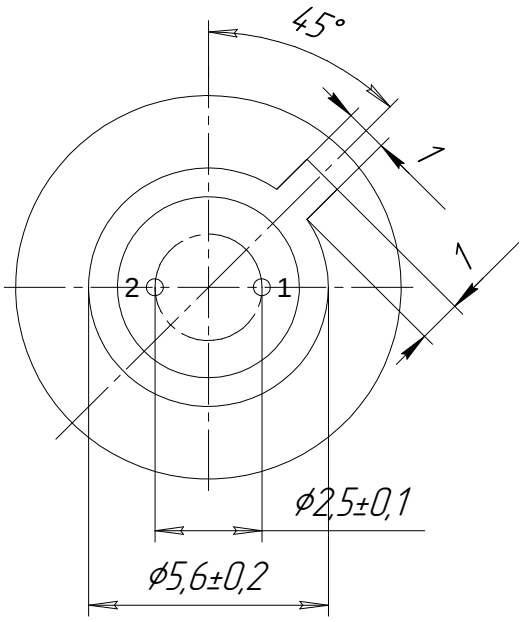


1 – LED cathode
2– LED anode

TOP VIEW



BOTTOM VIEW



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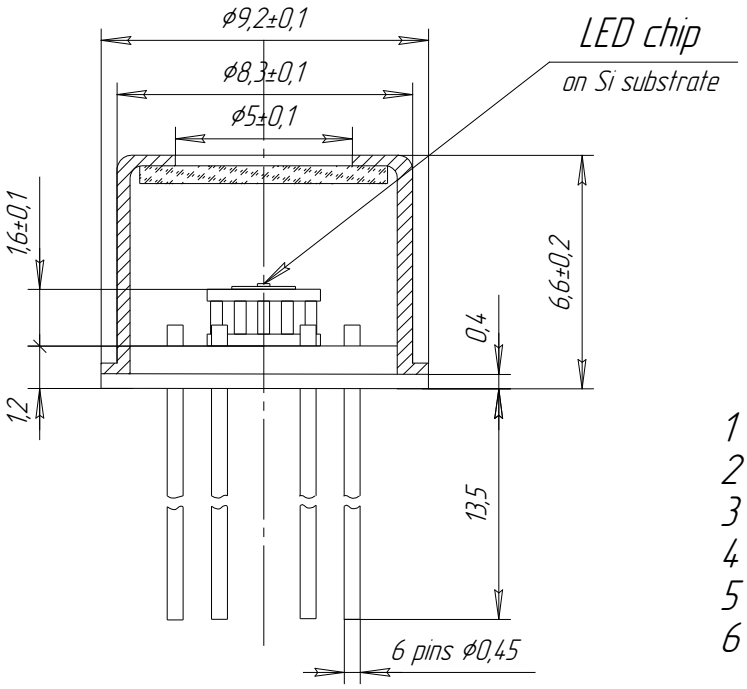
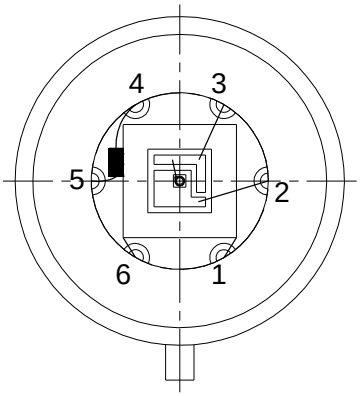
Technical Drawings

Lms22LED-TEM

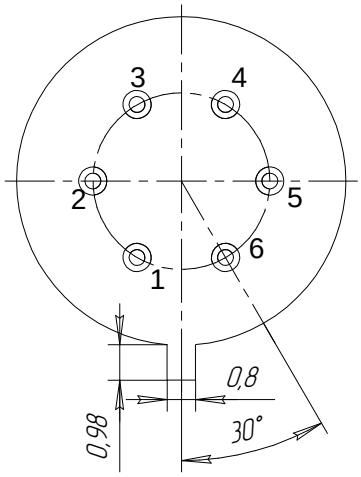


1 – TEC +
2 – LED anode
3 – LED cathode
4 – thermistor
5 – thermistor
6 – TEC –

TOP VIEW



BOTTOM VIEW



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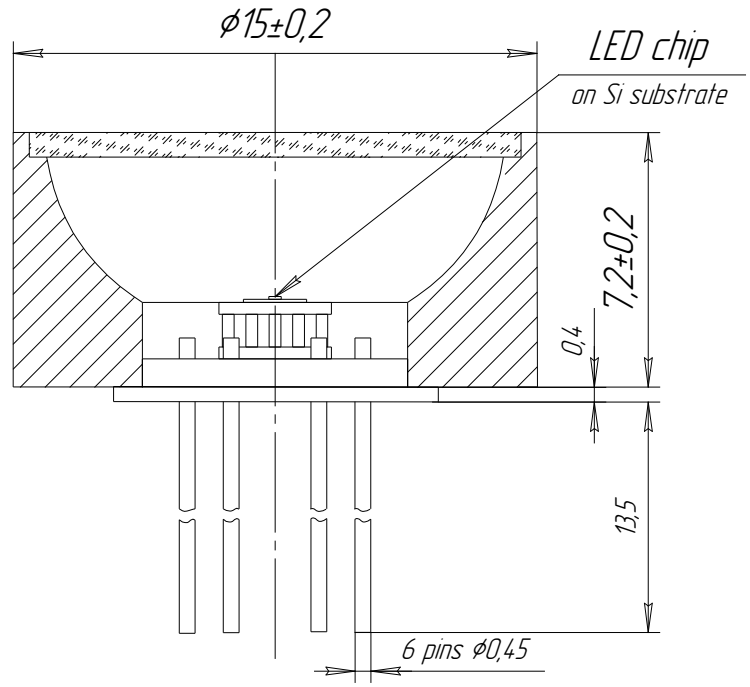
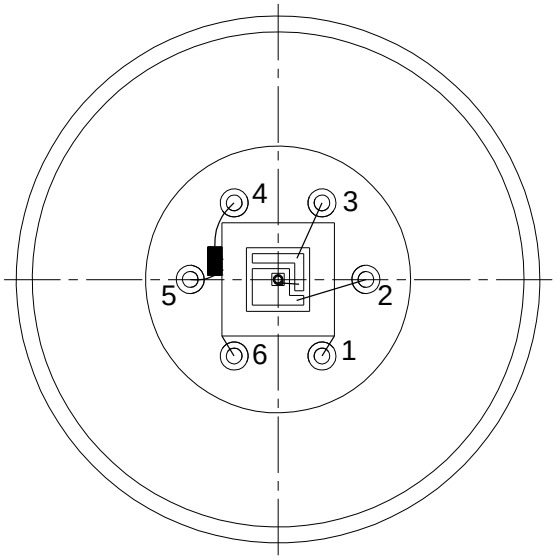
Technical Drawings

Lms22LED-TEM-R

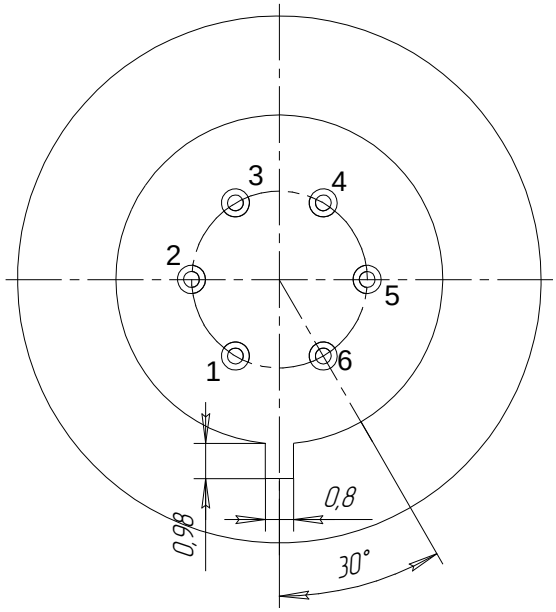


1 – TEC +
2 – LED anode
3 – LED cathode
4 – thermistor
5 – thermistor
6 – TEC –

TOP VIEW



BOTTOM VIEW



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