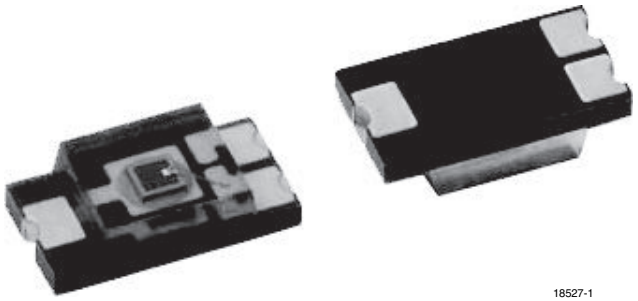
Ambient Light Sensor



18527-1

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^2): 0.27
- AEC-Q101 qualified
- High photo sensitivity
- Adapted to human eye responsivity
- Supression filter for near infrared radiation
- Angle of half sensitivity: φ = ± 60°
- Floor life: 168 h, MSL 3, acc. J-STD-020
- Lead (Pb)-free reflow soldering
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912

AUTOMOTIVE GRADE

Pb-free

e4

RoHS COMPLIANT

GREEN (5-2008)

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^2 sensitive area. It is sensitive to visible light much like the human eye and has peak sensitivity at 540 nm.

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	0.04	± 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_{amb} = 25 °C, unless otherwise specified)				
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Reverse voltage		V_R	16	V
Power dissipation		P_V	100	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. 7	T_{sd}	260	°C
Thermal resistance junction/ambient	Soldered on PCB with pad dimensions: 4 mm x 4 mm	R_{thJA}	450	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 lx	$V_{(BR)}$	16			V
Reverse dark current	V_{CE} = 10 V, E = 0 lx	I_{ro}		0.1	5	nA
Diode capacitance	V_R = 0 V, f = 1 MHz, E = 0 lx	C_D		60		pF
	V_R = 5 V, f = 1 MHz, E = 0 lx	C_D		24		pF
Reverse light current	E_e = 1 mW/cm², λ = 550 nm, V_R = 5 V	I_{ra}		1		µA
	E_V = 100 lx, CIE illuminant A, V_R = 5 V	I_{ra}	0.03	0.04	0.09	µA
Temperature coefficient of I_{ra}	E_V = 100 lx, CIE illuminant A, V_R = 5 V	TK_{Ira}		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

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

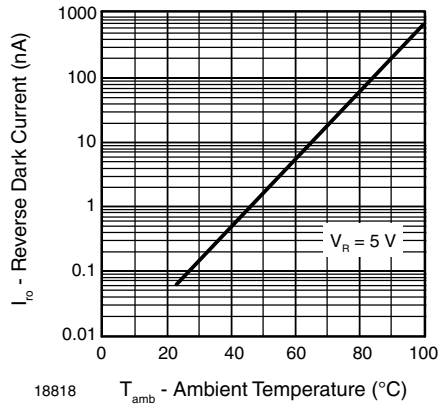


Fig. 1 - Reverse Dark Current vs. Ambient Temperature

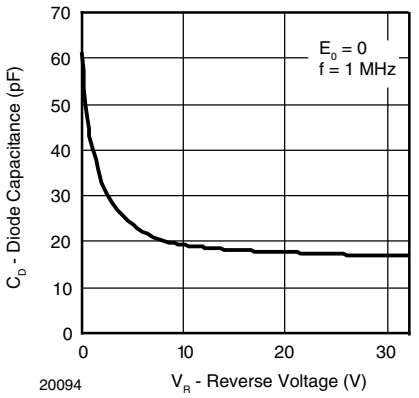


Fig. 3 - Diode Capacitance vs. Reverse Voltage

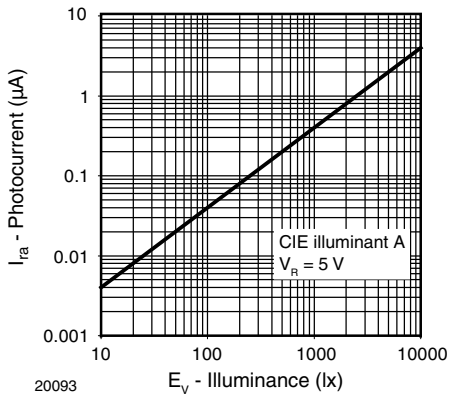


Fig. 2 - Reverse Light Current vs. Illuminance

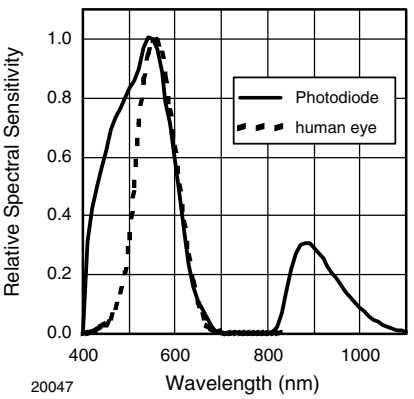


Fig. 4 - Relative Spectral Sensitivity vs. Wavelength

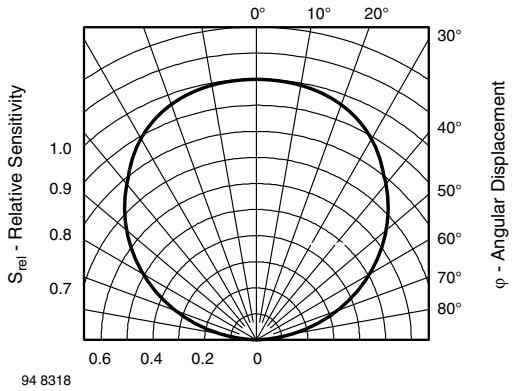


Fig. 1 - Relative Radiant Sensitivity vs. Angular Displacement

REFLOW SOLDER PROFILE

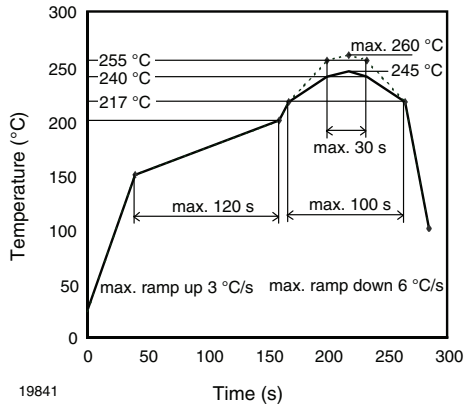
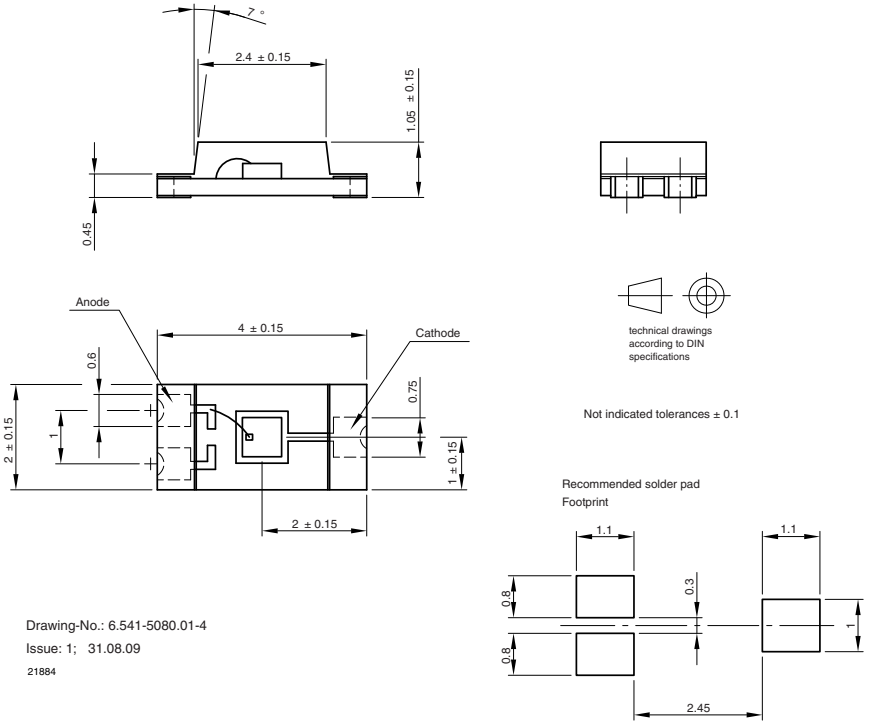


Fig. 5 - Lead (Pb)-free Reflow Solder Profile acc. J-STD-020D

PACKAGE DIMENSIONS in millimeters



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

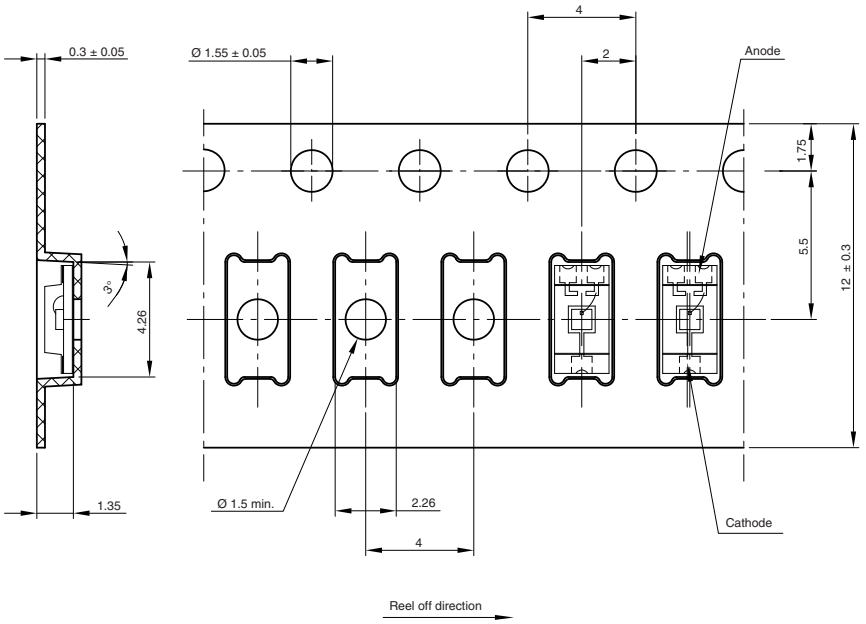
Time between soldering and removing from MBB must not exceed the time indicated in J-STD-020:
Moisture sensitivity: level 3
Floor life: 168 h
Conditions: T_{amb} < 30 °C, RH < 60 %

DRYING

In case of moisture absorption devices should be baked before soldering. Conditions see J-STD-020 or label. Devices taped on reel dry using recommended conditions:

192 h at 40 °C (+ 5 °C), RH < 5 %
or
96 h at 60 °C (+ 5 °C), RH < 5 %.

BLISTER TAPE DIMENSIONS in millimeters



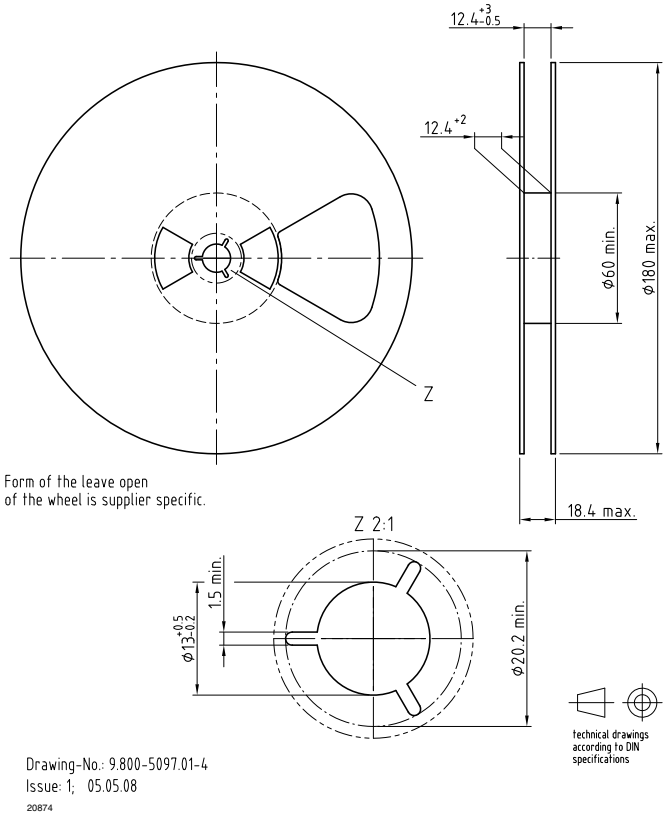
Not indicated tolerances ±0.1

technical drawings according to DIN specifications

Drawing-No.: 9.700-5329.02-4
Issue: 2; 31.08.09
20877

REEL DIMENSIONS in millimeters

Volume: 3000 pcs/reel



technical drawings according to DIN specifications

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

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