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: $\phi = \pm 60^\circ$
- Floor life: 168 h, MSL 3, according to J-STD-020
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

APPLICATIONS

- Automotive sensors
- Ambient light sensors
- Backlight dimming

PRODUCT SUMMARY

<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>Ira ((\mu)A)</th>
<th>$\phi$ (°)</th>
<th>$\lambda_{0,5}$ (nm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TEMD6200FITX01</td>
<td>0.04</td>
<td>$\pm 60$</td>
<td>430 to 610</td>
</tr>
</tbody>
</table>

Note

- Test condition see table “Basic Characteristics”

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>

Note

- MOQ: Minimum order quantity

ABSOLUTE MAXIMUM RATINGS ($T_{\text{amb}} = 25 \degree \text{C}, \text{unless otherwise specified}$)

<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>$T_{\text{amb}}$</td>
<td>-40 to +110</td>
<td>°C</td>
</tr>
<tr>
<td>Storage temperature range</td>
<td></td>
<td>$T_{\text{stg}}$</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_{amb} = 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>$I_R = 100 \mu A, E = 0 \text{ lx}$</td>
<td>$V_{BR}$</td>
<td>16</td>
<td>-</td>
<td>-</td>
<td>V</td>
</tr>
<tr>
<td>Reverse dark current</td>
<td>$V_R = 10 \text{ V}, E = 0 \text{ lx}$</td>
<td>$I_\text{rd}$</td>
<td>-</td>
<td>0.1</td>
<td>5</td>
<td>nA</td>
</tr>
<tr>
<td>Diode capacitance</td>
<td>$V_R = 5 \text{ V}, f = 1 \text{ MHz}, E = 0 \text{ lx}$</td>
<td>$C_D$</td>
<td>-</td>
<td>60</td>
<td>-</td>
<td>pF</td>
</tr>
<tr>
<td>Reverse light current</td>
<td>$E_a = 1 \text{ mW/cm}^2, \lambda = 550 \text{ nm}$, $V_R = 5 \text{ V}$</td>
<td>$I_{pa}$</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>$\mu A$</td>
</tr>
<tr>
<td>Angle of half sensitivity</td>
<td>$E_V = 100 \text{ lx}, \text{ CIE illuminant A}$</td>
<td>$I_{pa}$</td>
<td>0.03</td>
<td>0.04</td>
<td>0.09</td>
<td>$\mu A$</td>
</tr>
<tr>
<td>Wavelength of peak sensitivity</td>
<td>-</td>
<td>$\lambda_p$</td>
<td>-</td>
<td>540</td>
<td>-</td>
<td>nm</td>
</tr>
<tr>
<td>Range of spectral bandwidth</td>
<td>-</td>
<td>$\lambda_{0.5}$</td>
<td>-</td>
<td>430 to 610</td>
<td>-</td>
<td>nm</td>
</tr>
</tbody>
</table>

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**Fig. 1 -** Reverse Dark Current vs. Ambient Temperature

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**Fig. 3 -** Diode Capacitance vs. Reverse Voltage

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**Fig. 2 -** Reverse Light Current vs. Illuminance

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**Fig. 4 -** Relative Spectral Sensitivity vs. Wavelength
Fig. 5 - Relative Radiant Sensitivity vs. Angular Displacement

**SOLDER PROFILE**

Fig. 6 - Lead (Pb)-free Reflow Solder Profile acc. J-STD-020

**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

BLISTER TAPE DIMENSIONS in millimeters
**REEL DIMENSIONS in millimeters**

Form of the leave open of the wheel is supplier specific.

Drawing-No.: 9.800-5096.01-4
Issue: 2; 26.04.10
20875

Ø 177.8 max.
Ø 55 min.

Ø 13 + 0.5 - 0.2
Ø 20.2 min.

Z 2:1

Z

technical drawings according to DIN specifications
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