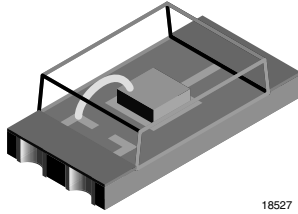


Ambient Light Sensor, RoHS Compliant, Released for Lead (Pb)-free Reflow Soldering, AEC-Q101 Released



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 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: 1206
- Dimensions (L x W x H in mm): 4 x 2 x 1.05
- Radiant sensitive area (in mm²): 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} (μA)	φ (deg)	$\lambda_{0.5}$ (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

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		μA
	$E_V = 100 \text{ lx}, \text{CIE illuminant A}, V_R = 5 V$	I_{ra}	0.03	0.04		μA
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		ϕ		± 60		deg
Wavelength of peak sensitivity		λ_p		540		nm
Range of spectral bandwidth		$\lambda_{0.5}$		430 to 610		nm

Note

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

BASIC CHARACTERISTICS

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

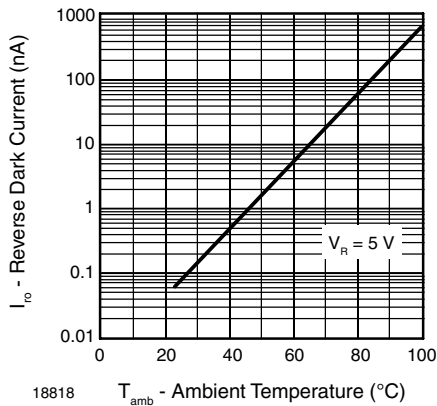


Fig. 1 - Reverse Dark Current vs. Ambient Temperature

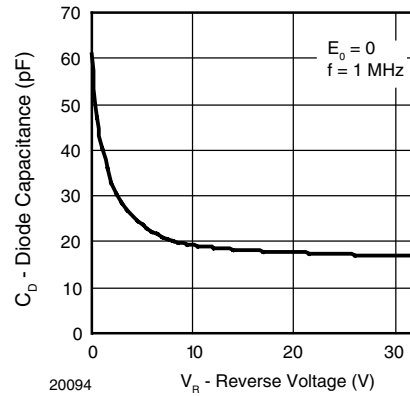


Fig. 3 - Diode Capacitance vs. Reverse Voltage

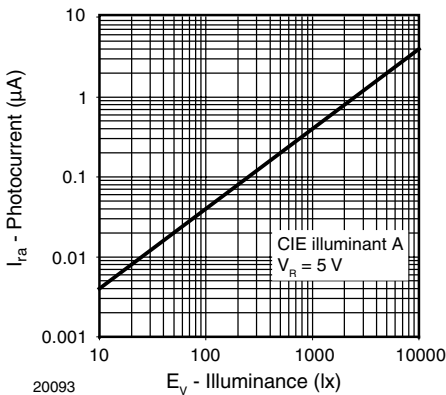


Fig. 2 - Reverse Light Current vs. Illuminance

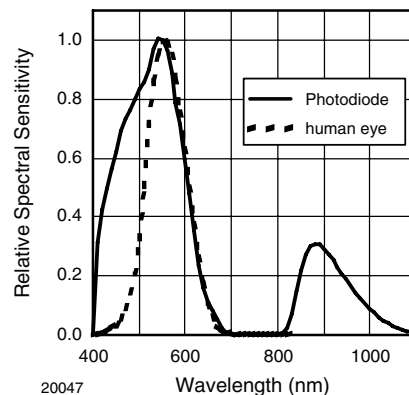


Fig. 4 - Relative Spectral Sensitivity vs. Wavelength



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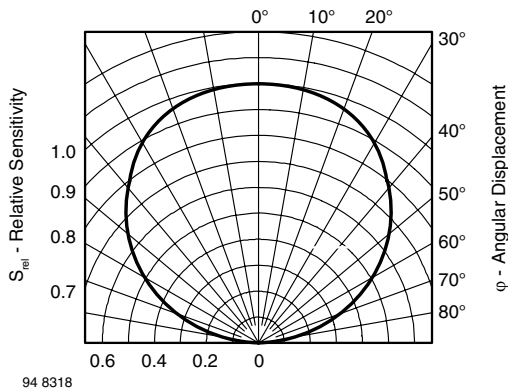


Fig. 5 - Relative Radiant Sensitivity vs. Angular Displacement

REFLOW SOLDER PROFILE

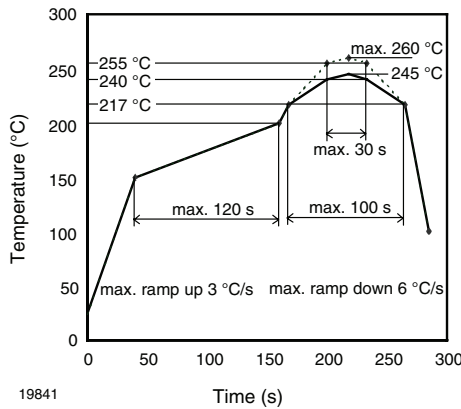
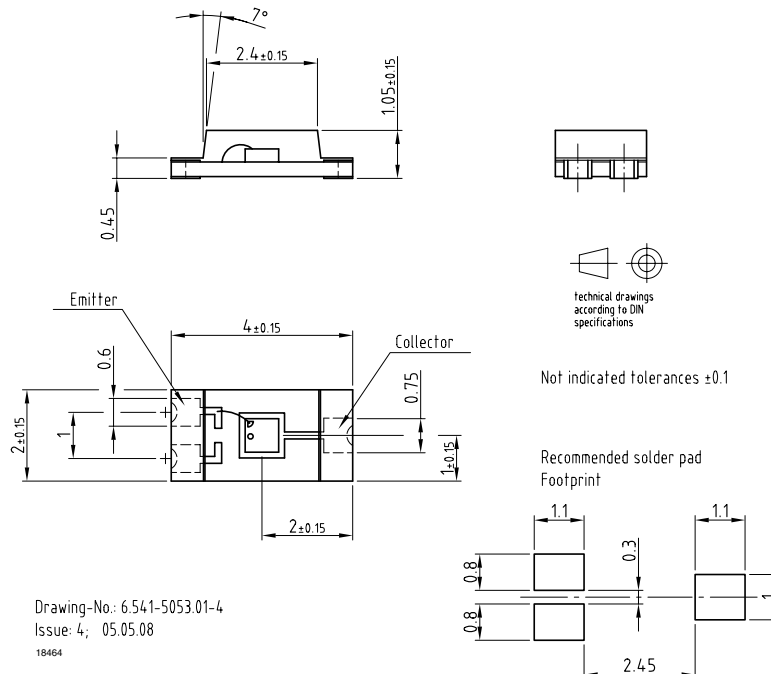


Fig. 6 - Lead (Pb)-free Reflow Solder Profile acc. J-STD-020D

PACKAGE DIMENSIONS in millimeters



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

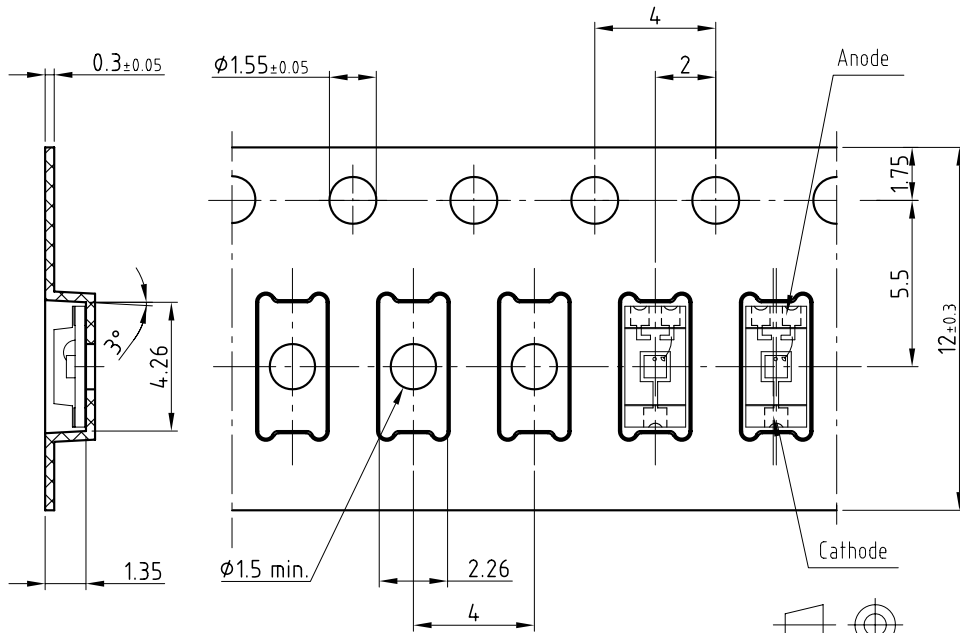
In case of moisture absorption devices should be baked before soldering. Conditions see J-STD-020 or recommended conditions:
 192 h at $40\text{ }^{\circ}\text{C}$ (+ $5\text{ }^{\circ}\text{C}$), $RH < 5\%$
 or
 96 h at $60\text{ }^{\circ}\text{C}$ (+ $5\text{ }^{\circ}\text{C}$), $RH < 5\%$.

TEMD6010FX01



Vishay Semiconductors Ambient Light Sensor, RoHS Compliant,
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BLISTER TAPE DIMENSIONS in millimeters

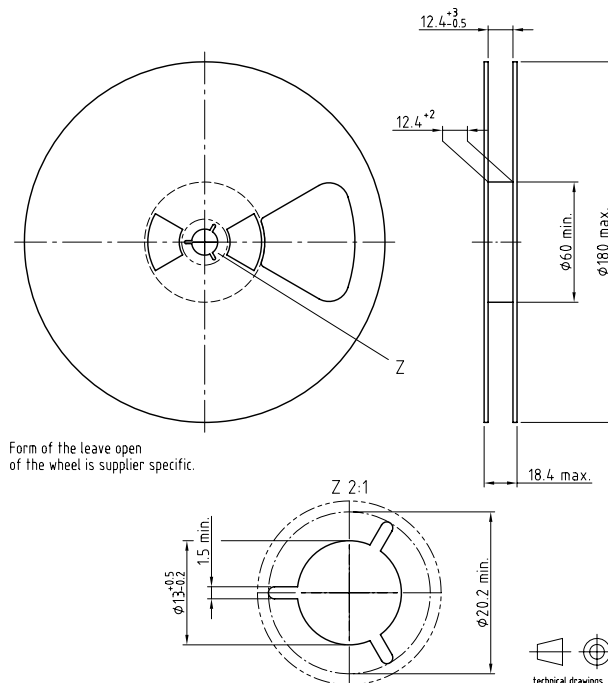


Drawing-No.: 9.700-5329.02-4
Issue: 1; 05.05.08
20877

technical drawings according to DIN specifications
Not indicated tolerances ±0.1

REEL DIMENSIONS in millimeters

Volume: 3000 pcs/reel



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

technical drawings according to DIN specifications



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

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