LED Microsensor NT

# Mid-Infrared (MIR) Light-Emitting Diode

**3.45 - 3.52 µm**

## Lms35LED-TEM

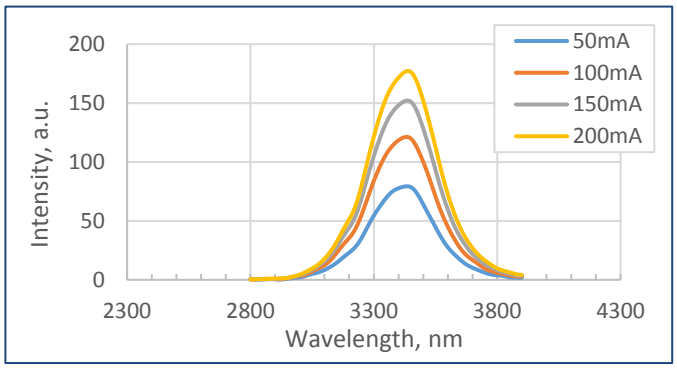
| Device parameters | Symbol | Value | Units |
|---|---|---|---|
| Operating/ storage temperature | $T_{stg}$ | +5..+90* | °C |
| Soldering temperature (can be applied for not more than 5 secs) | $T_{sol}$ | +180 | °C |

*LED design for different storage/operating temperature range can be considered under request.

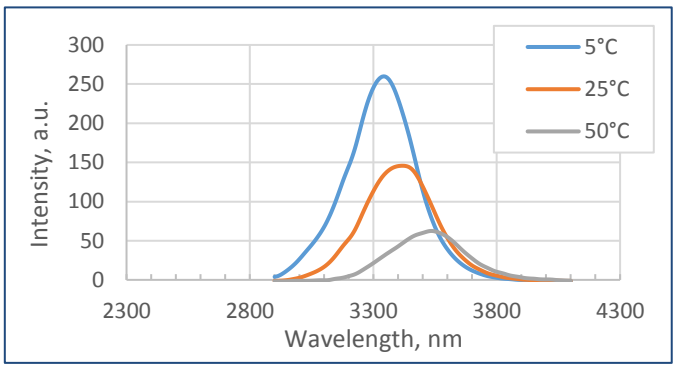
All parameters are for LED operation at 25°C unless otherwise stated.

| LED parameters | Conditions | Symbol | Value | Units |
|---|---|---|---|---|
| Peak emission wavelength[1] | qCW mode[3] I = 150 mA | $\lambda_p$ | 3.45 - 3.52 | µm |
| FWHM of the emission band[1] | qCW mode[3] I = 150 mA | FWHM | 300 - 600 | nm |
| Average optical power (minimal / typical)[1] | qCW mode[3] I = 200 mA | $P_{qcw}$ | min 14 / typ 28 | µW |
| Peak optical power (minimal / typical)[2] | Pulse mode[4] I = 1 A | $P_{pul}$ | min 105 / typ 210 | µW |
| Maximum operating current | qCW mode[3] | $I_{max\ qcw}$ | 250 | mA |
| | Pulse mode[4] | $I_{max\ pulse}$ | 2 | A |
| Forward voltage[1] | qCW mode[3] I = 200 mA | V | 0.2 - 0.8 | V |

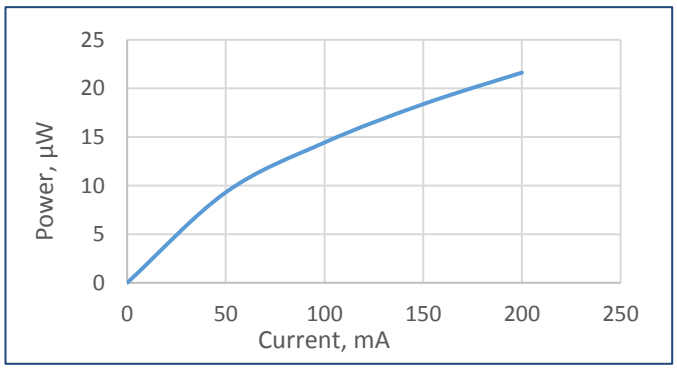
Typical spectra at different currents (qCW[3])



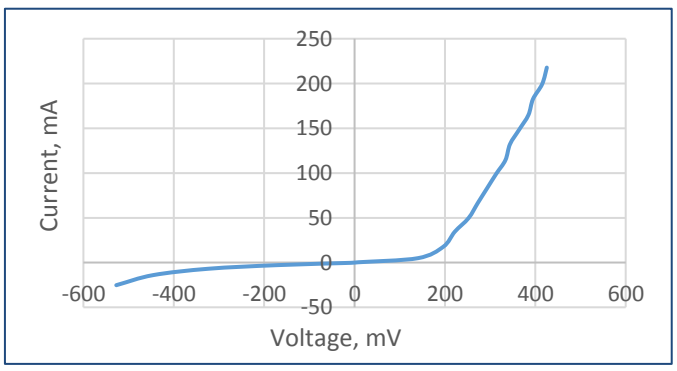

Spectra at different temperatures (qCW[3], 150 mA)




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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| Packages | Model |
|---|---|
| TO-18 with a cap without a glass window | Lms35LED |
| TO-18 with a parabolic reflector without a glass window | Lms35LED-R |
| TO-18 with a parabolic reflector with a glass window | Lms35LED-RW |
| TO-5 with a built-in thermocooler and thermoresistor, covered by a cap with a glass window | Lms35LED-TEM |
| TO-5 with a built-in thermocooler and thermoresistor, covered by a parabolic reflector with a glass window | Lms35LED-TEM-R |

Related products:

- **Photodiodes Lms36PD, Lms41PD 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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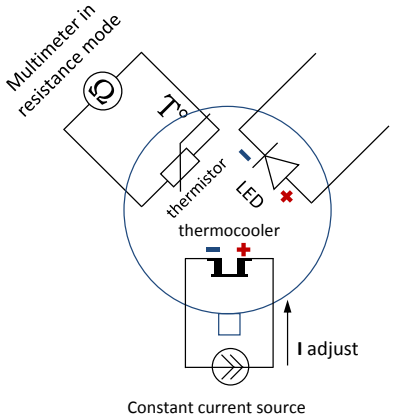
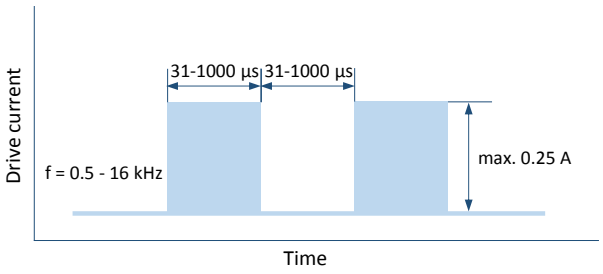
To drive the LED we recommend the following basic circuit connection:

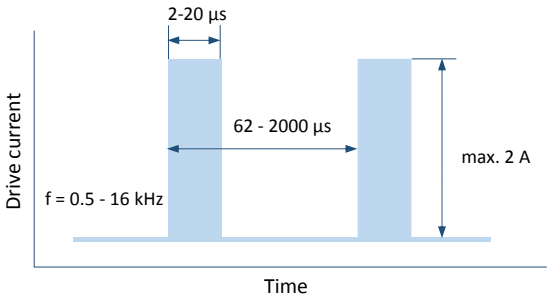



We recommend using **Quasi Continuous Wave (qCW) mode** with a duty cycle 50% or 25% to obtain maximum average optical power and short **Pulse modes** to obtain maximum peak power. Hard CW (continius wave) mode is NOT recommended.

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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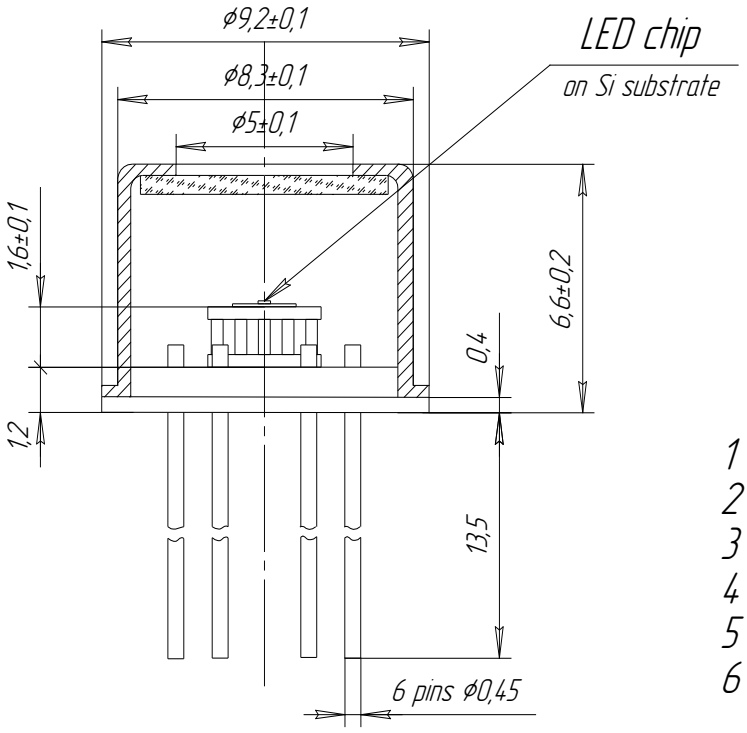
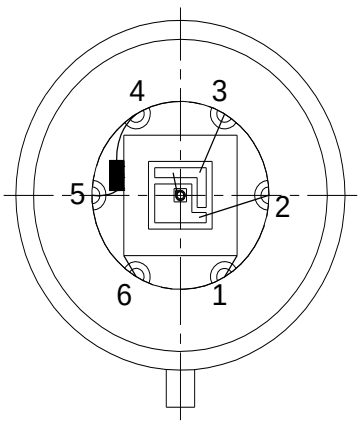
## Technical Drawing

### Lms35LED-TEM

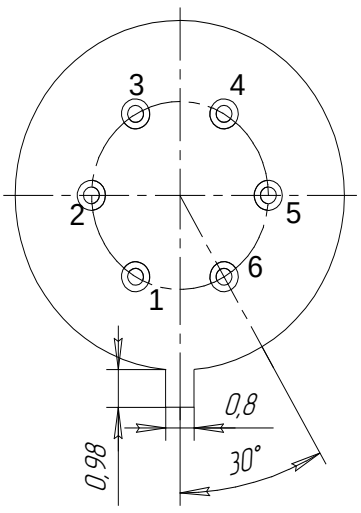



1 – TEC +
2 – LED anode
3 – LED cathode
4 – thermistor
5 – thermistor
6 – TEC –

TOP VIEW




BOTTOM VIEW



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