Ambient Light Sensor

**DESCRIPTION**

TEMD6200FITX01 is a high speed and high sensitive PIN photodiode in a miniature flat plastic package. It is spectral sensitivity is closely matched to the human eye.

**FEATURES**

- Package type: surface-mount
- Package form: 0805
- Dimensions (L x W x H in mm): 2 x 1.25 x 0.85
- Radiant sensitive area (in mm²): 0.27
- AEC-Q101 qualified
- Adapted to human eye responsivity
- Angle of half sensitivity: $\varphi \approx 60^\circ$
- Floor life: 168 h, MSL 3, according to J-STD-020

**APPLICATIONS**

- Automotive sensors
- Ambient light sensors
- Backlight dimming

**PRODUCT SUMMARY**

<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>$I_{ra}$ (μA)</th>
<th>$\varphi$ (°)</th>
<th>$\lambda_{0.5}$ (nm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TEMD6200FITX01</td>
<td>0.04</td>
<td>± 60</td>
<td>430 to 610</td>
</tr>
</tbody>
</table>

**ORDERING INFORMATION**

<table>
<thead>
<tr>
<th>ORDERING CODE</th>
<th>PACKAGING</th>
<th>REMARKS</th>
<th>PACKAGE FORM</th>
</tr>
</thead>
<tbody>
<tr>
<td>TEMD6200FITX01</td>
<td>Tape and reel</td>
<td>MOQ: 3000 pcs, 3000 pcs/reel</td>
<td>0805</td>
</tr>
</tbody>
</table>

**ABSOLUTE MAXIMUM RATINGS** ($T_{amb} = 25 \, ^\circ C$, unless otherwise specified)

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>TEST CONDITION</th>
<th>SYMBOL</th>
<th>VALUE</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reverse voltage</td>
<td></td>
<td>$V_R$</td>
<td>16</td>
<td>V</td>
</tr>
<tr>
<td>Operating temperature range</td>
<td></td>
<td>$T_{amb}$</td>
<td>-40 to +110</td>
<td>°C</td>
</tr>
<tr>
<td>Storage temperature range</td>
<td></td>
<td>$T_{stg}$</td>
<td>-40 to +110</td>
<td>°C</td>
</tr>
<tr>
<td>Soldering temperature</td>
<td>In accordance with Fig. 6</td>
<td>$T_{sd}$</td>
<td>260</td>
<td>°C</td>
</tr>
</tbody>
</table>
## BASIC CHARACTERISTICS (T<sub>amb</sub> = 25 °C, unless otherwise specified)

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>TEST CONDITION</th>
<th>SYMBOL</th>
<th>MIN.</th>
<th>TYP.</th>
<th>MAX.</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakdown voltage</td>
<td>I&lt;sub&gt;R&lt;/sub&gt; = 100 μA, E = 0 lx</td>
<td>V&lt;sub&gt;BR&lt;/sub&gt;</td>
<td>16</td>
<td>-</td>
<td>-</td>
<td>V</td>
</tr>
<tr>
<td>Reverse dark current</td>
<td>V&lt;sub&gt;R&lt;/sub&gt; = 10 V, E = 0 lx</td>
<td>I&lt;sub&gt;ro&lt;/sub&gt;</td>
<td>-</td>
<td>0.1</td>
<td>5</td>
<td>nA</td>
</tr>
<tr>
<td>Diode capacitance</td>
<td>V&lt;sub&gt;R&lt;/sub&gt; = 0 V, f = 1 MHz, E = 0 lx</td>
<td>C&lt;sub&gt;D&lt;/sub&gt;</td>
<td>-</td>
<td>60</td>
<td>-</td>
<td>pF</td>
</tr>
<tr>
<td></td>
<td>V&lt;sub&gt;R&lt;/sub&gt; = 5 V, f = 1 MHz, E = 0 lx</td>
<td>C&lt;sub&gt;D&lt;/sub&gt;</td>
<td>-</td>
<td>24</td>
<td>-</td>
<td>pF</td>
</tr>
<tr>
<td>Reverse light current</td>
<td>E&lt;sub&gt;a&lt;/sub&gt; = 1 mW/cm&lt;sup&gt;2&lt;/sup&gt;, λ = 550 nm, V&lt;sub&gt;R&lt;/sub&gt; = 5 V</td>
<td>I&lt;sub&gt;ra&lt;/sub&gt;</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>μA</td>
</tr>
<tr>
<td></td>
<td>E&lt;sub&gt;V&lt;/sub&gt; = 100 lx, CIE illuminant A</td>
<td>I&lt;sub&gt;ra&lt;/sub&gt;</td>
<td>0.03</td>
<td>0.04</td>
<td>0.09</td>
<td>μA</td>
</tr>
<tr>
<td>Angle of half sensitivity</td>
<td>ϕ</td>
<td>-</td>
<td>±60</td>
<td>-</td>
<td>°</td>
<td></td>
</tr>
<tr>
<td>Wavelength of peak sensitivity</td>
<td>λ&lt;sub&gt;p&lt;/sub&gt;</td>
<td>-</td>
<td>540</td>
<td>-</td>
<td>nm</td>
<td></td>
</tr>
<tr>
<td>Range of spectral bandwidth</td>
<td>λ&lt;sub&gt;0.5&lt;/sub&gt;</td>
<td>-</td>
<td>430 to 610</td>
<td>-</td>
<td>nm</td>
<td></td>
</tr>
</tbody>
</table>

### Diagrams

- **Fig. 1** - Reverse Dark Current vs. Ambient Temperature
- **Fig. 2** - Reverse Light Current vs. Illuminance
- **Fig. 3** - Diode Capacitance vs. Reverse Voltage
- **Fig. 4** - Relative Spectral Sensitivity vs. Wavelength
SOLDER PROFILE

DRYPACK

Devices are packed in moisture barrier bags (MBB) to prevent the products from moisture absorption during transportation and storage. Each bag contains a desiccant.

FLOOR LIFE

Time between soldering and removing from MBB must not exceed the time indicated in J-STD-020:
Moisture sensitivity: Level 3
Floor life: 168 h
Conditions: \( T_{\text{amb}} < 30 ^\circ \text{C}, \text{RH} < 60 \% \)

DRYING

In case of moisture absorption devices should be baked before soldering. Conditions see J-STD-033D or label.
Devices taped on reel dry using recommended conditions:
192 h at 40 °C (+ 5 °C), RH < 5 %
or
96 h at 60 °C (+ 5 °C), RH < 5 %.
**PACKAGE DIMENSIONS** in millimeters

![Diagram of package dimensions](image1)

Not indicated tolerances ±0.1

**Recommended solder pad footprint**

![Recommended solder pad footprint](image2)

**BLISTER TAPE DIMENSIONS** in millimeters

![Diagram of blister tape dimensions](image3)

Not indicated tolerances ±0.1

For technical questions, contact: detectortechsupport@vishay.com

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