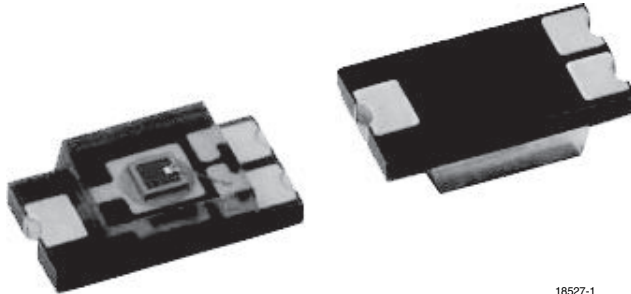


Ambient Light Sensor



18527-1

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 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): 0.27
- 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
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912



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 ($T_{amb} = 25^\circ\text{C}$, 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	$^\circ\text{C}$
Operating temperature range		T_{amb}	- 40 to + 100	$^\circ\text{C}$
Storage temperature range		T_{stg}	- 40 to + 100	$^\circ\text{C}$
Soldering temperature	Acc. reflow solder profile fig. 7	T_{sd}	260	$^\circ\text{C}$
Thermal resistance junction/ambient	Soldered on PCB with pad dimensions: 4 mm x 4 mm	R_{thJA}	450	K/W

BASIC CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Breakdown voltage	$I_R = 100\text{ }\mu\text{A}$, $E = 0\text{ lx}$	$V_{(BR)}$	16			V
Reverse dark current	$V_{CE} = 10\text{ V}$, $E = 0\text{ lx}$	I_{ro}		0.1	5	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		μA
	$E_V = 100\text{ lx}$, CIE illuminant A, $V_R = 5\text{ V}$	I_{ra}	0.03	0.04	0.09	μA
Temperature coefficient of I_{ra}	$E_V = 100\text{ lx}$, CIE illuminant A, $V_R = 5\text{ V}$	$TK_{I_{ra}}$		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

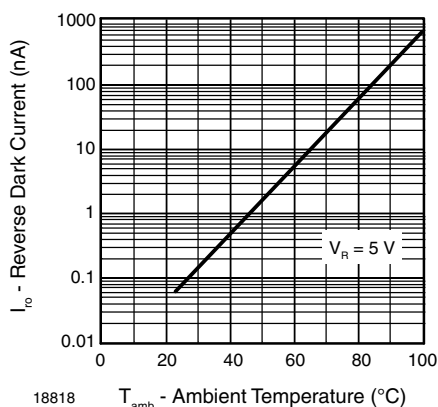
BASIC CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)


Fig. 1 - Reverse Dark Current vs. Ambient Temperature

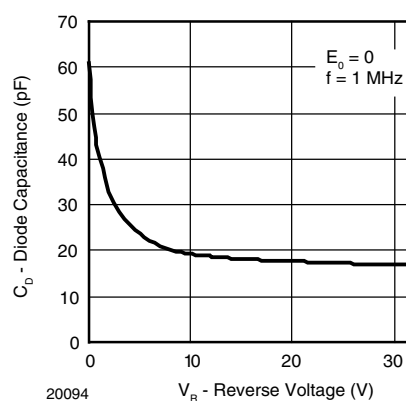


Fig. 3 - Diode Capacitance vs. Reverse Voltage

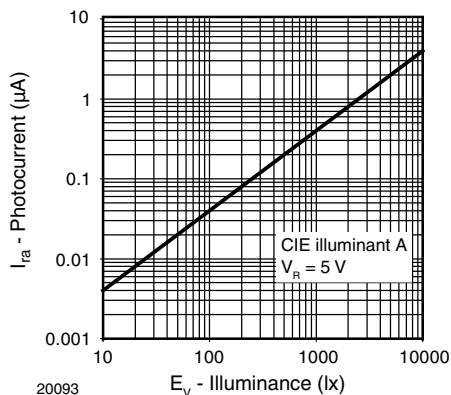


Fig. 2 - Reverse Light Current vs. Illuminance

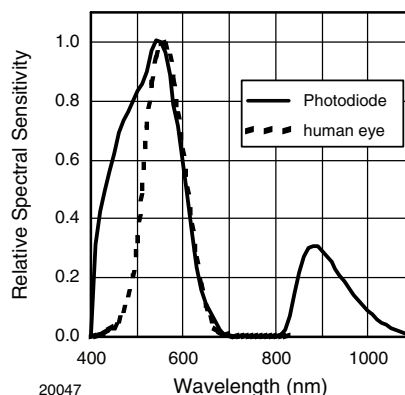


Fig. 4 - Relative Spectral Sensitivity vs. Wavelength

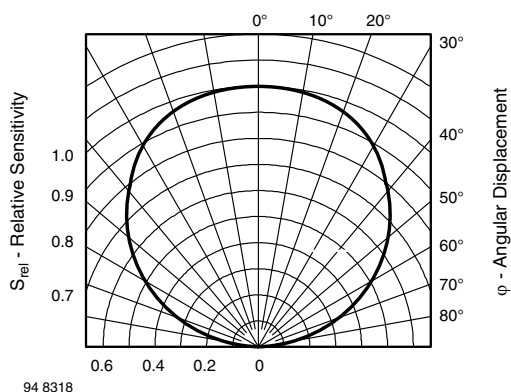


Fig. 1 - Relative Radiant Sensitivity vs. Angular Displacement

REFLOW SOLDER PROFILE

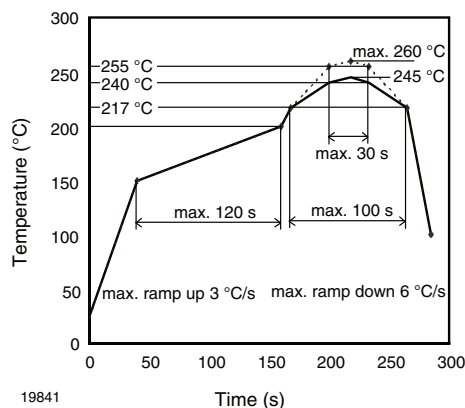
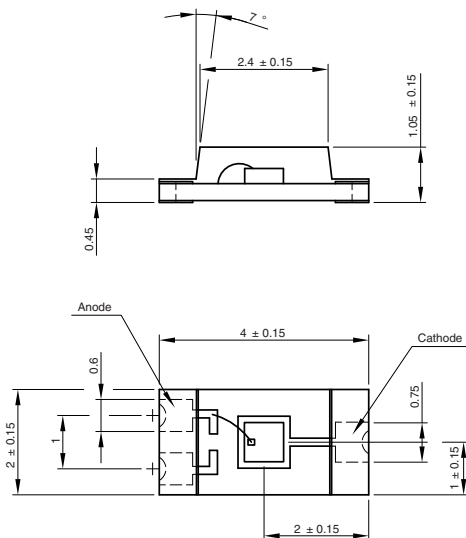
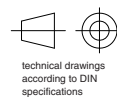


Fig. 5 - Lead (Pb)-free Reflow Solder Profile acc. J-STD-020D

PACKAGE DIMENSIONS in millimeters

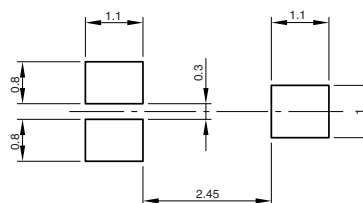


Drawing-No.: 6.541-5080.01-4
Issue: 1; 31.08.09
21884



Not indicated tolerances ± 0.1

Recommended solder pad
Footprint



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

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 $40\text{ }^{\circ}\text{C}$ ($+5\text{ }^{\circ}\text{C}$), $RH < 5\%$

or

96 h at $60\text{ }^{\circ}\text{C}$ ($+5\text{ }^{\circ}\text{C}$), $RH < 5\%$.



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