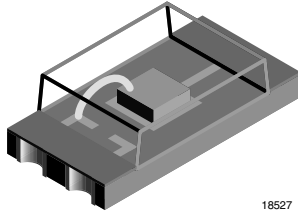


## Ambient Light Sensor, RoHS Compliant, Released for Lead (Pb)-free Reflow Soldering, AEC-Q101 Released



18527

### DESCRIPTION

TEMD6010FX01 ambient light sensor is a PIN photodiode with high speed and high photo sensitivity in a clear, surface mount plastic package. The detector chip has 0.23 mm<sup>2</sup> 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: 1206
- Dimensions (L x W x H in mm): 4 x 2 x 1.05
- Radiant sensitive area (in mm<sup>2</sup>): 0.23
- 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:  $\varphi = \pm 60^\circ$
- 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 dimming
- Mobil phones
- Notebooks
- Computers

### PRODUCT SUMMARY

COMPONENT	$I_{ra}$ ( $\mu A$ )	$\varphi$ (deg)	$\lambda_{0.5}$ (nm)
TEMD6010FX01	1	$\pm 60$	430 to 610

**Note**

Test conditions see table "Basic Characteristics"

### ORDERING INFORMATION

ORDERING CODE	PACKAGING	REMARKS	PACKAGE FORM
TEMD6010FX01	Tape and reel	MOQ: 3000 pcs, 3000 pcs/reel	1206

**Note**

MOQ: minimum order quantity

### ABSOLUTE MAXIMUM RATINGS

PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Reverse voltage		$V_R$	16	V
Power dissipation		$P_V$	100	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. 7	$T_{sd}$	260	$^\circ C$
Thermal resistance junction/ambient	Soldered on PCB with pad dimensions: 4 mm x 4 mm	$R_{thJA}$	450	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	$V_{CE} = 5 V, E = 0$	$I_{ro}$		2	30	nA
Diode capacitance	$V_R = 0 V, f = 1 \text{ MHz}, E = 0$	$C_D$		60		pF
	$V_R = 5 V, f = 1 \text{ MHz}, E = 0$	$C_D$		24		pF
Reverse light current	$E_e = 1 \text{ mW/cm}^2, \lambda = 550 \text{ nm}, V_R = 5 V$	$I_{ra}$		1		$\mu A$
	$E_V = 100 \text{ lx}, \text{CIE illuminant A}, V_R = 5 V$	$I_{ra}$	0.03	0.04		$\mu A$
Temperature coefficient of $I_{ra}$	$E_V = 100 \text{ lx}, \text{CIE illuminant A}, V_R = 5 V$	$TK_{I_{ra}}$		0.2		%/K
Angle of half sensitivity		$\phi$		$\pm 60$		deg
Wavelength of peak sensitivity		$\lambda_p$		540		nm
Range of spectral bandwidth		$\lambda_{0.5}$		430 to 610		nm

**Note**

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

**BASIC CHARACTERISTICS**

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

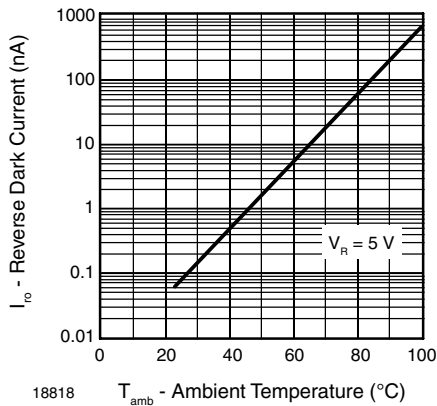


Fig. 1 - Reverse Dark Current vs. Ambient Temperature

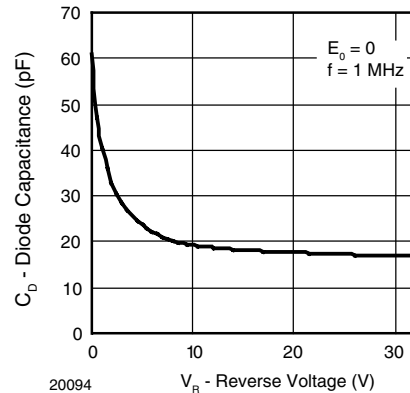


Fig. 3 - Diode Capacitance vs. Reverse Voltage

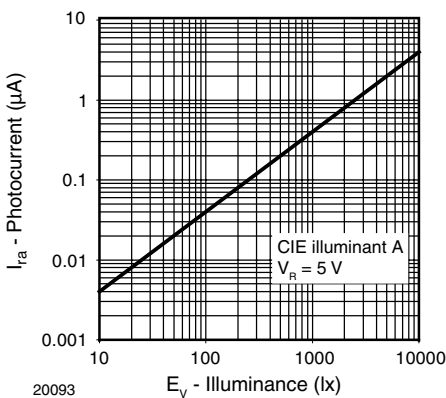


Fig. 2 - Reverse Light Current vs. Illuminance

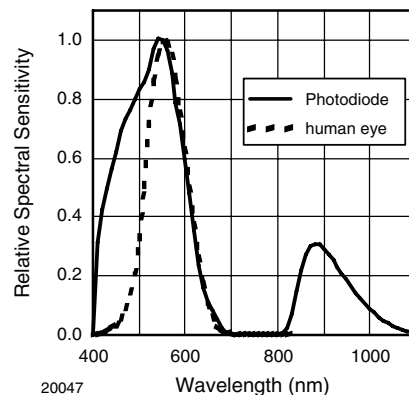


Fig. 4 - Relative Spectral Sensitivity vs. Wavelength



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

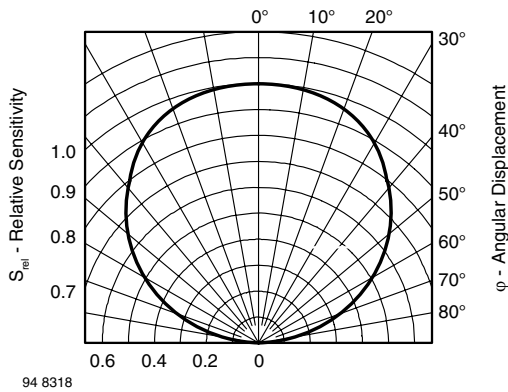


Fig. 5 - Relative Radiant Sensitivity vs. Angular Displacement

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

**DRYING**

In case of moisture absorption devices should be baked before soldering. Conditions see J-STD-020 or recommended conditions:  
 192 h at  $40\text{ }^{\circ}\text{C}$  (+  $5\text{ }^{\circ}\text{C}$ ),  $RH < 5\%$   
 or  
 96 h at  $60\text{ }^{\circ}\text{C}$  (+  $5\text{ }^{\circ}\text{C}$ ),  $RH < 5\%$ .

**REFLOW SOLDER PROFILE**

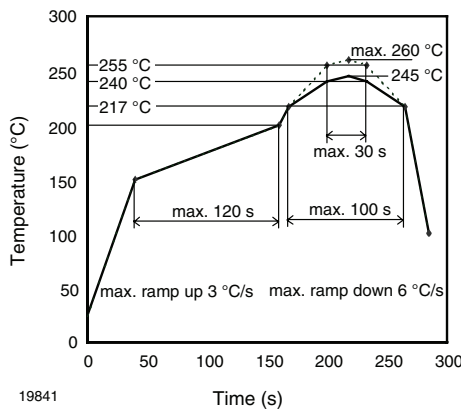
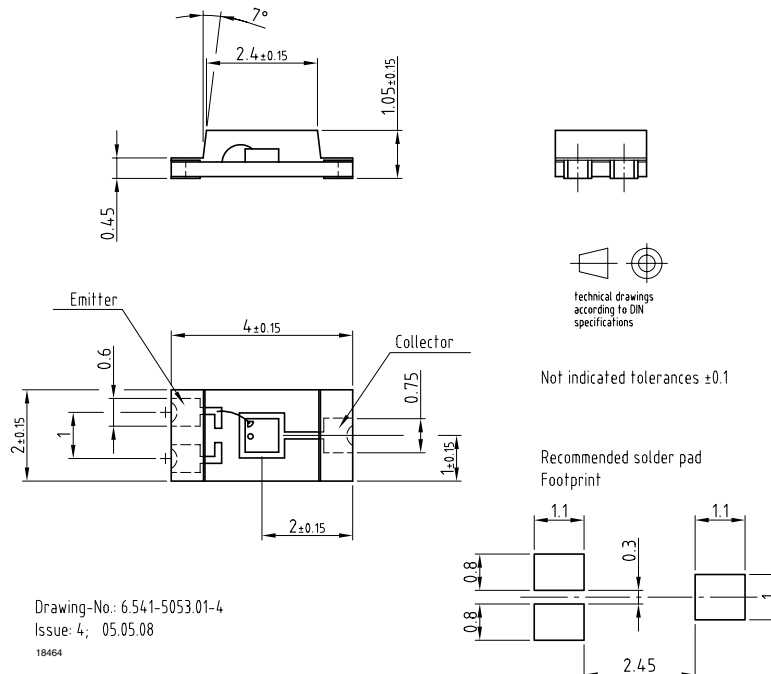


Fig. 6 - Lead (Pb)-free Reflow Solder Profile acc. J-STD-020D

**PACKAGE DIMENSIONS** in millimeters

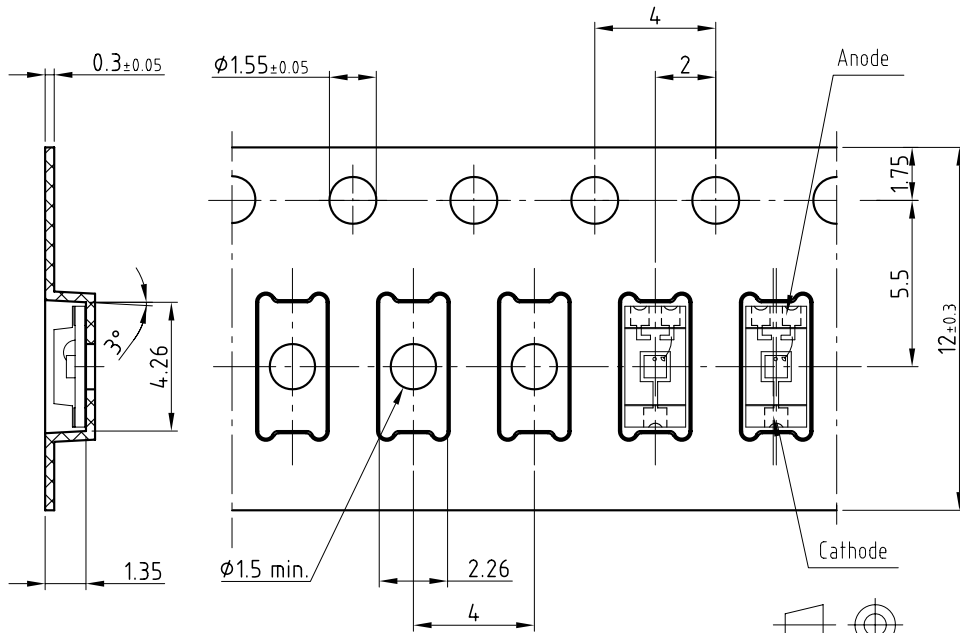


# TEMD6010FX01



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

## BLISTER TAPE DIMENSIONS in millimeters



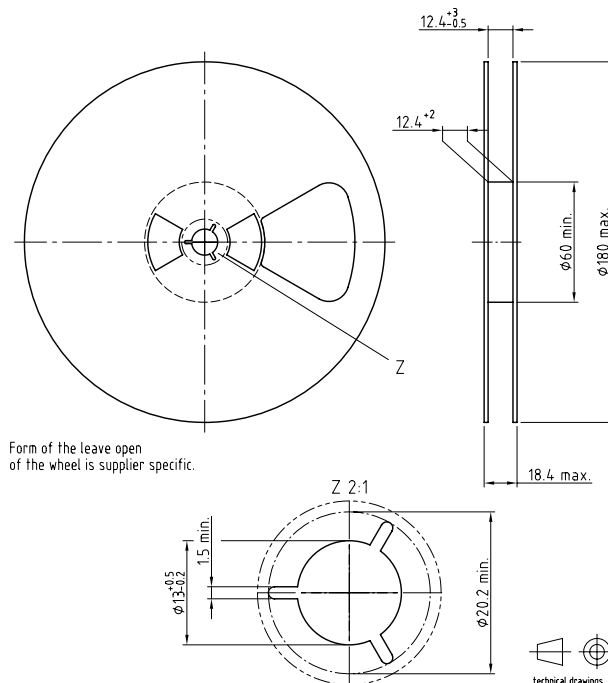
Drawing-No.: 9.700-5329.02-4  
Issue: 1; 05.05.08  
20877

technical drawings  
according to DIN  
specifications

Not indicated tolerances ±0.1

## REEL DIMENSIONS in millimeters

Volume: 3000 pcs/reel



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



## Disclaimer

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

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained herein or in any other disclosure relating to any product.

Vishay disclaims any and all liability arising out of the use or application of any product described herein or of any information provided herein to the maximum extent permitted by law. The product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein, which apply to these products.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications unless otherwise expressly indicated. Customers using or selling Vishay products not expressly indicated for use in such applications do so entirely at their own risk and agree to fully indemnify Vishay for any damages arising or resulting from such use or sale. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

Product names and markings noted herein may be trademarks of their respective owners.