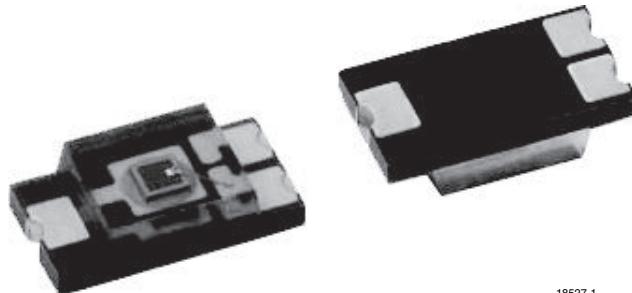


## Ambient Light Sensor

### FEATURES



18527-1

AUTOMOTIVE GRADE


**RoHS**  
COMPLIANT

**GREEN**  
(S-2008)\*\*

- 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>): 0.27
- AEC-Q101 qualified
- High photo sensitivity
- Adapted to human eye responsivity
- Supression filter for near infrared radiation
- Angle of half sensitivity:  $\phi = \pm 60^\circ$
- Floor life: 168 h, MSL 3, acc. J-STD-020
- Lead (Pb)-free reflow soldering
- Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC

### Note

\*\* Please see document "Vishay Material Category Policy":  
[www.vishay.com/doc?99902](http://www.vishay.com/doc?99902)

### APPLICATIONS

- Automotive sensors
- Ambient light sensors
- Backlight dimming
- Mobil phones
- Notebooks
- Computers

### 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 0.27 mm<sup>2</sup> sensitive area. It is sensitive to visible light much like the human eye and has peak sensitivity at 540 nm.

### PRODUCT SUMMARY

COMPONENT	I <sub>ra</sub> (μA)	φ (deg)	λ0.5 (nm)
TEMD6010FX01	1	± 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 (T<sub>amb</sub> = 25 °C, unless otherwise specified)

PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Reverse voltage		V <sub>R</sub>	16	V
Power dissipation		P <sub>V</sub>	100	mW
Junction temperature		T <sub>j</sub>	100	°C
Operating temperature range		T <sub>amb</sub>	- 40 to + 100	°C
Storage temperature range		T <sub>stg</sub>	- 40 to + 100	°C
Soldering temperature	Acc. reflow solder profile fig. 7	T <sub>sd</sub>	260	°C
Thermal resistance junction/ambient	Soldered on PCB with pad dimensions: 4 mm x 4 mm	R <sub>thJA</sub>	450	K/W

<b>BASIC CHARACTERISTICS</b> ( $T_{amb} = 25^\circ C$ , unless otherwise specified)						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Breakdown voltage	$I_R = 100 \mu A, E = 0 \text{ lx}$	$V_{(BR)}$	16			V
Reverse dark current	$V_{CE} = 5 \text{ V}, E = 0 \text{ lx}$	$I_{ro}$		2	30	nA
Diode capacitance	$V_R = 0 \text{ V}, f = 1 \text{ MHz}, E = 0 \text{ lx}$	$C_D$		60		pF
	$V_R = 5 \text{ V}, f = 1 \text{ MHz}, E = 0 \text{ lx}$	$C_D$		24		pF
Reverse light current	$E_e = 1 \text{ mW/cm}^2, \lambda = 550 \text{ nm}, V_R = 5 \text{ V}$	$I_{ra}$		1		$\mu A$
	$E_V = 100 \text{ lx}, \text{CIE illuminant A}, V_R = 5 \text{ V}$	$I_{ra}$	0.03	0.04		$\mu A$
Temperature coefficient of $I_{ra}$	$E_V = 100 \text{ lx}, \text{CIE illuminant A}, V_R = 5 \text{ V}$	$TK_{Ira}$		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

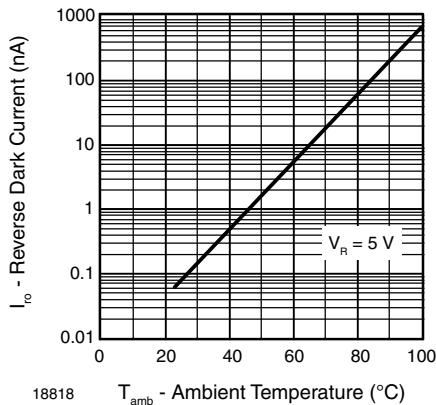
**BASIC CHARACTERISTICS** ( $T_{amb} = 25^\circ C$ , unless otherwise specified)


Fig. 1 - Reverse Dark Current vs. Ambient Temperature

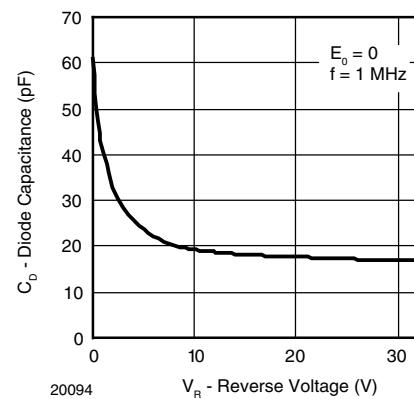


Fig. 3 - Diode Capacitance vs. Reverse Voltage

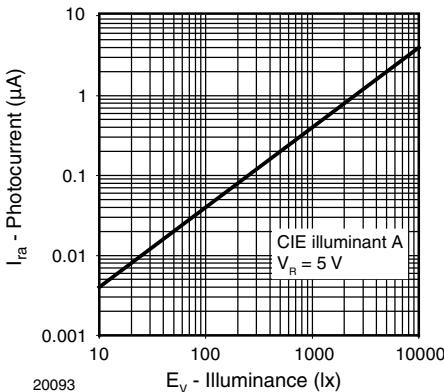


Fig. 2 - Reverse Light Current vs. Illuminance

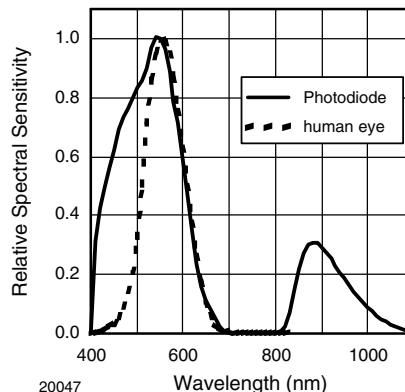


Fig. 4 - Relative Spectral Sensitivity vs. Wavelength

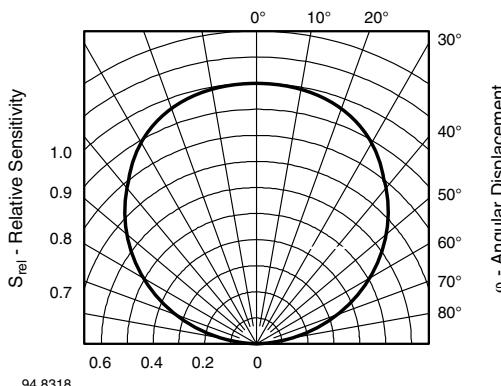


Fig. 1 - Relative Radiant Sensitivity vs. Angular Displacement

## REFLOW SOLDER PROFILE

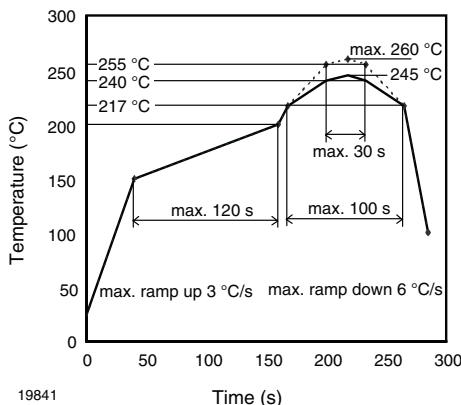
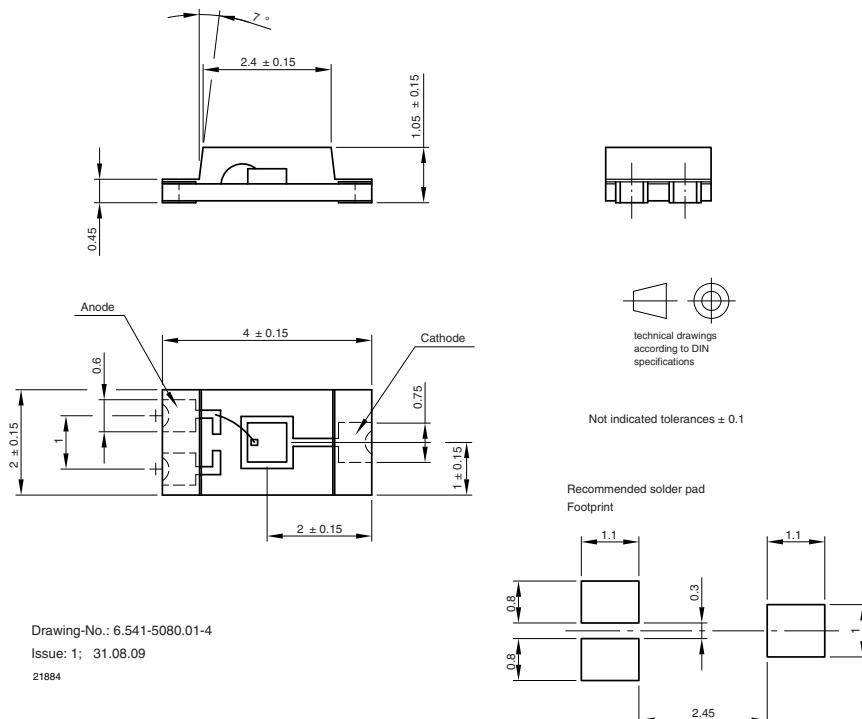
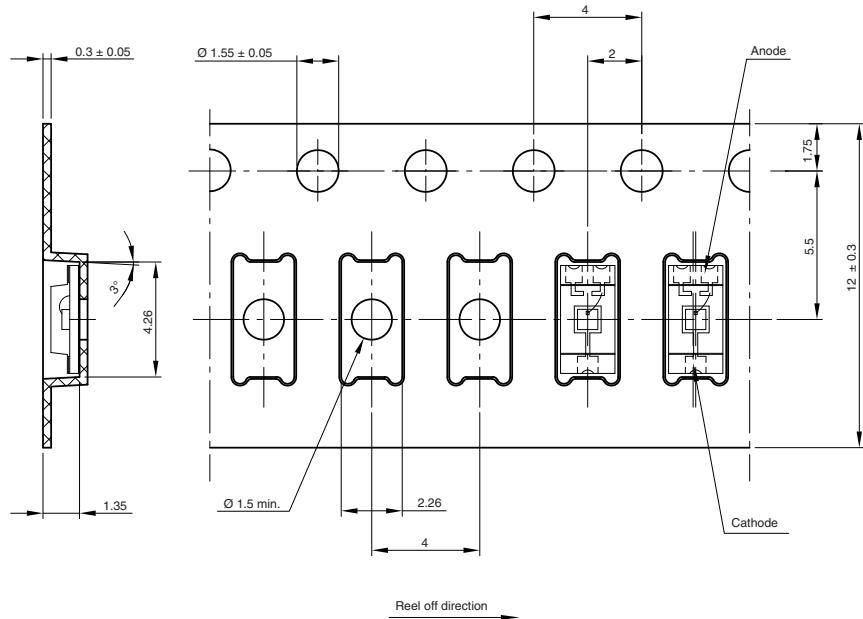


Fig. 5 - Lead (Pb)-free Reflow Solder Profile acc. J-STD-020D

## PACKAGE DIMENSIONS in millimeters



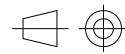
**BLISTER TAPE DIMENSIONS** in millimeters


Drawing-No.: 9.700-5329.02-4

Issue: 2; 31.08.09

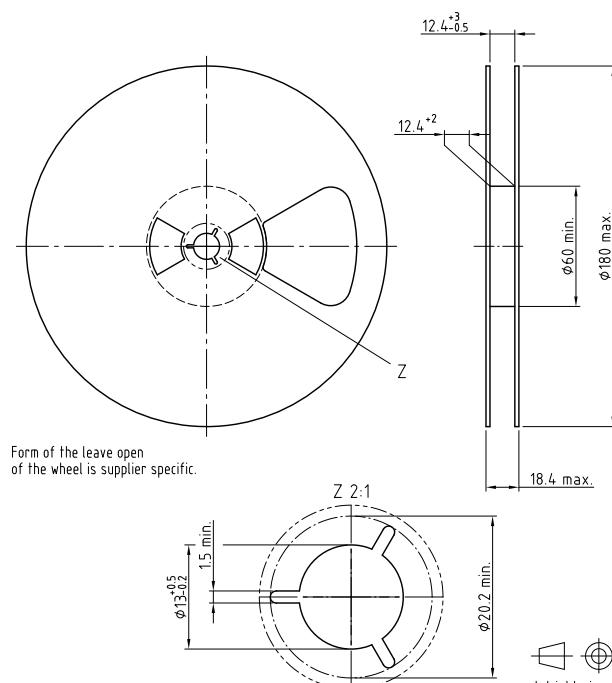
20877

Not indicated tolerances ±0.1


technical drawings  
according to DIN  
specifications

**REEL DIMENSIONS** in millimeters

Volume: 3000 pcs/reel



Drawing-No.: 9.800-5097.01-4

Issue: 1; 05.05.08

20874


technical drawings  
according to DIN  
specifications

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