Longwave Infrared (LWIR) Camera Module

The FLIR Lepton is an LWIR camera solution that is smaller than a dime, can fit inside a cell phone, and is ten times less expensive than a traditional IR camera. Using a focal plane array (FPA) of 80 × 60 active pixel, Lepton easily integrates into native mobile-devices and other electronics as an IR sensor or thermal imager.

ENHANCED IR SENSOR
Greater sensitivity than common thermopile arrays
- Thermal sensitivity <50 mK
- Optional temperature-stable output to support radiometric processing
- Low operating power, 150mW
- Low power standby mode

MICRO THERMAL IMAGER
Uncooled thermal imaging for small electronics
- Integrated digital thermal image processing
- Multiple lens options: 50° / 25° FOV
- Shutter option available
- Fast time to image (<0.5 seconds)

EASE OF INTEGRATION
Simplifies development and manufacturing of thermal-enabled devices
- 8.5 x 8.5 x 5.6 mm package
- Export Compliant (<9Hz)
- MIPI and SPI video interfaces
- Uses standard cell phone-compatible power supplies
- Two-wire serial control interface
- 32-pin socket interface to connector

www.flir.com/lepton
## Specifications

<table>
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<tr>
<th>Overview</th>
<th>LEPTON 50° shutterless</th>
<th>LEPTON 25°</th>
<th>LEPTON 50° w/shutter</th>
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<tr>
<td>Sensor technology</td>
<td>Uncooled VOx microbolometer</td>
<td></td>
<td></td>
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<tr>
<td>Spectral range</td>
<td>Longwave infrared, 8 μm to 14 μm</td>
<td></td>
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<tr>
<td>Array format</td>
<td>80 x 60, progressive scan</td>
<td></td>
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<tr>
<td>Pixel size</td>
<td>17 μm</td>
<td></td>
<td></td>
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<tr>
<td>Effective frame rate</td>
<td>8.6 Hz (exportable)</td>
<td></td>
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<tr>
<td>Thermal sensitivity</td>
<td>&lt;50 mK (0.050° C)</td>
<td></td>
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<tr>
<td>Non-uniformity corrections</td>
<td>Shutterless, automatic (with scene motion)</td>
<td>Automatic with shutter</td>
<td></td>
</tr>
<tr>
<td>Image optimization</td>
<td>Factory configured and fully automated</td>
<td></td>
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</tr>
<tr>
<td>FOV - horizontal</td>
<td>51°</td>
<td>25°</td>
<td>51°</td>
</tr>
<tr>
<td>FOV - diagonal</td>
<td>63.5°</td>
<td>31.3°</td>
<td>63.5°</td>
</tr>
<tr>
<td>Output format</td>
<td>User-selectable 14-bit, 8-bit (AGC applied), or 24-bit RGB (AGC and colorization applied)</td>
<td>Integral</td>
<td></td>
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<tr>
<td>Solar protection</td>
<td>Integral</td>
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</tbody>
</table>

### Electrical

- **Input clock**: 25-MHz nominal, CMOS IO Voltage Levels
- **Video data interface**: Video over SPI
- **Control port**: CCI (I2C-like), CMOS IO Voltage Levels
- **Input supply voltage (nominal)**: 2.8 V, 1.2 V, 2.5 V to 3.1 V IO
- **Power dissipation**: Nominally 150 mW at room temperature (operating), 4 mW (standby)

### Mechanical

- **Package dimensions – socket version**: 8.5 x 8.5 x 5.6 mm (w x l x h)
- **Weight**: 0.55 grams (typ), 0.55 grams (typ), 0.55 grams (typ)

### Environmental

- **Optimum operating temperature range**: -10 °C to +65 °C
- **Non-operating temperature range**: -40 °C to +80 °C
- **Shock**: 1500 G @ 0.4 ms

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16-0797-OEM