Ambient Light Sensor in 0805 Package

20043

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 sensitivity
- Adapted to human eye responsivity
- Suppression 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

HALOGEN FREE

GREEN (5-2008)

DESCRIPTION

TEMT6202FX01 ambient light sensor is a silicon NPN epitaxial planar phototransistor in a miniature transparent 0805 package for surface mounting. The device is sensitive to the visible spectrum.

APPLICATIONS

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

PRODUCT SUMMARY			
COMPONENT	I_{PCE} (µA)	φ (°)	$\lambda_{0.5}$ (nm)
TEMT6202FX01	16 to 30	± 60	450 to 610

Note

- Test condition see table "Basic Characteristics"

ORDERING INFORMATION			
ORDERING CODE	PACKAGING	REMARKS	PACKAGE FORM
TEMT6202FX01	Tape and reel	MOQ: 3000 pcs, 3000 pcs/reel	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	According to reflow profile fig. 9	T_{sd}	260	°C
Thermal resistance junction to ambient		R_{thJA}	450	K/W

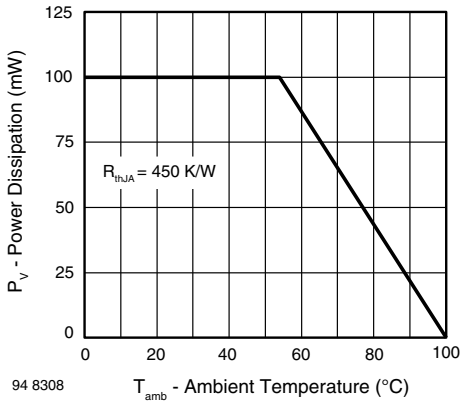


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

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 V, E = 0 lx	I_{CEO}	-	3	50	nA
Collector emitter capacitance	V_{CE} = 0 V, f = 1 MHz, E = 0 lx	C_{CEO}	-	16	-	pF
Photo current	E_V = 20 lx, CIE illuminant A, V_{CE} = 5 V	I_{PCE}	-	4.6	-	µA
	E_V = 100 lx, CIE illuminant A, V_{CE} = 5 V	I_{PCE}	16	23	30	µA
Temperature coefficient of I_{PCE}	CIE illuminant A	TK_{IPCE}	-	1.18	-	%/K
	LED, white	TK_{IPCE}	-	0.9	-	%/K
Angle of half sensitivity		φ	-	± 60	-	°
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 lx, 0.45 µA	V_{CEsat}	-	0.1	-	V

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

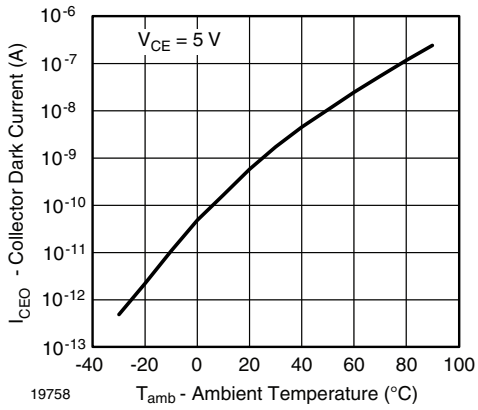


Fig. 2 - Collector Dark Current vs. Ambient Temperature

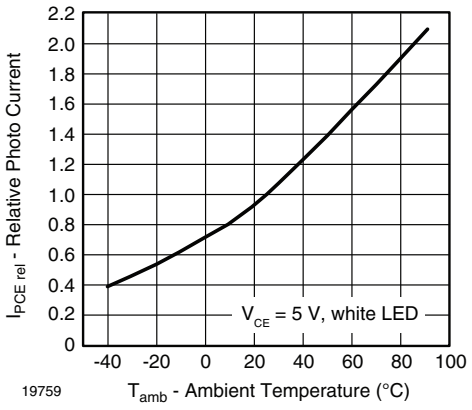


Fig. 3 - Relative Photo Current vs. Ambient Temperature

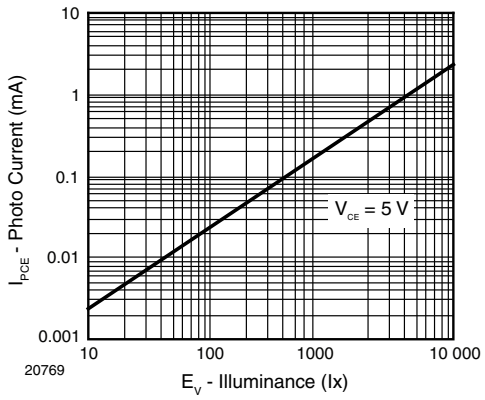


Fig. 4 - Photo Current vs. Illuminance

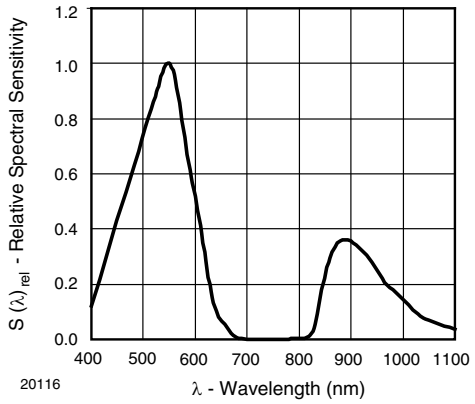


Fig. 7 - Relative Spectral Sensitivity vs. Wavelength

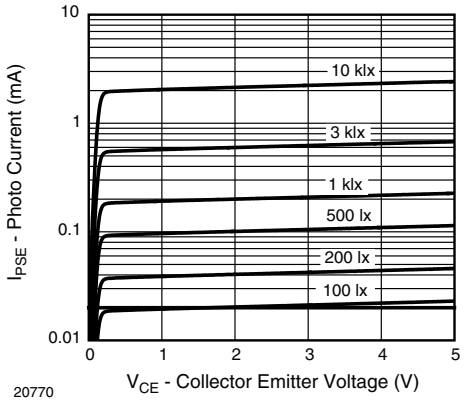


Fig. 5 - Photo Current vs. Collector Emitter Voltage

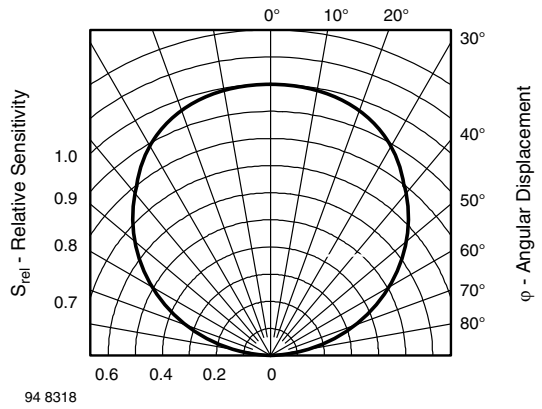


Fig. 8 - Relative Radiant Sensitivity vs. Angular Displacement

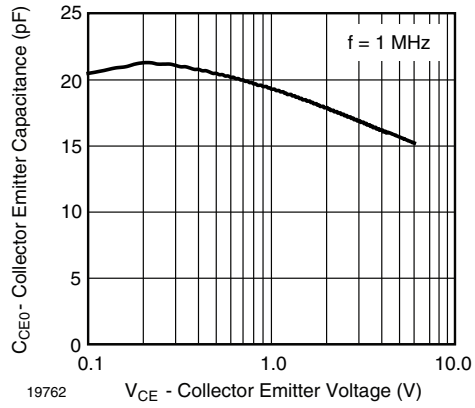


Fig. 6 - Collector Emitter Capacitance vs. Collector Emitter Voltage

REFLOW SOLDER PROFILE

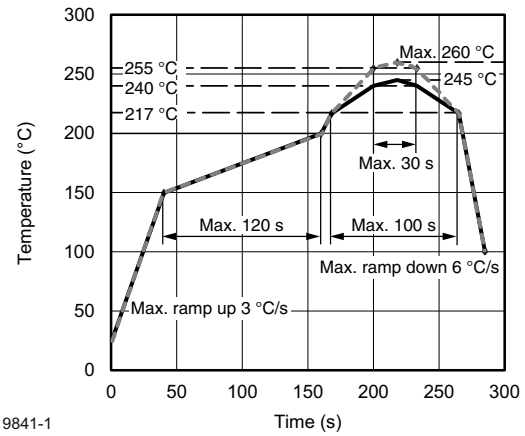


Fig. 9 - Lead (Pb)-free Reflow Solder Profile
According to J-STD-020

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

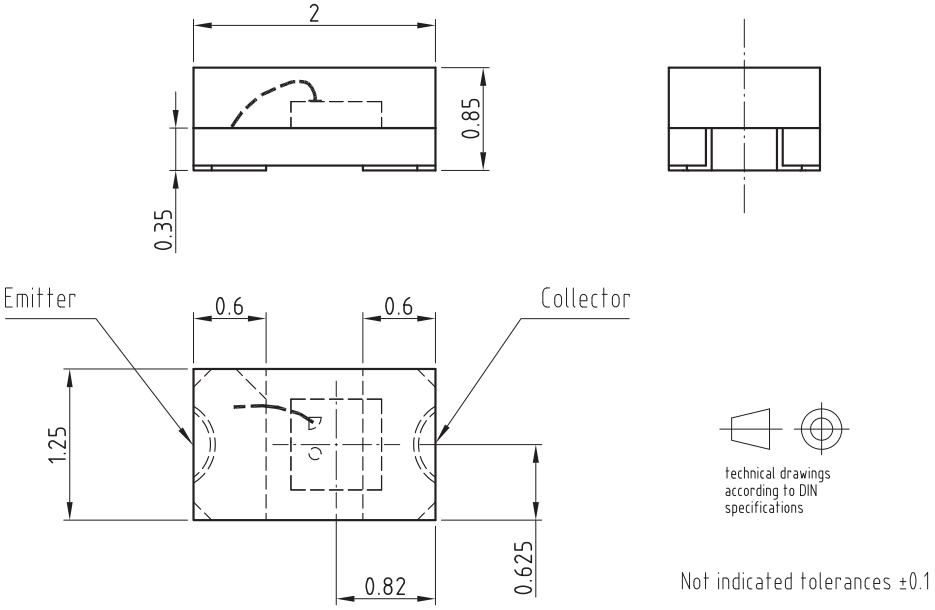
Floor life: 168 h

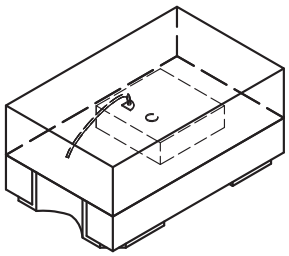
Conditions: T_{amb} < 30 °C, RH < 60 %

DRYING

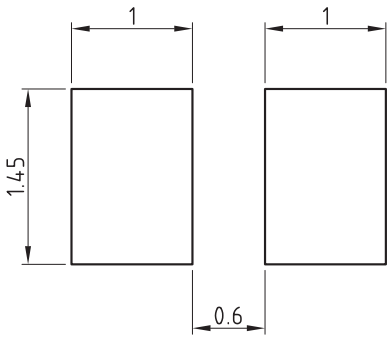
In case of moisture absorption devices should be baked before soldering. Conditions see J-STD-020 or label. Devices taped on reel dry using recommended conditions: 192 h at 40 °C (+ 5 °C), RH < 5 %.

PACKAGE DIMENSIONS in millimeters





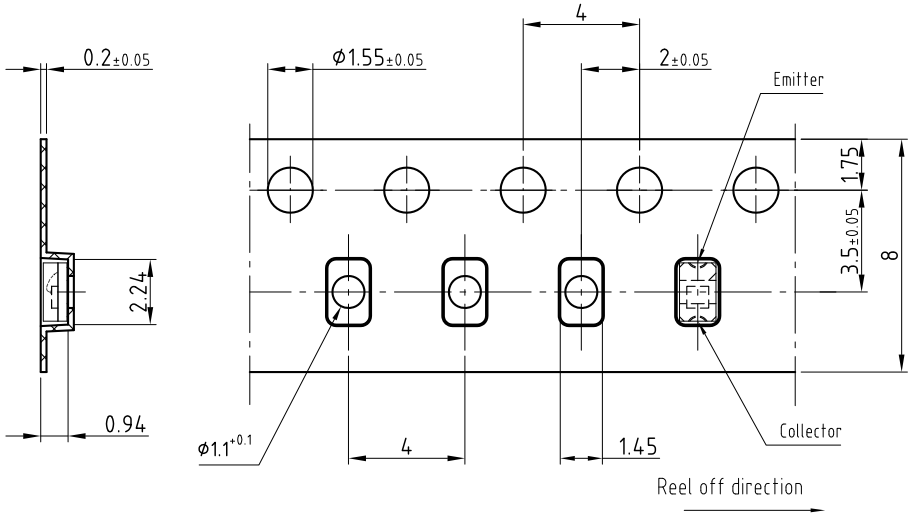
Recommended solder pad
Footprint



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

19757

BLISTER TAPE DIMENSIONS in millimeters



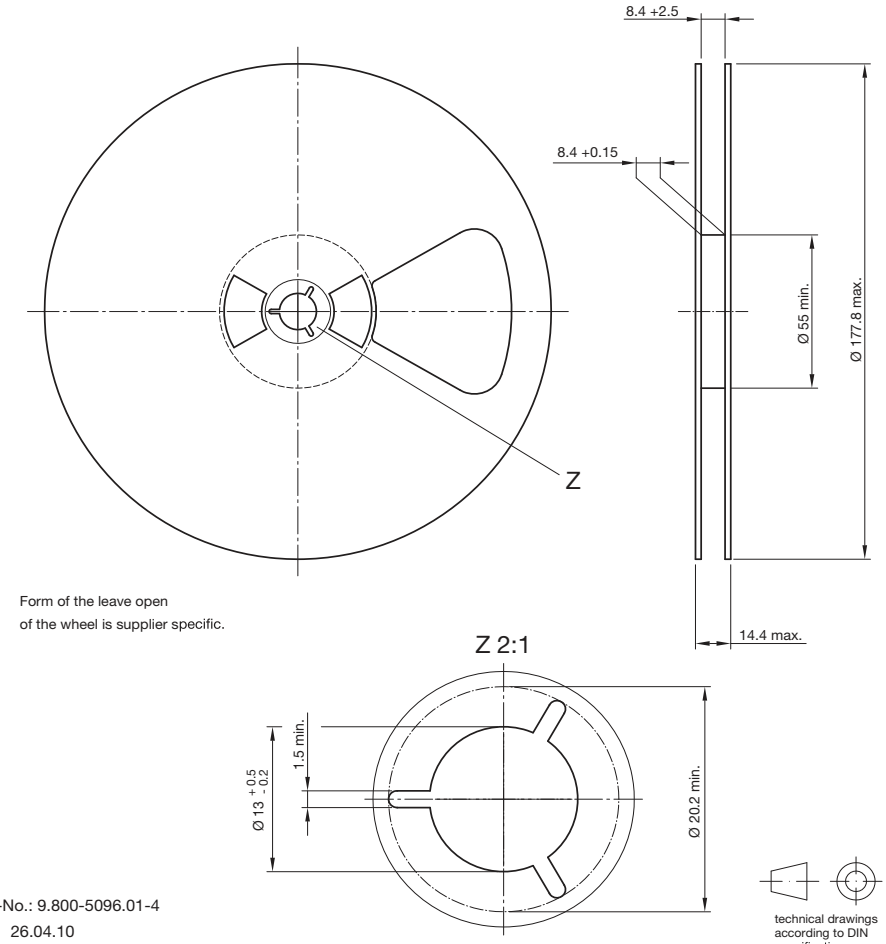
Drawing-No.: 9.700-5310.01-4
Issue: 2; 14.08.07
20690

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

technical drawings according to DIN specifications

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