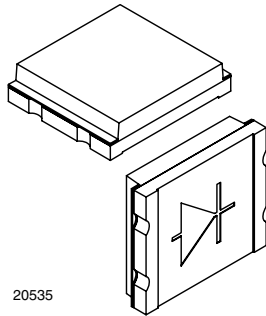


Ambient Light Sensor, RoHS Compliant, Released for Lead (Pb)-free Reflow Soldering, AEC-Q101 Released



20535

DESCRIPTION

TEMD5510FX01 ambient light sensor is a PIN photodiode with high photo sensitivity in a miniature surface mount device (SMD). The detector chip has 7.5 mm² sensitive area. It is sensitive to visible light much like the human eye and has peak sensitivity at 540 nm.

FEATURES

- Package type: surface mount
- Package form: top view
- Dimensions (L x W x H in mm): 5 x 4.24 x 1.12
- Radiant sensitive area (in mm²): 7.5
- Product designed and qualified acc. AEC-Q101 for the automotive market
- High photo sensitivity
- Adapted to human eye responsivity
- Supression filter for near infrared radiation
- Angle of half sensitivity: $\varphi = \pm 65^\circ$
- Floor life: 72 h, MSL 4, acc. J-STD-020
- Lead (Pb)-free reflow soldering
- Lead (Pb)-free component in accordance with RoHS 2002/95/EC and WEEE 2002/96/EC


RoHS
COMPLIANT

APPLICATIONS

- Automotive sensors
- Ambient light sensors
- Backlight dimmers
- Notebooks
- Computers

PRODUCT SUMMARY

| COMPONENT | I_{ra} (μA) | φ (deg) | $\lambda_{0.5}$ (nm) |
|--------------|----------------------|-----------------|----------------------|
| TEMD5510FX01 | 26 | ± 65 | 430 to 610 |

Note

Test conditions see table "Basic Characteristics"

ORDERING INFORMATION

| ORDERING CODE | PACKAGING | REMARKS | PACKAGE FORM |
|---------------|---------------|------------------------------|--------------|
| TEMD5510FX01 | Tape and reel | MOQ: 1500 pcs, 1500 pcs/reel | Top view |

Note

MOQ: minimum order quantity

ABSOLUTE MAXIMUM RATINGS

| PARAMETER | TEST CONDITION | SYMBOL | VALUE | UNIT |
|-------------------------------------|--|------------|---------------|------------|
| Reverse voltage | | V_R | 16 | V |
| Power dissipation | $T_{amb} \leq 25^\circ C$ | P_V | 215 | mW |
| Junction temperature | | T_j | 100 | $^\circ C$ |
| Operating temperature range | | T_{amb} | - 40 to + 100 | $^\circ C$ |
| Storage temperature range | | T_{stg} | - 40 to + 100 | $^\circ C$ |
| Soldering temperature | Acc. reflow solder profile fig. 5 | T_{sd} | 260 | $^\circ C$ |
| Thermal resistance junction/ambient | Soldered on PCB with pad dimensions: 4 mm x 4 mm | R_{thJA} | 350 | K/W |

Note

$T_{amb} = 25^\circ C$, unless otherwise specified

| BASIC CHARACTERISTICS | | | | | | |
|--------------------------------|--|-----------------|------|------------|------|---------|
| PARAMETER | TEST CONDITION | SYMBOL | MIN. | TYP. | MAX. | UNIT |
| Breakdown voltage | $I_R = 100 \mu A, E = 0$ | $V_{(BR)}$ | 16 | | | V |
| Reverse dark current | $V_R = 10 V, E = 0$ | I_{ro} | | 2 | 30 | nA |
| Diode capacitance | $V_R = 0 V, f = 1 MHz, E = 0$ | C_D | | 1600 | | pF |
| | $V_R = 3 V, f = 1 MHz, E = 0$ | C_D | | 730 | 40 | pF |
| Reverse light current | $E_e = 1 mW/cm^2, \lambda = 550 nm, V_R = 5 V$ | I_{ra} | | 26 | | μA |
| | $E_v = 100 lx, CIE illuminant A, V_R = 5 V$ | I_{ra} | 0.8 | 1 | | μA |
| Angle of half sensitivity | | ϕ | | ± 65 | | deg |
| Wavelength of peak sensitivity | | λ_p | | 540 | | nm |
| Range of spectral bandwidth | | $\lambda_{0.5}$ | | 430 to 610 | | nm |

Note

$T_{amb} = 25 \text{ }^\circ C$, unless otherwise specified

BASIC CHARACTERISTICS

$T_{amb} = 25 \text{ }^\circ C$, unless otherwise specified

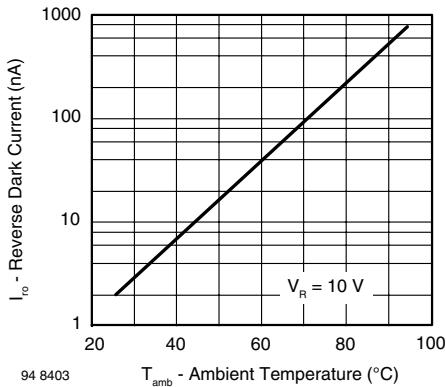


Fig. 1 - Reverse Dark Current vs. Ambient Temperature

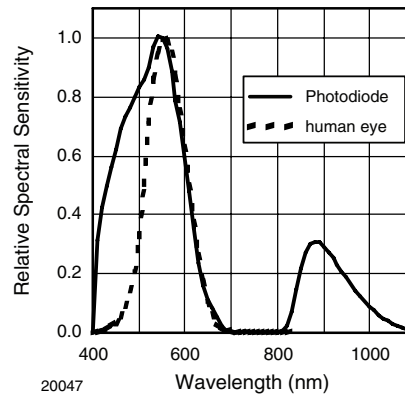


Fig. 3 - Relative Spectral Sensitivity vs. Wavelength

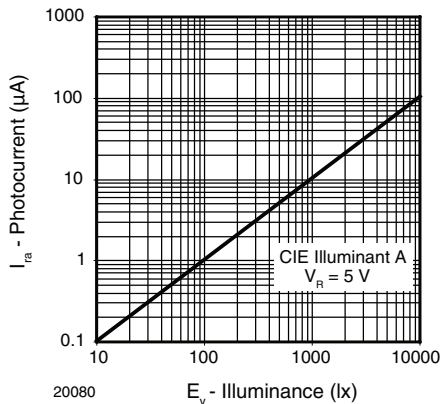


Fig. 2 - Reverse Light Current vs. Irradiance

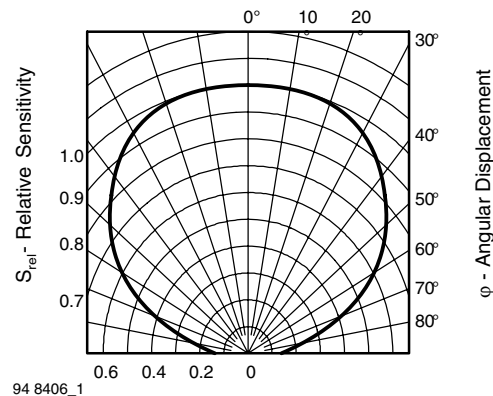


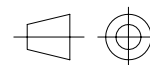
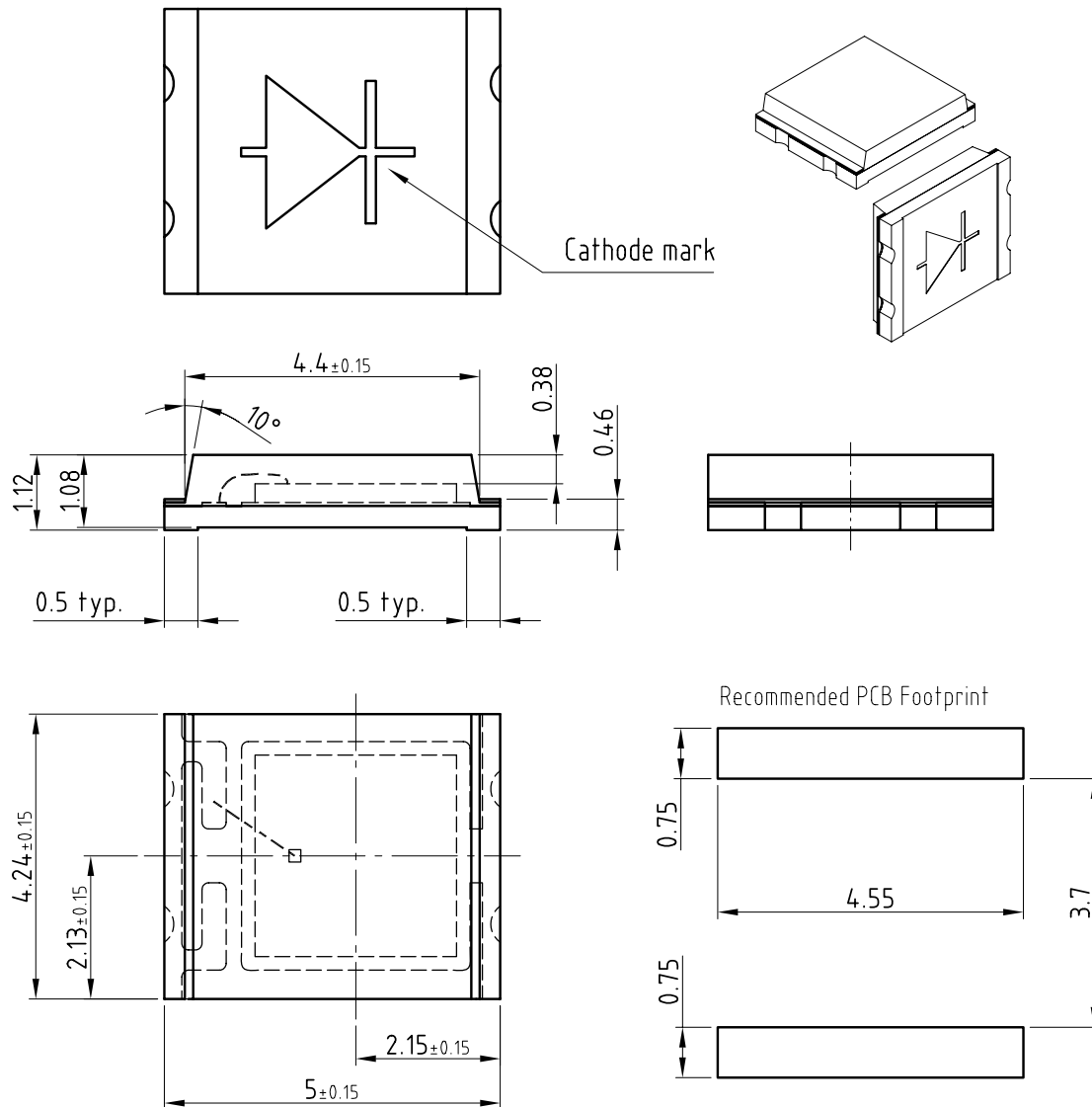
Fig. 4 - Relative Radiant Sensitivity vs. Angular Displacement



TEMD5510FX01

Ambient Light Sensor, RoHS Compliant, Released for Vishay Semiconductors
Lead (Pb)-free Reflow Soldering, AEC-Q101 Released

PACKAGE DIMENSIONS in millimeters



technical drawings
according to DIN
specifications

Drawing-No.: 6.541-5060.01-4
Issue: 3; 05.02.08
20536

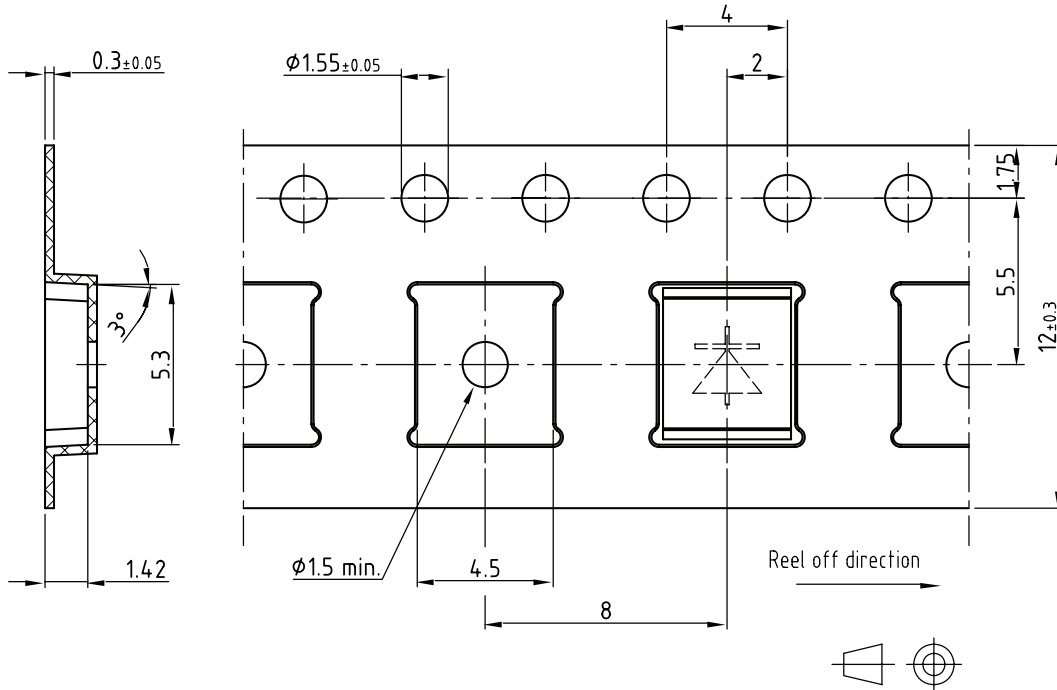
Not indicated tolerances ± 0.1

TEMD5510FX01



Vishay Semiconductors Ambient Light Sensor, RoHS Compliant, Released for Lead (Pb)-free Reflow Soldering, AEC-Q101 Released

TAPING DIMENSIONS in millimeters



Drawing-No.: 9.700-5293.01-4

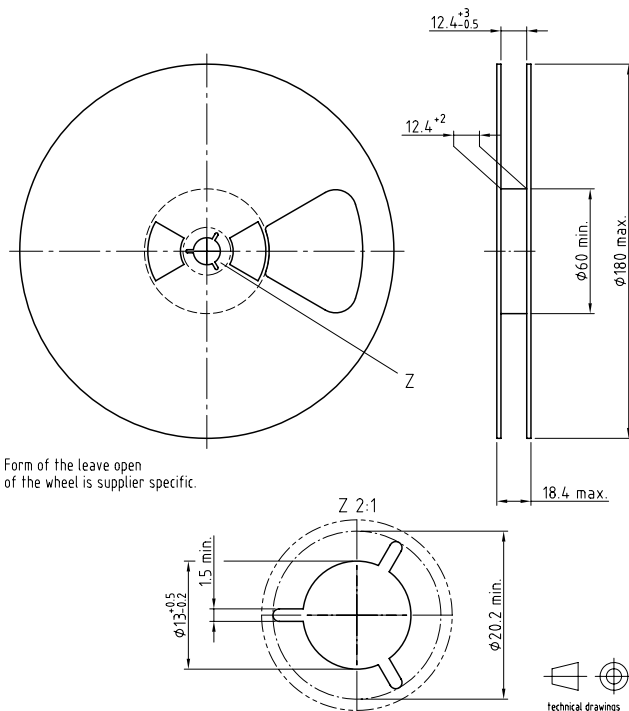
Issue: 1; 03.12.04

20537

Not indicated tolerances ± 0.1

Technical drawings according to DIN specifications

REEL DIMENSIONS in millimeters



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

Drawing-No.: 9.800-5097.01-4

Issue: 1; 05.05.08

20874

Technical drawings according to DIN specifications



SOLDER PROFILE

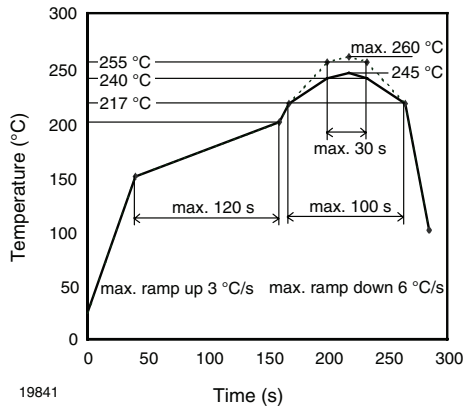


Fig. 5 - Lead (Pb)-free Reflow Solder Profile
acc. J-STD-020D

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 4

Floor life: 72 h

Conditions: $T_{amb} < 30\text{ }^{\circ}\text{C}$, $\text{RH} < 60\%$

DRYING

In case of moisture absorption devices should be baked before soldering. Conditions see J-STD-020 or recommended conditions:

192 h at $40\text{ }^{\circ}\text{C} (+ 5\text{ }^{\circ}\text{C})$, $\text{RH} < 5\%$

or

96 h at $60\text{ }^{\circ}\text{C} (+ 5\text{ }^{\circ}\text{C})$, $\text{RH} < 5\%$.



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All product specifications and data are subject to change without notice.

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