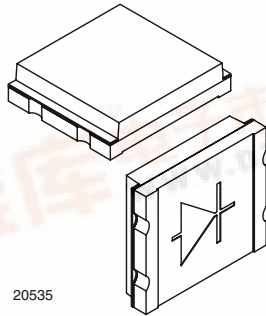




TEMD5510FX01

Vishay Semiconductors

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	°C
Operating temperature range		T_{amb}	- 40 to + 100	°C
Storage temperature range		T_{stg}	- 40 to + 100	°C
Soldering temperature	Acc. reflow solder profile fig. 5	T_{sd}	260	°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

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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
	$E_v = 100 lx, CIE \text{ illuminant A}, V_R = 5 V$	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

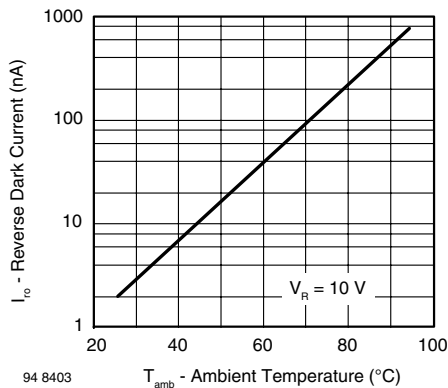


Fig. 1 - Reverse Dark Current vs. Ambient Temperature

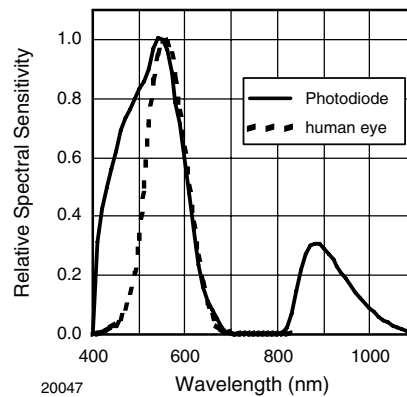


Fig. 3 - Relative Spectral Sensitivity vs. Wavelength

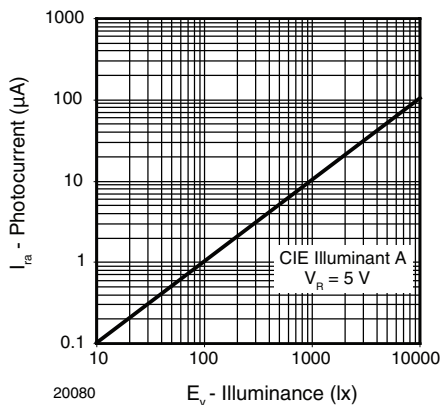


Fig. 2 - Reverse Light Current vs. Irradiance

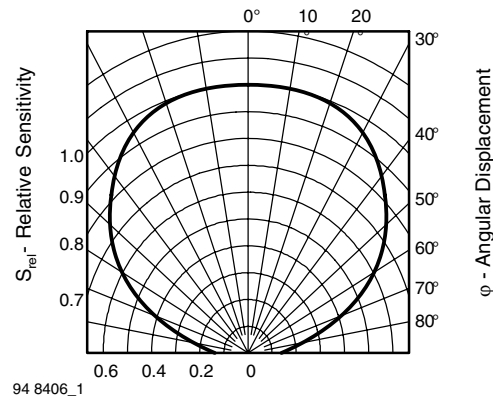


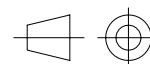
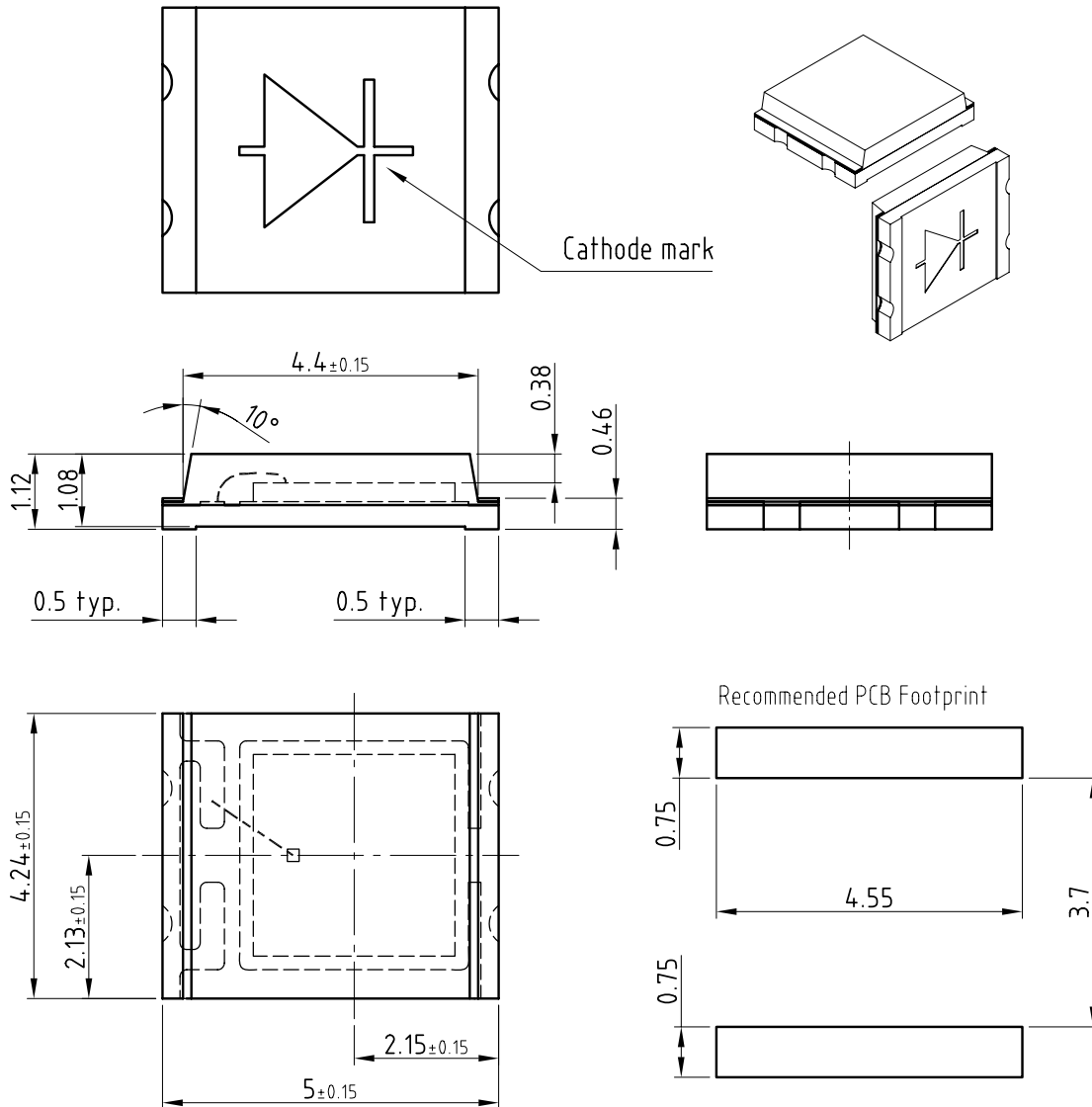
Fig. 4 - Relative Radiant Sensitivity vs. Angular Displacement



TEMD5510FX01

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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

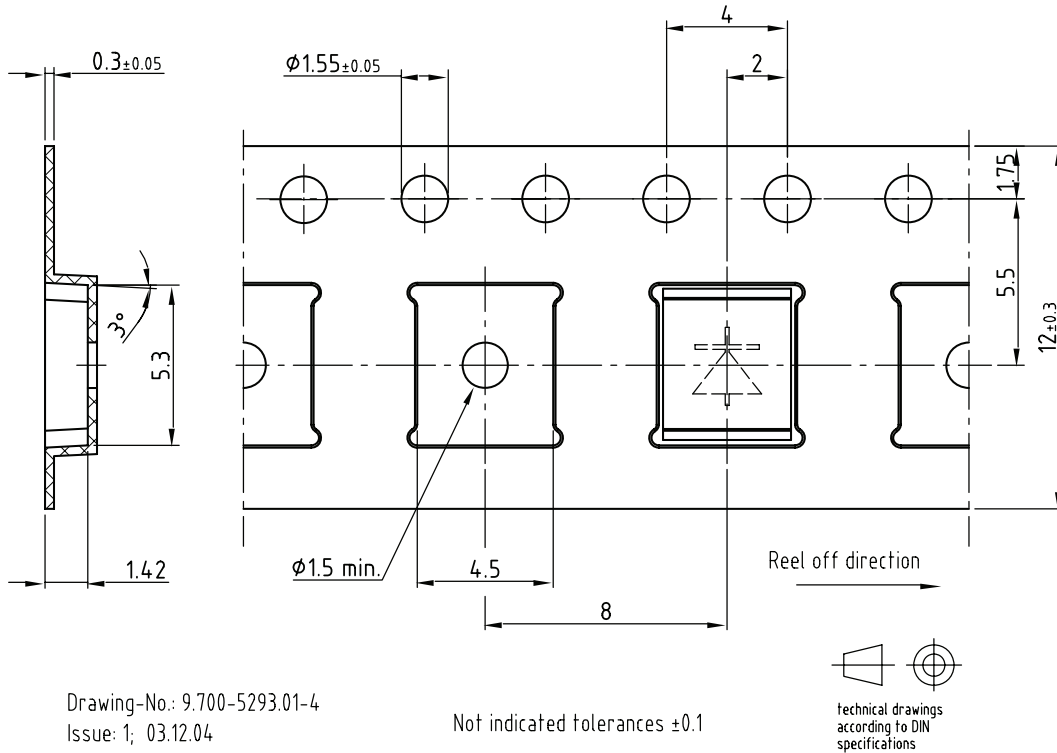
Not indicated tolerances ± 0.1

TEMD5510FX01



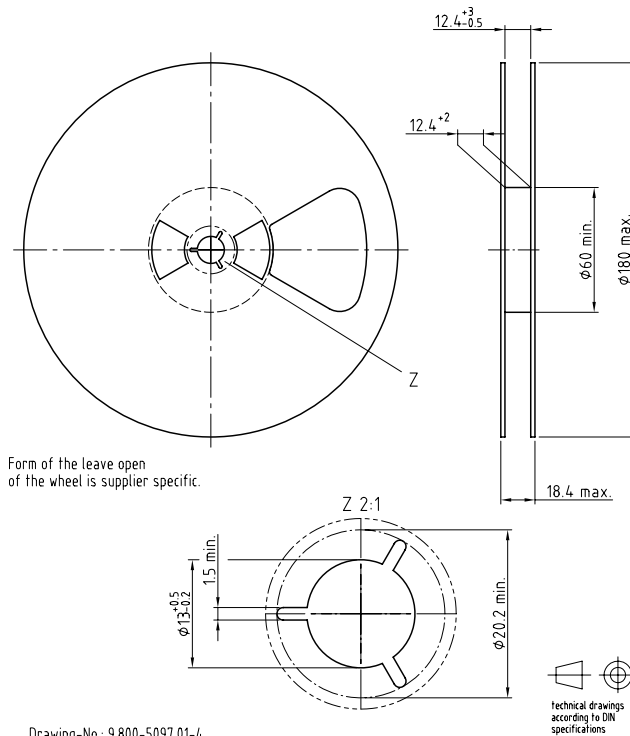
Vishay Semiconductors Ambient Light Sensor, RoHS Compliant, Released for Lead (Pb)-free Reflow Soldering, AEC-Q101 Released

TAPING DIMENSIONS in millimeters



Drawing-No.: 9.700-5293.01-4
 Issue: 1; 03.12.04
 20537

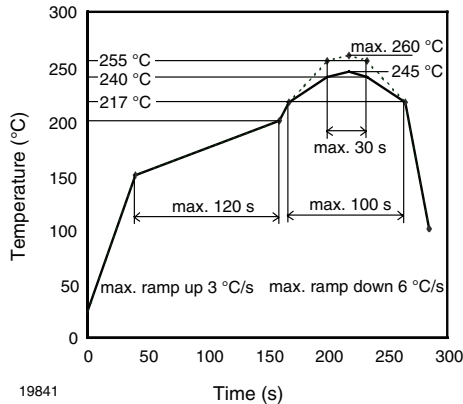
REEL DIMENSIONS in millimeters



Drawing-No.: 9.800-5097.01-4
 Issue: 1; 05.05.08
 20874



SOLDER PROFILE



19841

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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