AUTOMOTIVE

RoHS

COMPLIANT

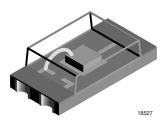
GREEN

(5-2008)3



Vishay Semiconductors

Ambient Light Sensor



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

FEATURES

Package type: surface mount

• Package form: 1206

• Dimensions (L x W x H in mm): 4 x 2 x 1.05

AEC-Q101 qualified

· High photo sensitivity

· Adapted to human eye responsivity

• Angle of half sensitivity: $\varphi = \pm 60^{\circ}$

• 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 _{PCE} (μΑ)	φ (deg)	λ _{0.5} (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 _{amb} = 25 °C, unless otherwise specified)				
PARAMETER	TEST CONDITION	SYMBOL VALUE		UNIT
Collector emitter voltage		V_{CEO}	6	V
Emitter collector voltage		V_{ECO}	1.5	V
Collector current		I _C	20	mA
Power dissipation		P _V	100	mW



ABSOLUTE MAXIMUM RATINGS (T _{amb} = 25 °C, unless otherwise specified)					
PARAMETER	TEST CONDITION	SYMBOL VALUE		UNIT	
Junction temperature		Tj	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. 8	T _{sd}	260	°C	
Thermal resistance junction/ambient	Soldered on PCB with pad dimensions: 4 mm x 4 mm	R _{thJA}	450	K/W	

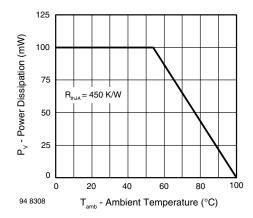


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

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

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

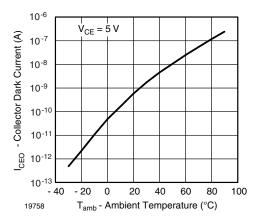


Fig. 1 - Collector Dark Current vs. Ambient Temperature

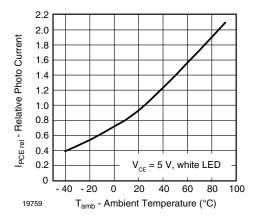


Fig. 2 - Relative Photo Current vs. Ambient Temperature

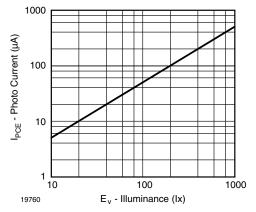


Fig. 3 - Photo Current vs. Illuminance

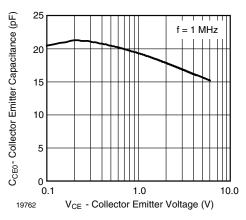


Fig. 4 - Collector Emitter Capacitance vs. Collector Emitter Voltage

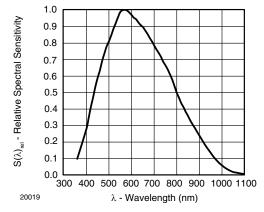


Fig. 5 - Relative Spectral Sensitivity vs. Wavelength

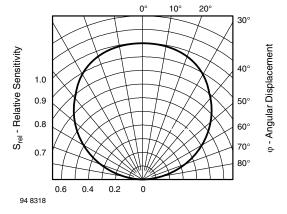


Fig. 6 - Relative Radiant Sensitivity vs. Angular Displacement



REFLOW SOLDER PROFILE

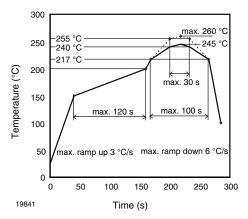


Fig. 7 - Lead (Pb)-free Reflow Solder Profile acc. J-STD-020D

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 %

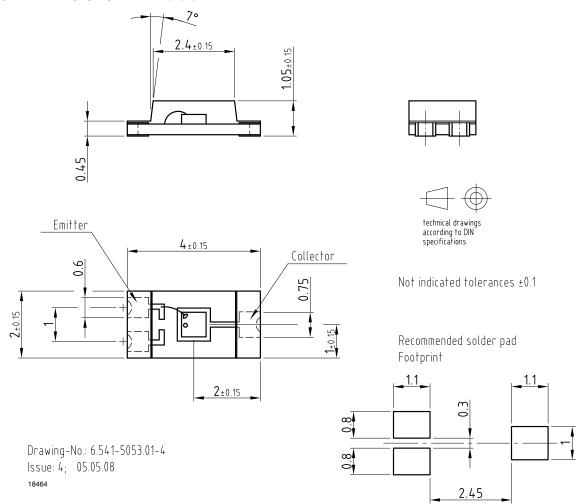
DRYING

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

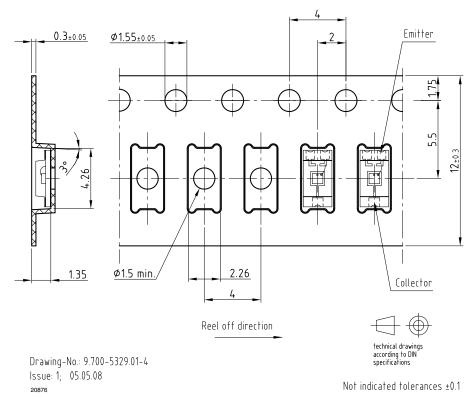
or

96 h at 60 °C (+ 5 °C), RH < 5 %.

PACKAGE DIMENSIONS in millimeters

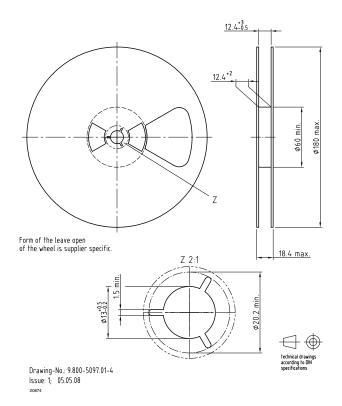


BLISTER TAPE DIMENSIONS in millimeters



REEL DIMENSIONS in millimeters

Volume: 3000 pcs/reel





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Vishay

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