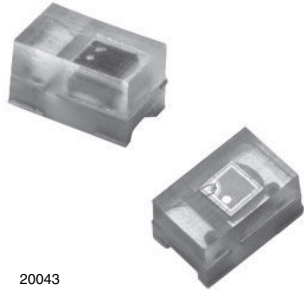




Ambient Light Sensor in 0805 Package



FEATURES

- Package type: surface mount
- Package form: 0805
- Dimensions (L x W x H in mm): 2 x 1.25 x 0.85
- 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
- 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

DESCRIPTION

TEMT6200FX01 ambient light sensor is a silicon NPN epitaxial planar phototransistor in a miniature transparent 0805 package for surface mounting. It is sensitive to visible light much like the human eye and has peak sensitivity at 550 nm.

APPLICATIONS

- Automotive sensors
- Ambient light sensor for display backlight dimming in:
 - Mobile phones
 - Notebook computers
 - PDAs
 - Cameras
 - Dashboards

PRODUCT SUMMARY			
COMPONENT	I _{PCE} (μA)	φ (deg)	λ _{0.5} (nm)
TEMT6200FX01	7.5 to 39	± 60	450 to 610

Note

- Test condition see table "Basic Characteristics"

ORDERING INFORMATION			
ORDERING CODE	PACKAGING	REMARKS	PACKAGE FORM
TEMT6200FX01	Tape and reel	MOQ: 3000 pcs, 3000 pcs/reel. Label with I _{PCE} group on each reel. Specifications of group A/B/C see table "Type Dedicated Characteristics"	0805

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
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 profile fig. 9	T _{sd}	260	°C
Thermal resistance junction/ambient	Soldered on PCB with pad dimensions: 4 mm x 4 mm	R _{thJA}	450	K/W

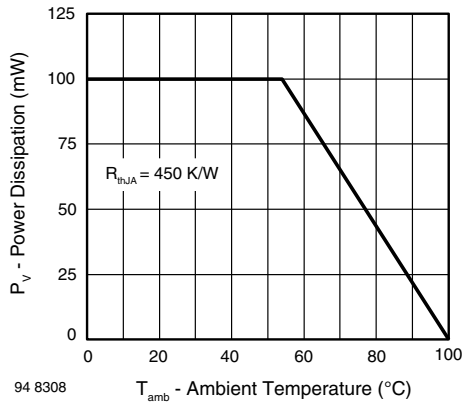


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

BASIC CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Collector emitter breakdown voltage	$I_C = 0.1\text{ mA}$	V_{CEO}	6			V
Collector dark current	$V_{CE} = 5\text{ V}$, $E = 0\text{ lx}$	I_{CEO}		3	50	nA
Collector emitter capacitance	$V_{CE} = 0\text{ V}$, $f = 1\text{ MHz}$, $E = 0\text{ lx}$	C_{CEO}		16		pF
Photo current	$E_V = 20\text{ lx}$, CIE illuminant A, $V_{CE} = 5\text{ V}$	I_{PCE}		4.6		μA
	$E_V = 100\text{ lx}$, CIE illuminant A, $V_{CE} = 5\text{ V}$	I_{PCE}	7.5		39	μA
Temperature coefficient of I_{PCE}	CIE illuminant A	$TK_{I_{PCE}}$		1.18		%/K
	LED, white	$TK_{I_{PCE}}$		0.9		%/K
Angle of half sensitivity		ϕ		± 60		deg
Wavelength of peak sensitivity		λ_p		550		nm
Range of spectral bandwidth		$\lambda_{0.5}$		450 to 610		nm
Collector emitter saturation voltage	$E_V = 20\text{ lx}$, $0.45\text{ }\mu\text{A}$	V_{CEsat}		0.1		V

TYPE DEDICATED CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)						
PARAMETER	TEST CONDITION	SELECTION TYPE	SYMBOL	MIN.	MAX.	UNIT
Photo current	$E_V = 100\text{ lx}$, CIE illuminant A, $V_{CE} = 5\text{ V}$	TEMT6200FX01A	I_{PCE}	7.5	15	μA
		TEMT6200FX01B	I_{PCE}	12	24	μA
		TEMT6200FX01C	I_{PCE}	19.5	39	μA

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

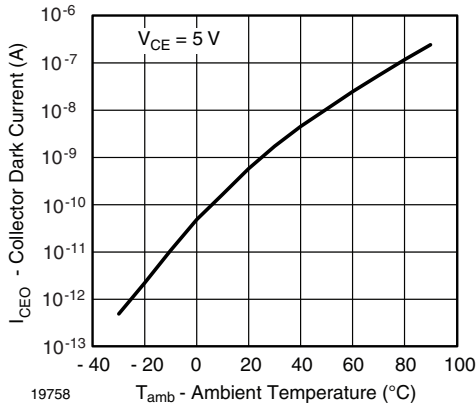


Fig. 1 - Collector Dark Current vs. Ambient Temperature

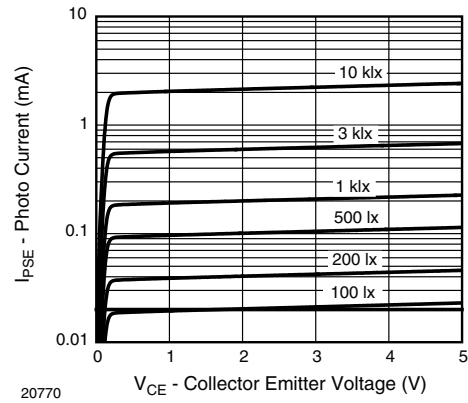


Fig. 4 - Photo Current vs. Collector Emitter Voltage

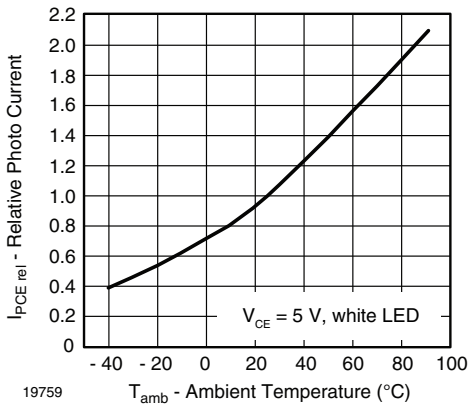


Fig. 2 - Relative Photo Current vs. Ambient Temperature

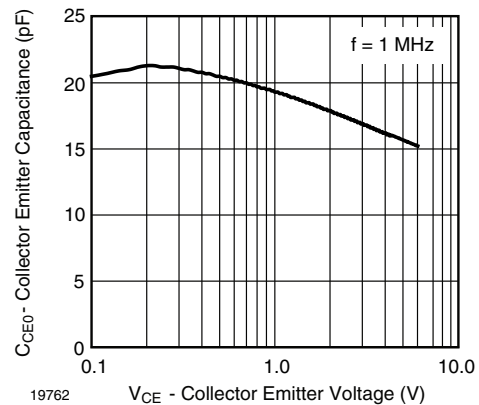


Fig. 5 - Collector Emitter Capacitance vs. Collector Emitter Voltage

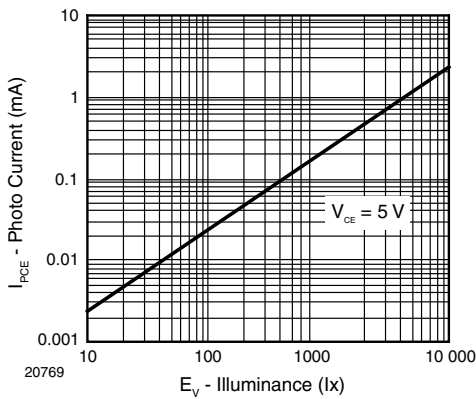


Fig. 3 - Photo Current vs. Illuminance

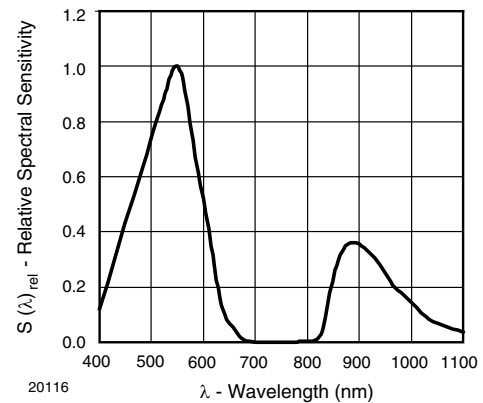


Fig. 6 - Relative Spectral Sensitivity vs. Wavelength

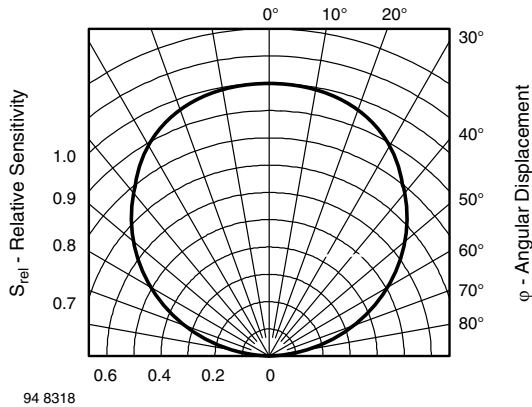


Fig. 7 - Relative Radiant Sensitivity vs. Angular Displacement

REFLOW SOLDER PROFILE

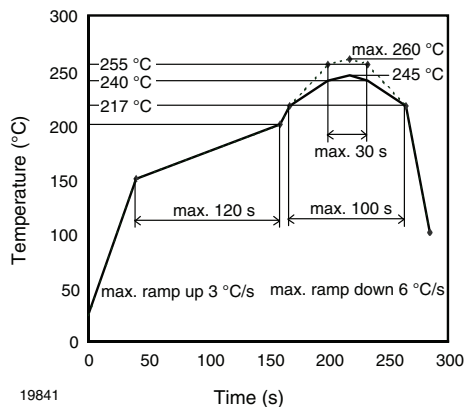


Fig. 8 - Lead (Pb)-free Reflow Solder Profile acc. J-STD-020

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

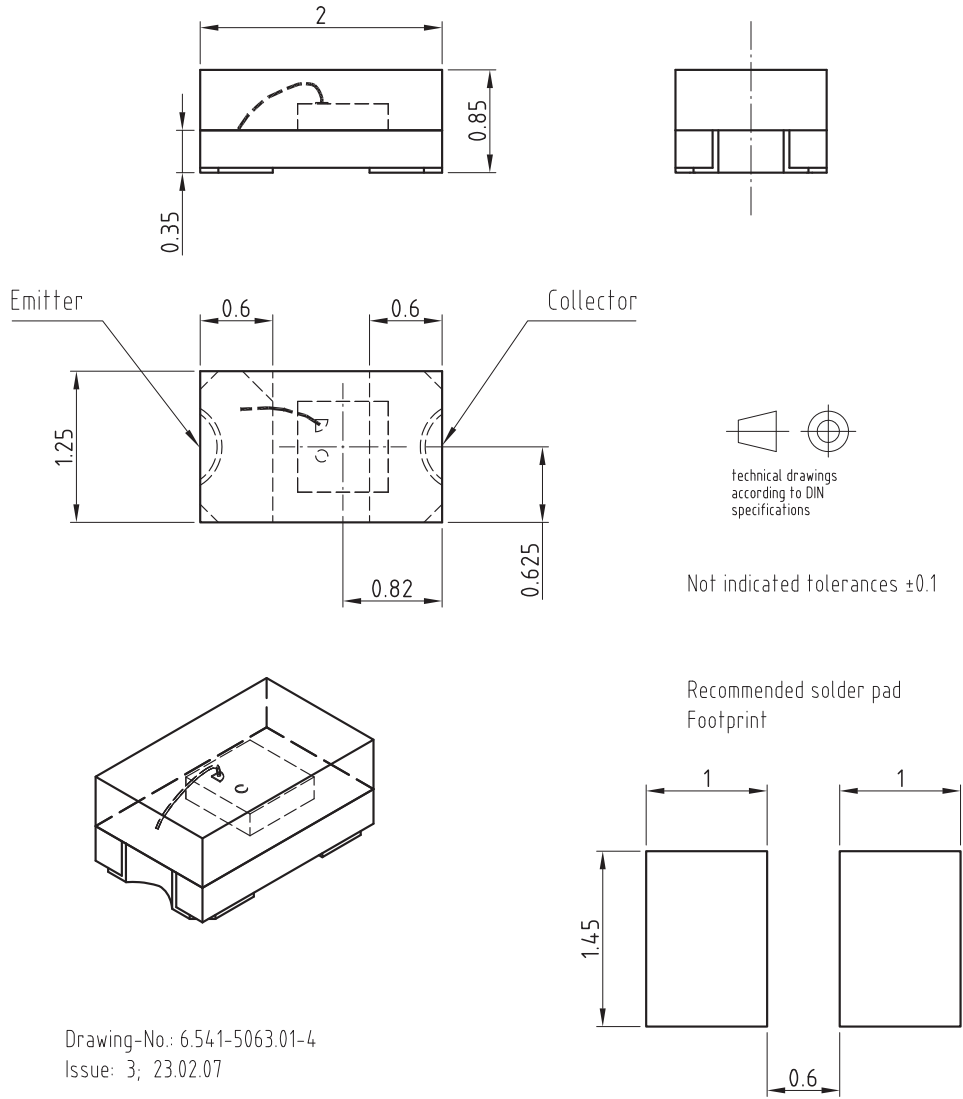
Time between soldering and removing from MBB must not exceed the time indicated in J-STD-020:
 Moisture sensitivity: level 3
 Floor life: 168 h
 Conditions: $T_{amb} < 30\text{ }^{\circ}\text{C}$, $\text{RH} < 60\%$

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



PACKAGE DIMENSIONS in millimeters

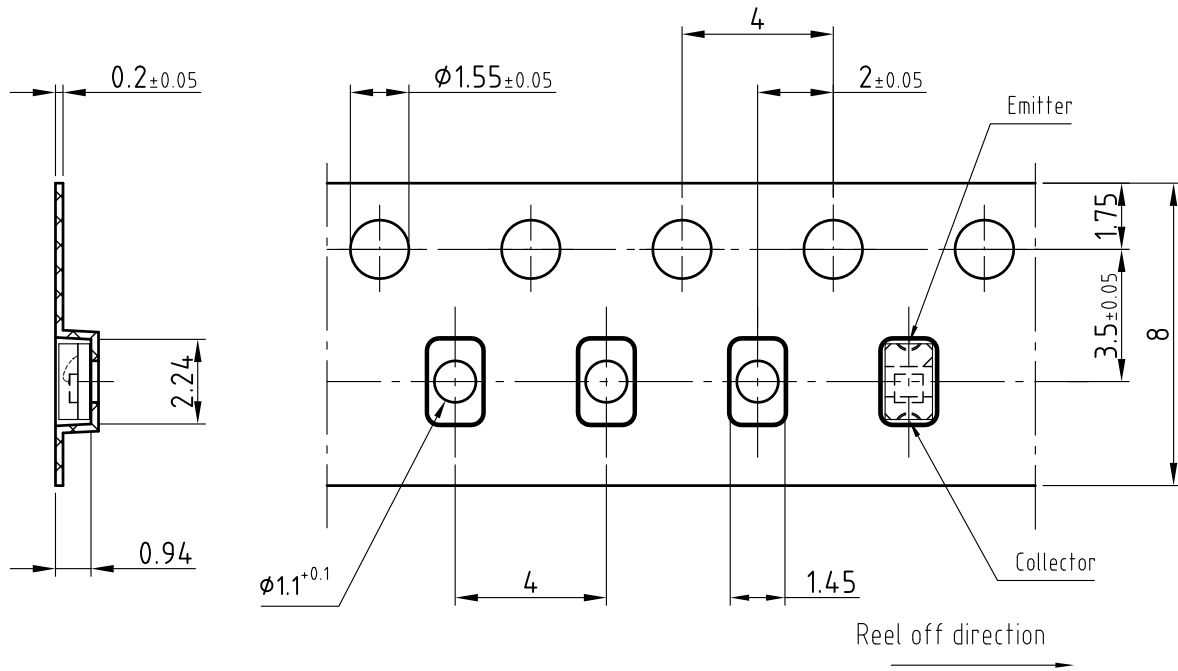


Drawing-No.: 6.541-5063.01-4
Issue: 3; 23.02.07

19757



BLISTER TAPE DIMENSIONS in millimeters



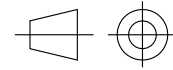
Drawing-No.: 9.700-5310.01-4

Issue: 2; 14.08.07

20690

Not indicated tolerances ±0.1

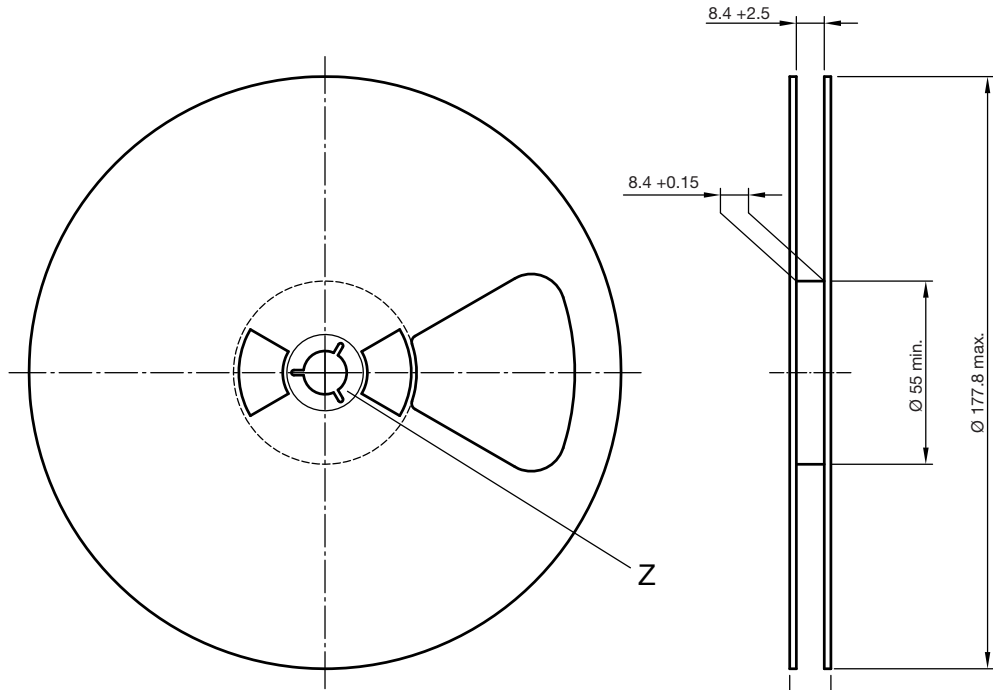
Quantity per reel: 3000 pcs



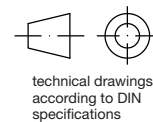
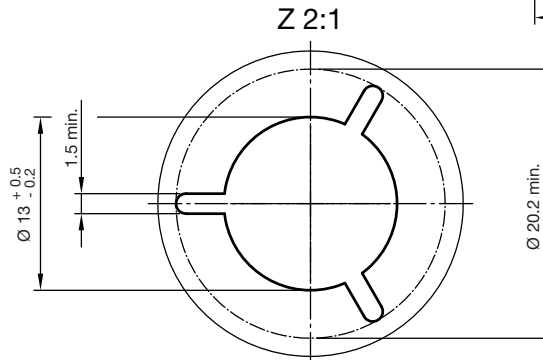
technical drawings according to DIN specifications



REEL DIMENSIONS in millimeters



Form of the leave open of the wheel is supplier specific.



Drawing-No.: 9.800-5096.01-4
 Issue: 2; 26.04.10
 20875



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