# **TEMT6000X01**





# **Ambient Light Sensor**

### **FEATURES**

- Package type: surface mount
- Package form: 1206
- Dimensions (L x W x H in mm): 4 x 2 x 1.05
- AEC-Q101 gualified
- · High photo sensitivity
- · Adapted to human eye responsivity
- 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

#### **APPLICATIONS**

Ambient light sensor for control of display backlight dimming in LCD displays and keypad backlighting of mobile devices and in industrial on/off-lighting operation.

- Automotive sensors
- Mobile phones
- Notebook computers
- PDA's
- Cameras
- Dashboards

PRODUCT SUMMARY			
COMPONENT	I <sub>PCE</sub> (μΑ)	φ (deg)	λ <sub>0.5</sub> (nm)
TEMT6000X01	50	± 60	440 to 800

Note

DESCRIPTION

570 nm.

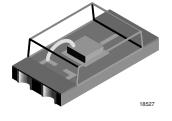
· Test condition see table "Basic Characteristics"

ORDERING INFORMATION				
ORDERING CODE	PACKAGING	REMARKS	PACKAGE FORM	
TEMT6000X01	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
Collector emitter voltage		V <sub>CEO</sub>	6	V
Emitter collector voltage		V <sub>ECO</sub>	1.5	V
Collector current		Ι <sub>C</sub>	20	mA
Power dissipation		Pv	100	mW



TEMT6000X01 ambient light sensor is a silicon NPN

epitaxial planar phototransistor in a miniature transparent

1206 package for surface mounting. It is sensitive to visible

light much like the human eye and has peak sensitivity at

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# TEMT6000X01



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ABSOLUTE MAXIMUM RATINGS (T <sub>amb</sub> = 25 °C, unless otherwise specified)				
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Junction temperature		Тj	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. 8	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

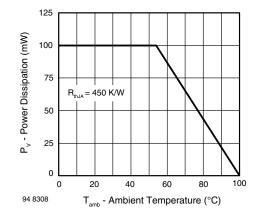


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

BASIC CHARACTERISTICS (T <sub>amb</sub> = 25 °C, unless otherwise specified)						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Collector emitter breakdown voltage	I <sub>C</sub> = 0.1 mA	V <sub>CEO</sub>	6			V
Collector dark current	$V_{CE} = 5 V, E = 0$	I <sub>CEO</sub>		3	50	nA
Collector emitter capacitance	$V_{CE} = 0 V$ , f = 1 MHz, E = 0	C <sub>CEO</sub>		16		pF
Collector light current	$E_V = 20$ lx, CIE illuminant A, $V_{CE} = 5$ V	I <sub>PCE</sub>	3.5	10	16	μA
	$E_V = 100 \text{ Ix, CIE illuminant A,}$ $V_{CE} = 5 \text{ V}$	I <sub>PCE</sub>		50		μA
<b>—</b> . <i>(</i> ()	CIE illuminant A	TKIPCE		1.18		%/K
Temperature coefficient of I <sub>PCE</sub>	LED, white	TKIPCE		0.9		%/K
Angle of half sensitivity		φ		± 60		deg
Wavelength of peak sensitivity		λρ		570		nm
Range of spectral bandwidth		λ <sub>0.5</sub>		440 to 800		nm
Collector emitter saturation voltage	$E_V = 20 \text{ lx}$ , CIE illuminant A, $I_{PCE} = 1.2 \mu\text{A}$	V <sub>CEsat</sub>		0.1		V





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## **BASIC CHARACTERISTICS** ( $T_{amb} = 25 \text{ °C}$ , unless otherwise specified)

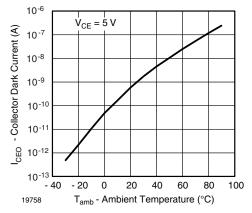


Fig. 1 - Collector Dark Current vs. Ambient Temperature

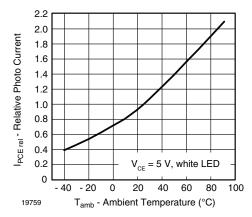


Fig. 2 - Relative Photo Current vs. Ambient Temperature

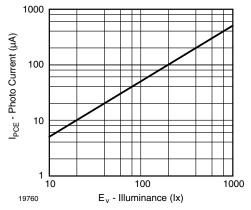


Fig. 3 - Photo Current vs. Illuminance

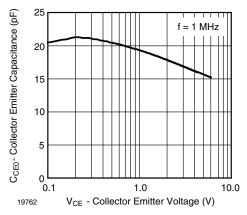


Fig. 4 - Collector Emitter Capacitance vs. Collector Emitter Voltage

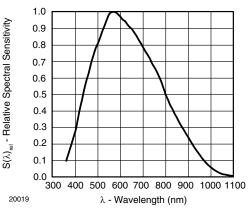


Fig. 5 - Relative Spectral Sensitivity vs. Wavelength

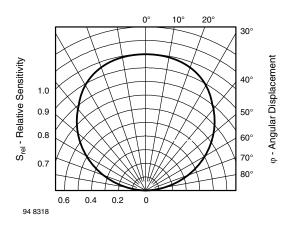


Fig. 6 - Relative Radiant Sensitivity vs. Angular Displacement

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### **REFLOW SOLDER PROFILE**

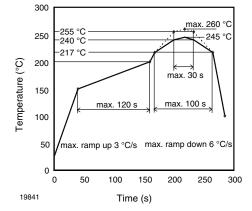


Fig. 7 - Lead (Pb)-free Reflow Solder Profile acc. J-STD-020D

#### 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

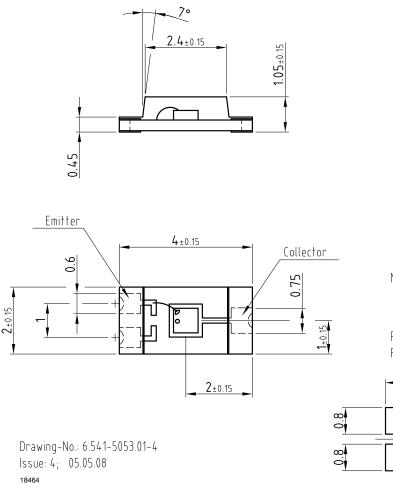
Time between soldering and removing from MBB must not exceed the time indicated in J-STD-020: Moisture sensitivity: level 3 Floor life: 168 h Conditions:  $T_{amb} < 30$  °C, RH < 60 %

#### 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 %.

#### **PACKAGE DIMENSIONS** in millimeters



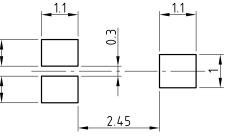




according to DIN specifications

Not indicated tolerances ±0.1

Recommended solder pad Footprint



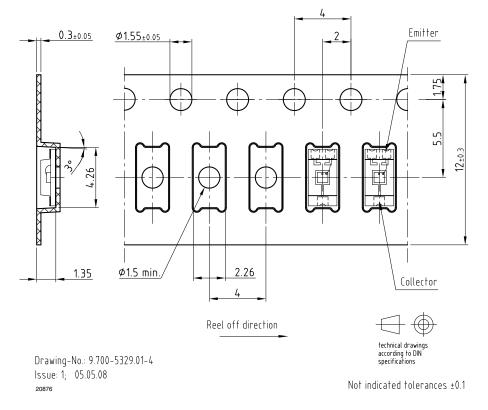
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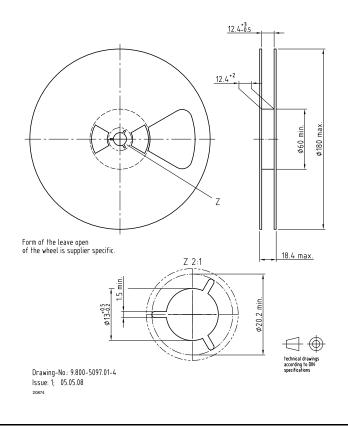


#### **BLISTER TAPE DIMENSIONS** in millimeters



### **REEL DIMENSIONS** in millimeters

Volume: 3000 pcs/reel



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Revision: 01-Jan-2025

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