### Lms19LED series

#### Device parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Value</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating/ storage temperature</td>
<td>$T_{stg}$</td>
<td>-60..+90*</td>
<td>°C</td>
</tr>
<tr>
<td>Soldering temperature (can be applied for not more than 5 secs)</td>
<td>$T_{sul}$</td>
<td>+180</td>
<td>°C</td>
</tr>
</tbody>
</table>

*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

<table>
<thead>
<tr>
<th>LED parameters</th>
<th>Conditions</th>
<th>Symbol</th>
<th>Value</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peak emission wavelength$^1$</td>
<td>qCW mode$^3$ $I = 150$ mA</td>
<td>$\lambda_p$</td>
<td>1.90 - 1.99</td>
<td>µm</td>
</tr>
<tr>
<td>FWHM of the emission band$^1$</td>
<td>qCW mode$^3$ $I = 150$ mA</td>
<td>FWHM</td>
<td>100 - 200</td>
<td>nm</td>
</tr>
<tr>
<td>Average optical power (minimal/typical)$^1$</td>
<td>qCW mode$^3$ $I = 200$ mA</td>
<td>$P_{qCW}$</td>
<td>min 0.8 / typ 1</td>
<td>mW</td>
</tr>
<tr>
<td>Peak optical power (minimal/typical)$^2$</td>
<td>Pulse mode$^4$ $I = 1$ A</td>
<td>$P_{pul}$</td>
<td>min 7.5 / typ 9</td>
<td>mW</td>
</tr>
<tr>
<td>Maximum operating current</td>
<td>qCW mode$^3$</td>
<td>$I_{qCW}$</td>
<td>250</td>
<td>mA</td>
</tr>
<tr>
<td></td>
<td>Pulse mode$^4$</td>
<td>$I_{pul}$</td>
<td>2</td>
<td>A</td>
</tr>
<tr>
<td>Forward voltage$^3$</td>
<td>qCW mode$^3$ $I = 200$ mA</td>
<td>$V$</td>
<td>0.5 - 2.5</td>
<td>V</td>
</tr>
</tbody>
</table>

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%.

#### Typical spectra (qCW$^3$)

![Typical spectra (qCW$^3$)](image)

#### Spectra at different temperatures (qCW$^3$, 150 mA)

![Spectra at different temperatures (qCW$^3$, 150 mA)](image)

#### Typical optical power characteristic (qCW$^3$)

![Typical optical power characteristic (qCW$^3$)](image)

#### Typical current-voltage characteristic (qCW$^3$)

![Typical current-voltage characteristic (qCW$^3$)](image)
Near-Infrared (NIR) Light-Emitting Diode

<table>
<thead>
<tr>
<th>Packages</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>TO-18 with a cap with a glass window</td>
<td>Lms19LED</td>
</tr>
<tr>
<td>TO-18 with a parabolic reflector without a glass window</td>
<td>Lms19LED-R</td>
</tr>
<tr>
<td>TO-18 with a parabolic reflector with a glass window</td>
<td>Lms19LED-RW</td>
</tr>
<tr>
<td>TO-5 with a built-in thermocooler and thermoresistor, covered by a cap with a glass window</td>
<td>Lms19LED-TEM</td>
</tr>
<tr>
<td>TO-5 with a built-in thermocooler and thermoresistor, covered by a parabolic reflector with a glass window</td>
<td>Lms19LED-TEM-R</td>
</tr>
</tbody>
</table>

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

**LED basic circuit connection**

![Diagram of LED basic circuit connection]

**Quasi Continuous Wave (qCW) mode**

- Drive current: \( f = 0.5 \text{ - } 16 \text{ kHz} \)
- Time: \( 31 \text{-}1000 \mu s \) and \( 31 \text{-}1000 \mu s \)
- max. 0.25 A

**Pulse mode**

- Drive current: \( f = 0.5 \text{ - } 16 \text{ kHz} \)
- Time: \( 2 \text{-}20 \mu s \) and \( 62 \text{-}2000 \mu s \)
- max. 2 A

**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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**REV.011216** The design and specification of the product can be changed by LED Microsensor NT LLC. without notice

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Near-Infrared (NIR) Light-Emitting Diode

1.90 - 1.99 μm

Technical Drawings

Lms19LED

1 - LED cathode
2 - LED anode

TOP VIEW

BOTTOM VIEW
Near-Infrared (NIR) Light-Emitting Diode

Technical Drawings

Lms19LED-TEM

1 - TEC +
2 - LED anode
3 - LED cathode
4 - thermistor
5 - thermistor
6 - TEC -
Near-Infrared (NIR) Light-Emitting Diode

1.80 - 1.89 μm

Technical Drawings

Lms19LED-TEM-R

TOP VIEW

BOTTOM VIEW

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

LED chip on Si substrate

6 pins Ø0.45

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