LED Microsensor NT

Mid-Infrared (MIR) Light-Emitting Diode
4-element 1-wavelength

4.10 - 4.30 µm

Lms43LED-4M series

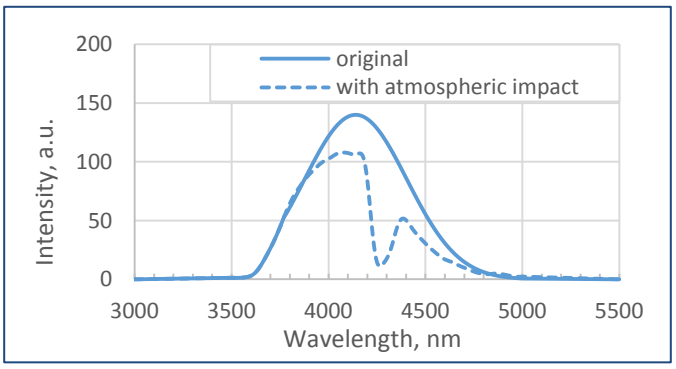
Device parameters	Symbol	Value	Units
Operating/ storage temperature	T_{opr}/ T_{stg}	-60..+90*	°C
Soldering temperature (can be applied for not more than 5 secs)	T_{sol}	+180	°C

*Temperature range may vary for different packaging types.

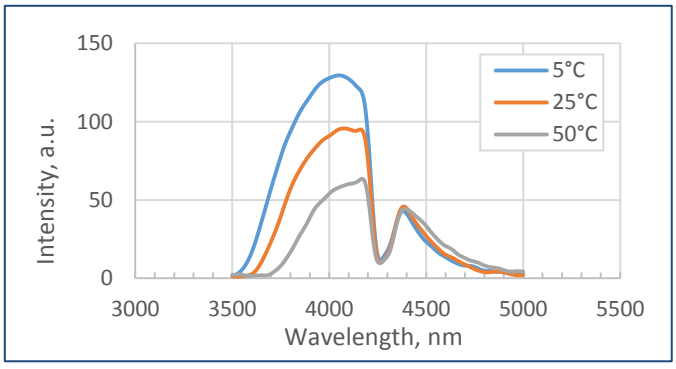
All parameters refer to LEDs in TO18 package with a cavity and operation at ambient temperature 25°C unless otherwise stated.

LED parameters	Conditions	Symbol	Value	Units
Peak emission wavelength[1]	qCW mode[3] I = 200 mA	λ_p	4.10 - 4.30	µm
FWHM of the emission band[1]	qCW mode[3] I = 200 mA	FWHM	400 - 1200	nm
Average optical power (minimal / typical)[1]	qCW mode[3] I = 800 mA	P_{qcw}	min 50 / typ 100	µW
Peak optical power (minimal / typical)[2]	Pulse mode[4] I = 4 A	P_{pul}	min 400 / typ 700	µW
Maximum operating current	qCW mode[3]	$I_{max\ qcw}$	1	A
	Pulse mode[4]	$I_{max\ pulse}$	8	A
Forward voltage[1]	qCW mode[3] I = 800 mA	V	0.25 - 0.7	V

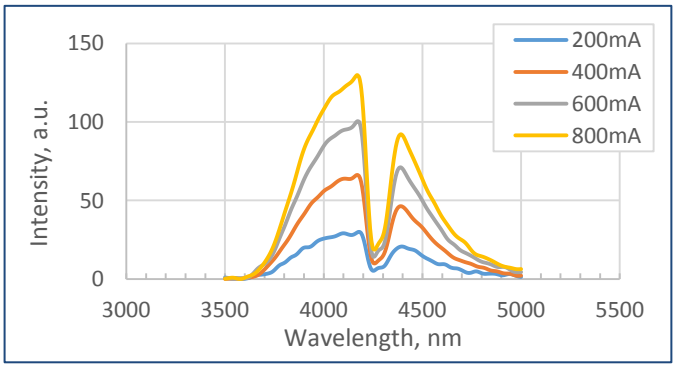
Typical spectrum (qCW[3])



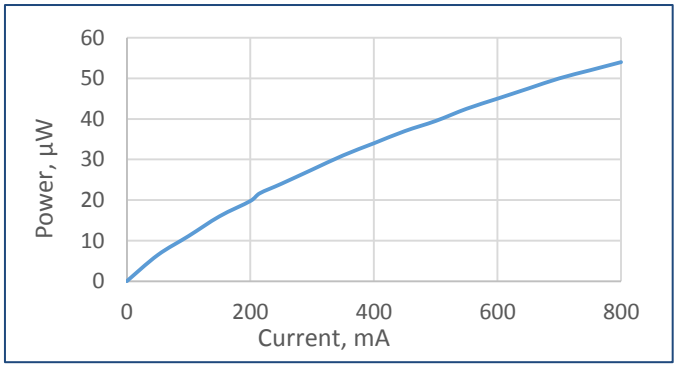
Spectra at different temperatures (qCW[3], 150 mA)



Typical spectra at different currents (qCW[3])



Typical optical power 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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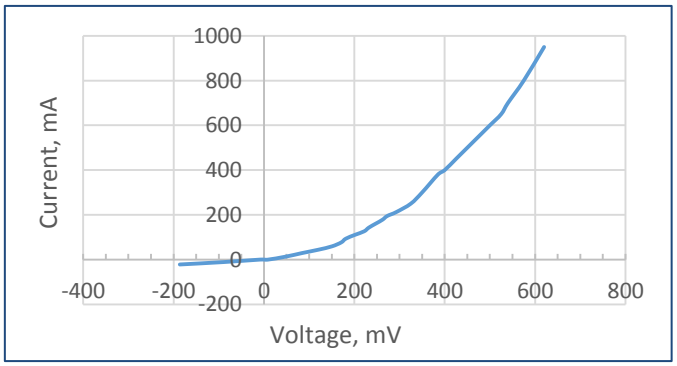
Typical current-voltage characteristic (qCW[3])



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

Packages	Model
TO-18 with a cap without a glass window	Lms43LED-4M
TO-18 with a parabolic reflector without a glass window	Lms43LED-4M-R
TO-18 with a parabolic reflector with a glass window	Lms43LED-4M-RW
TO-5 with a built-in thermocooler and thermoresistor, covered by a cap with a glass window	Lms43LED-4M-TEM
TO-5 with a built-in thermocooler and thermoresistor, covered by a parabolic reflector with a glass window	Lms43LED-4M-TEM-R

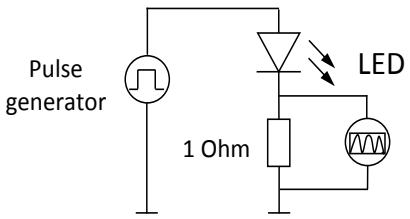
Related products:

- **Photodiodes Lms43PD series** - detectors of mid-infrared radiation;
- **LED driver** D-41i - provides LED array power supply.

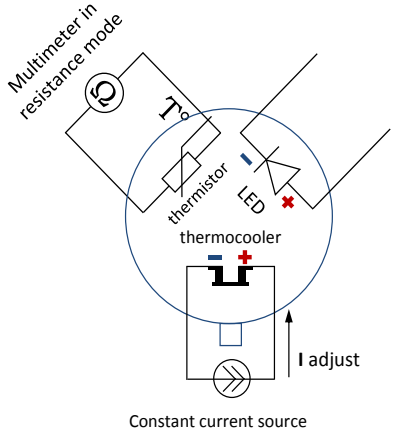
NOTE! nominal driver current will be divided by 4 (number of chips in an array)

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

LED basic circuit connection

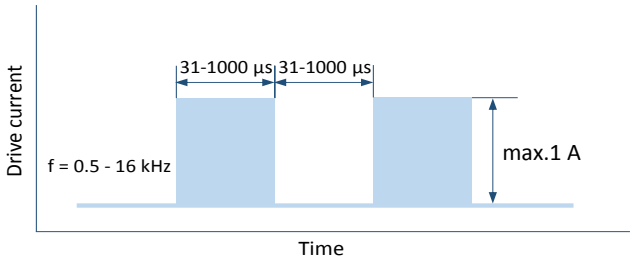


LED with thermoelectric module basic circuit connection

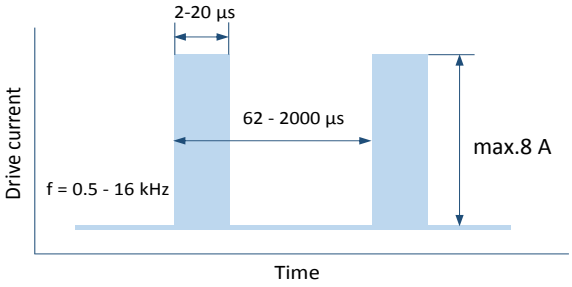


We recommend using **Quasi Continuous Wave (qCW) mode** with a duty cycle 50% or 25% to obtain maximum average optical power and short **Pulse modes** to obtain maximum peak power. Hard CW (continius wave) mode is NOT recommended.

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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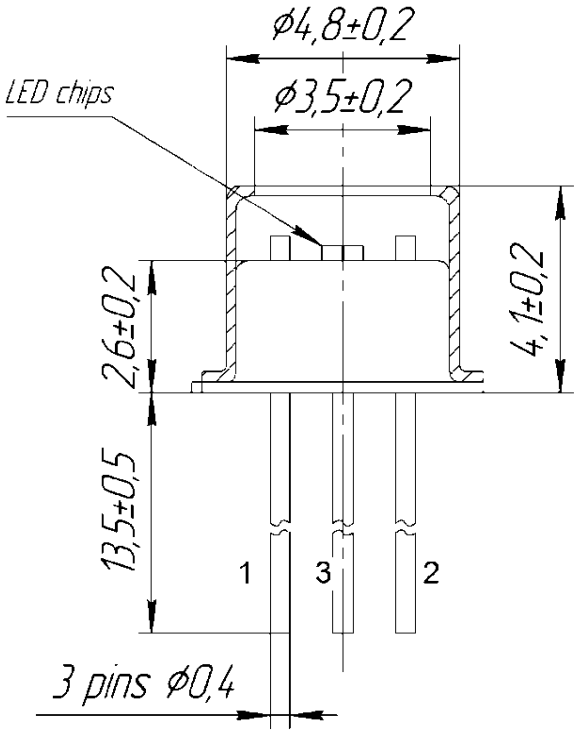
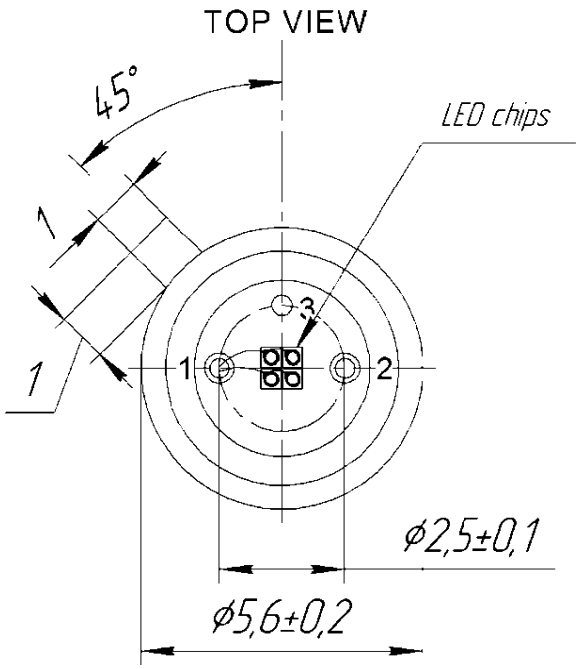
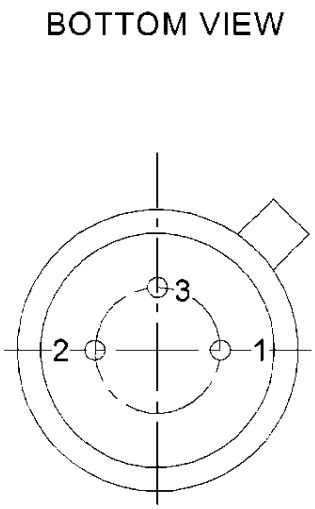
Technical Drawings

Lms43LED-4M



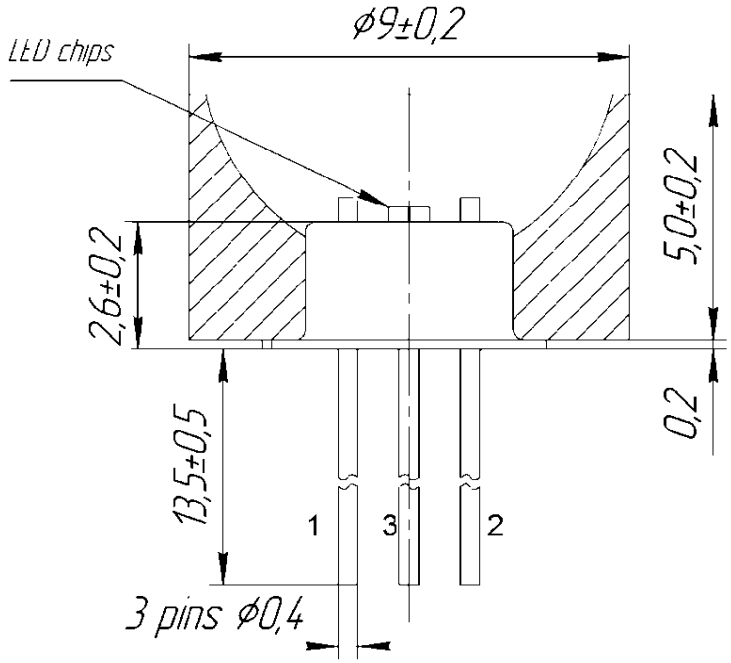
1 – LEDs cathode
3 – LEDs anode



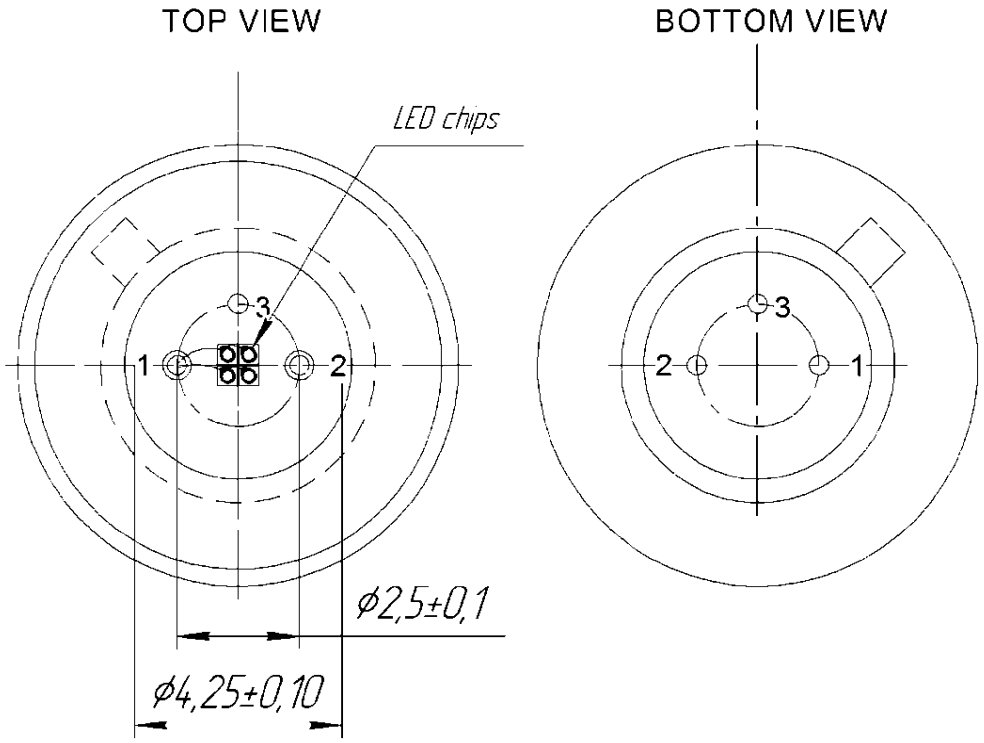


Technical Drawings

Lms43LED-4M-R

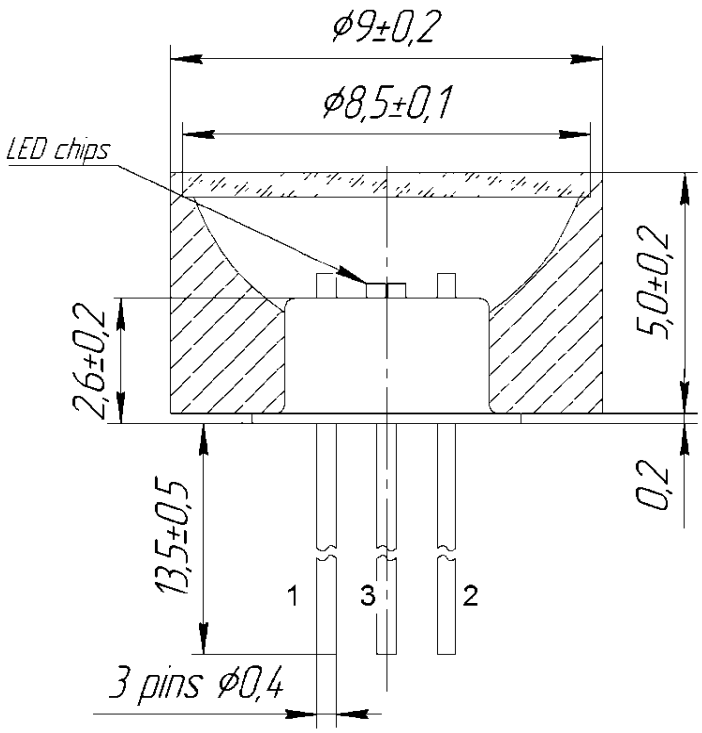


1 – LEDs cathode
3 – LEDs anode

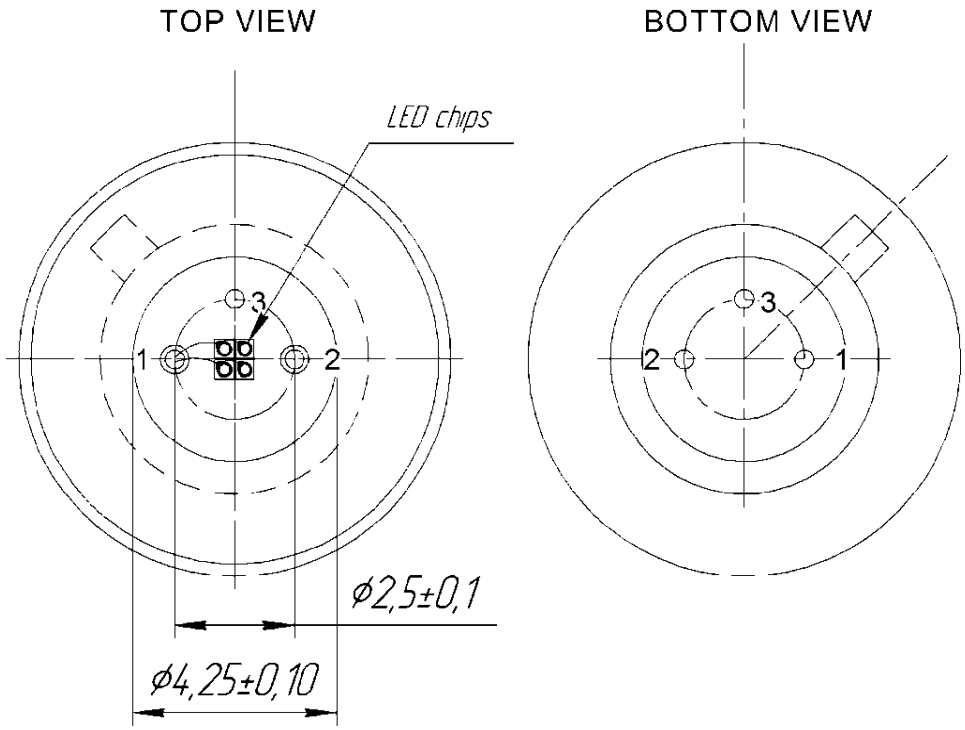


Technical Drawings

Lms43LED-4M-RW

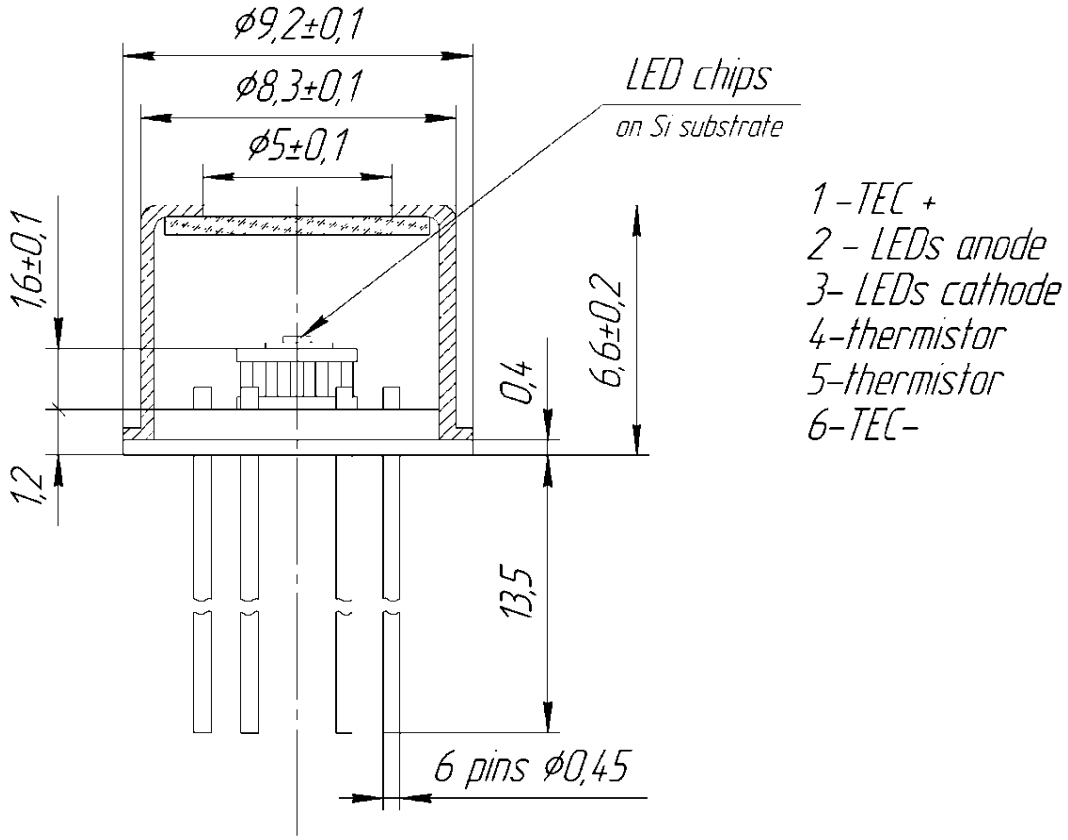


1 – LEDs cathode
3 – LEDs anode

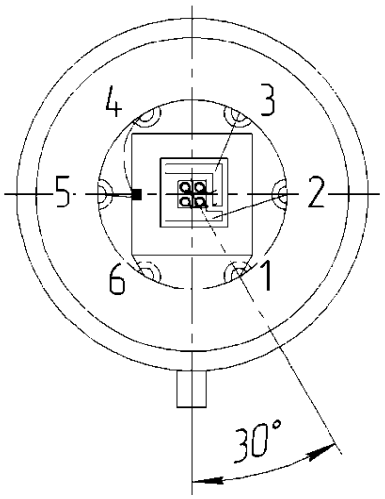


Technical Drawings

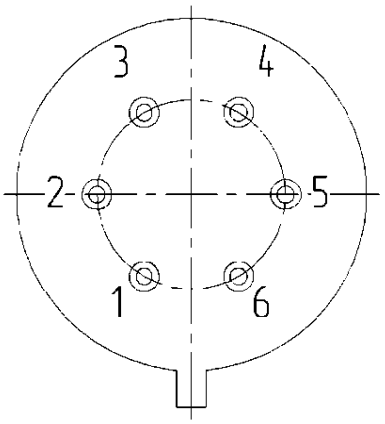
Lms43LED-4M-TEM



TOP VIEW



BOTTOM VIEW



Technical Drawings

Lms43LED-4M-TEM-R