**Near-Infrared (NIR) Light-Emitting Diode**

**Lms17LED series**

<table>
<thead>
<tr>
<th>Device parameters</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_{sol})</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.

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<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 = 25) mA</td>
<td>(\lambda_p)</td>
<td>1.70 - 1.76</td>
<td>μm</td>
</tr>
<tr>
<td>FWHM of the emission band(^1)</td>
<td>(qCW) mode(^3) (I = 25) mA</td>
<td>FWHM</td>
<td>160 - 220</td>
<td>nm</td>
</tr>
<tr>
<td>Average optical power (minimal / typical)(^2)</td>
<td>(qCW) mode(^3) (I = 200) mA</td>
<td>(P_{qCW})</td>
<td>min 5 /typ 7</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 15 / typ 17</td>
<td>mW</td>
</tr>
<tr>
<td>Maximum operating current</td>
<td>(qCW) mode(^3)</td>
<td>(I_{qCW})</td>
<td>200</td>
<td>mA</td>
</tr>
<tr>
<td></td>
<td>Pulse mode(^4)</td>
<td>(I_{pul})</td>
<td>1</td>
<td>A</td>
</tr>
<tr>
<td></td>
<td>DC mode(^5)</td>
<td>(I_{DC})</td>
<td>100</td>
<td>mA</td>
</tr>
<tr>
<td>Forward voltage(^1)</td>
<td>(qCW) mode(^3) (I = 200) mA</td>
<td>(V)</td>
<td>0.7 - 1.1</td>
<td>V</td>
</tr>
</tbody>
</table>

**Typical spectrum (qCW\(^3\), 25 mA)**

**Spectra at different temperatures (qCW\(^3\), 25 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%.

\(^5\) DC mode: direct current.

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10, A, Kurchatova str., 1N, St-Petersburg, 194223, Russia; info@lmsnt.com; www.lmsnt.com
Near-Infrared (NIR) Light-Emitting Diode

- 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.

<table>
<thead>
<tr>
<th>Packages</th>
<th>Model</th>
</tr>
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<tbody>
<tr>
<td>TO-18 with a cap with a glass window</td>
<td>Lms17LED</td>
</tr>
<tr>
<td>TO-18 with a parabolic reflector without a glass window</td>
<td>Lms17LED-R</td>
</tr>
<tr>
<td>TO-18 with a parabolic reflector with a glass window</td>
<td>Lms17LED-RW</td>
</tr>
<tr>
<td>TO-5 with a built-in thermocooler and thermoresistor, covered by a cap with a glass window</td>
<td>Lms17LED-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>Lms17LED-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:
Near-Infrared (NIR) Light-Emitting Diode

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

**LED basic circuit connection**

1. **Constant current source**
2. **I adjust**
3. **thermocooler**
4. **LED**
5. **1 Ohm**
6. **Pulse generator**

**LED with thermoelectric module basic circuit connection**

- **Multimeter in resistance mode**
- **thermistor**
- **LED**
- **thermocooler**
- **I adjust**

**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.

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.

**Quasi Continuous Wave (qCW) mode**

- Drive current: 62 - 2000 μs
- Time: 2 - 20 μs
- max. 1 A

**Pulse mode**

- Drive current: 31 - 1000 μs
- Time: 31 - 1000 μs
- max. 0.2 A

**f = 0.5 - 16 kHz**
Technical Drawings

Lms17LED

1 - LED anode
2 - LED cathode

TOP VIEW
BOTTOM VIEW

LED chip

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1.70 - 1.76 μm

Technical Drawings

Lms17LED-R

1 - LED anode
2 - LED cathode

TOP VIEW

BOTTOM VIEW

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Lms17LED-RW

1.70 - 1.76 μm

1 - LED anode
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BOTTOM VIEW

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1.70 - 1.76 μm

Technical Drawings

Lms17LED-TEM

TOP VIEW

BOTTOM VIEW

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