RoHS

COMPLIANT

HALOGEN FREE

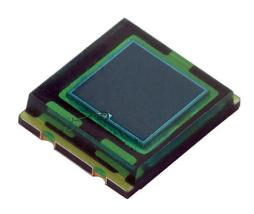
GREEN

(5-2008)



Vishay Semiconductors

Ambient Light Sensor



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
- AEC-Q101 qualified
- · 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, according to J-STD-020
- Lead (Pb)-free reflow soldering
- Material categorization: for definitions of compliance please see <u>www.vishay.com/doc?99912</u>

APPLICATIONS

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

PRODUCT SUMMARY				
COMPONENT	I _{ra} (μΑ)	φ (°)	λ _{0.5} (nm)	
TEMD5510FX01	1	± 65	430 to 610	

Note

• Test conditions see table "Basic Characteristics"

ORDERING INFORMATION					
ORDERING CODE	PACKAGING	PACKAGING REMARKS			
TEMD5510FX01	Tape and reel	MOQ: 1500 pcs, 1500 pcs/reel	Top view		
TEMD5510FX01-GS15	Tape and reel	MOQ: 5000 pcs, 5000 pcs/reel	Top view		

Note

· MOQ: minimum order quantity

ABSOLUTE MAXIMUM RATINGS (T _{amb} = 25 °C, unless otherwise specified)						
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT		
Reverse voltage		V_R	16	V		
Power dissipation	T _{amb} ≤ 25 °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 +110	°C		
Soldering temperature	According to reflow solder profile Fig. 5	T _{sd}	260	°C		
Thermal resistance junction-to-ambient	JESD51	R _{thJA}	350	K/W		



BASIC CHARACTERISTICS (T _{amb} = 25 °C, unless otherwise specified)						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Breakdown voltage	I _R = 100 μA, 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	1	1600	ı	pF
	$V_R = 3 V, f = 1 MHz, E = 0$	C_D	ı	730	1	pF
Reverse light current	$E_e = 1 \text{ mW/cm}^2$, $\lambda = 550 \text{ nm}$, $V_R = 5 \text{ V}$	I _{ra}	ı	26	-	μA
neverse light current	$E_v = 100 \text{ lx}$, CIE illuminant A, $V_R = 5 \text{ V}$	I _{ra}	0.8	1	1.4	μA
Temperature coefficient of Ira	$E_v = 100 lx$, CIE illuminant A, $V_R = 5 V$	TK _{lra}	ı	0.2	1	%/K
Angle of half sensitivity		φ	ı	± 65	-	0
Wavelength of peak sensitivity		λ_{p}		540		nm
Range of spectral bandwidth		λ _{0.5}		430 to 610	-	nm

BASIC CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)

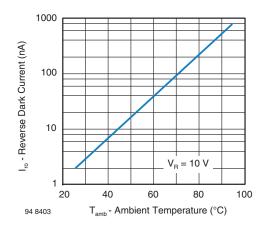


Fig. 1 - Reverse Dark Current vs. Ambient Temperature

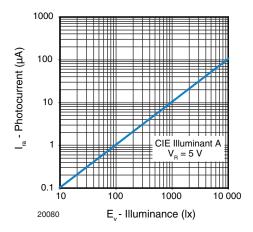


Fig. 2 - Reverse Light Current vs. Irradiance

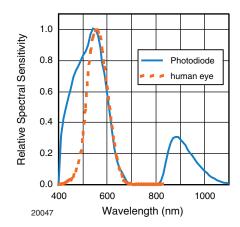


Fig. 3 - Relative Spectral Sensitivity vs. Wavelength

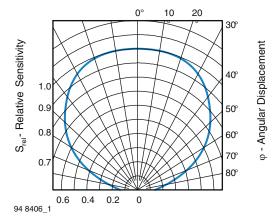
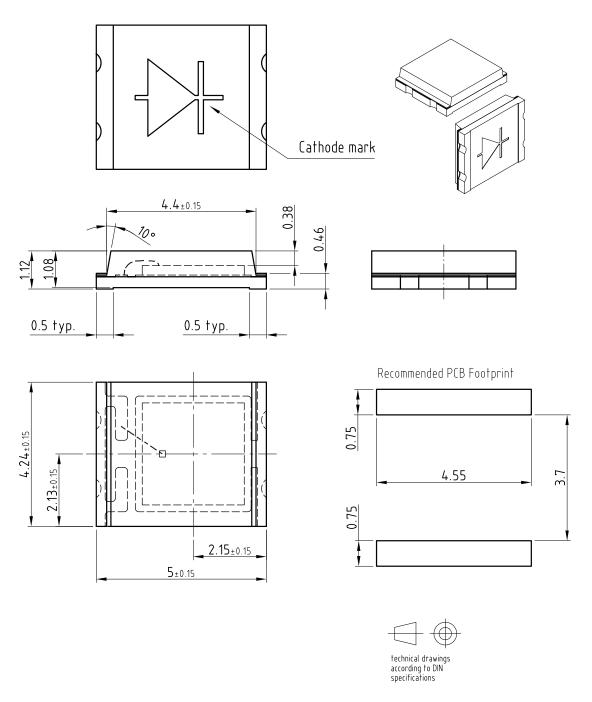


Fig. 4 - Relative Radiant Sensitivity vs. Angular Displacement

PACKAGE DIMENSIONS in millimeters



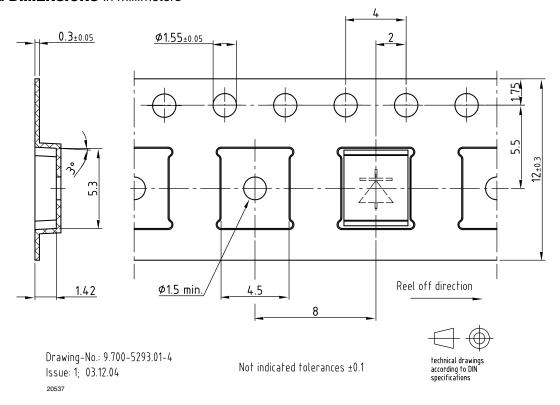
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Issue: 3; 05.02.08

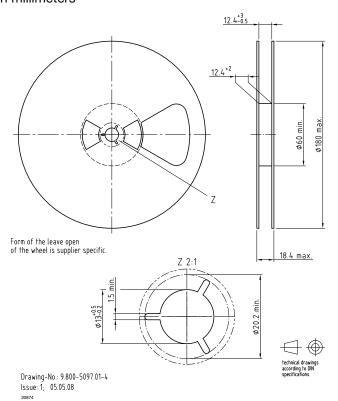
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Not indicated tolerances ± 0.1

TAPING DIMENSIONS in millimeters



REEL DIMENSIONS in millimeters





SOLDER PROFILE

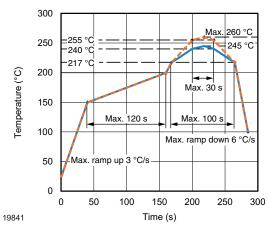


Fig. 5 - Lead (Pb)-free Reflow Solder Profile According to J-STD-020D

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 °C, RH < 60 %

DRYING

In case of moisture absorption devices should be baked before soldering. Conditions see J-STD-033D or recommended conditions:

192 h at 40 °C (+ 5 °C), RH < 5 %

or

96 h at 60 °C (+ 5 °C), RH < 5 %.



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