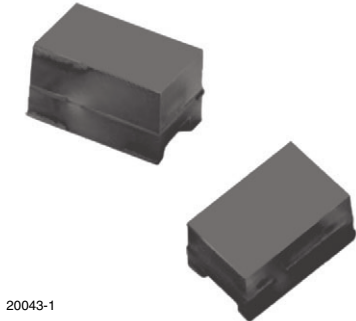


Silicon Phototransistor in 0805 Package



20043-1

DESCRIPTION

TEMT7100X01 is a silicon NPN epitaxial planar phototransistor with daylight blocking filter in a miniature, black 0805 package for surface mounting. Filter bandwidth is matched with 830 nm to 950 nm IR emitters.

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
- Daylight blocking filter matches with 830 nm to 950 nm IR emitters
- Angle of half sensitivity: $\varphi = \pm 60^\circ$
- Package matched with IR emitter series VSMB1940X01
- Floor life: 168 h, MSL 3, according to J-STD-020
- Lead (Pb)-free reflow soldering
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

 AUTOMOTIVE
GRADE

RoHS
COMPLIANT
HALOGEN
FREE
GREEN
(5-2008)

APPLICATIONS

- Detector in automotive applications
- Photo interrupters
- Miniature switches
- Counters
- Encoders
- Position sensors

PRODUCT SUMMARY

COMPONENT	I_{ca} (μA) at $E_e = 1 \text{ mW/cm}^2$, $\lambda = 950 \text{ nm}$, $V_{CE} = 5 \text{ V}$	φ ($^\circ$)	$\lambda_{0.5}$ (nm)
TEMT7100X01	225 to 675	± 60	750 to 1010

Note

- Test condition see table "Basic Characteristics"

ORDERING INFORMATION

ORDERING CODE	PACKAGING	REMARKS	PACKAGE FORM
TEMT7100X01	Tape and reel	MOQ: 3000 pcs, 3000 pcs/reel	0805

Note

- MOQ: minimum order quantity

ABSOLUTE MAXIMUM RATINGS ($T_{amb} = 25^\circ C$, unless otherwise specified)

PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Collector emitter voltage		V_{CEO}	20	V
Emitter collector voltage		V_{ECO}	7	V
Collector current		I_C	20	mA
Power power dissipation	$T_{amb} \leq 55^\circ C$	P_V	100	mW
Junction temperature		T_j	100	$^\circ C$
Operating temperature range		T_{amb}	-40 to +100	$^\circ C$
Storage temperature range		T_{stg}	-40 to +100	$^\circ C$
Soldering temperature	According to reflow profile Fig. 8	T_{sd}	260	$^\circ C$
Thermal resistance junction-to-ambient	According to J-STD-051	R_{thJA}	270	K/W

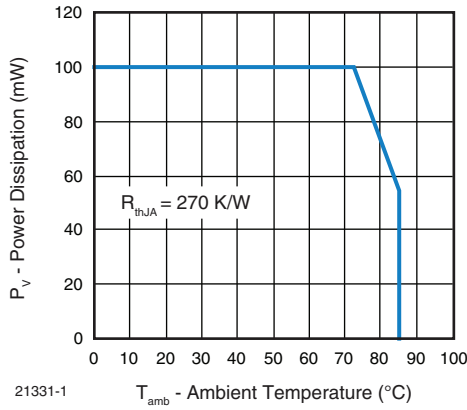


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

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}	20	-	-	V
Collector dark current	V _{CE} = 5 V, E = 0	I _{CEO}	-	1	100	nA
Collector emitter capacitance	V _{CE} = 0 V, f = 1 MHz, E = 0	C _{CEO}	-	25	-	pF
Collector light current	E _e = 1 mW/cm ² , λ = 950 nm, V _{CE} = 5 V	I _{CA}	225	450	675	μA
Angle of half sensitivity		φ	-	± 60	-	°
Wavelength of peak sensitivity		λ _p	-	870	-	nm
Range of spectral bandwidth		λ _{0.5}	-	750 to 1010	-	nm
Collector emitter saturation voltage	I _C = 0.05 mA	V _{CEsat}	-	-	0.4	V
Temperature coefficient of I _{ca}	E _e = 1 mW/cm ² , λ = 950 nm, V _{CE} = 5 V	Tk _{Ica}	-	1.1	-	%/K

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

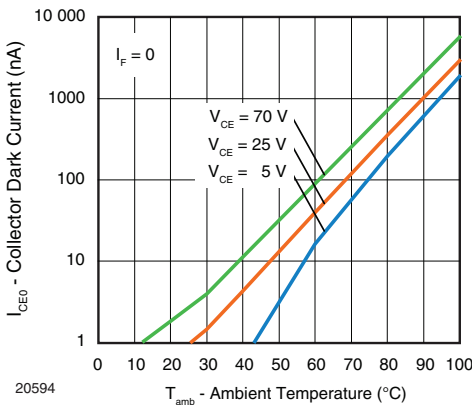


Fig. 2 - Collector Dark Current vs. Ambient Temperature

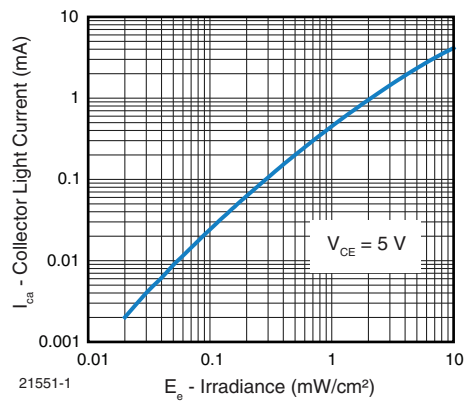


Fig. 3 - Collector Light Current vs. Irradiance

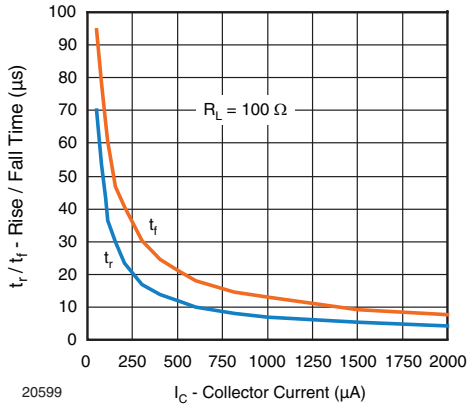


Fig. 4 - Rise/Fall Time vs. Collector Current

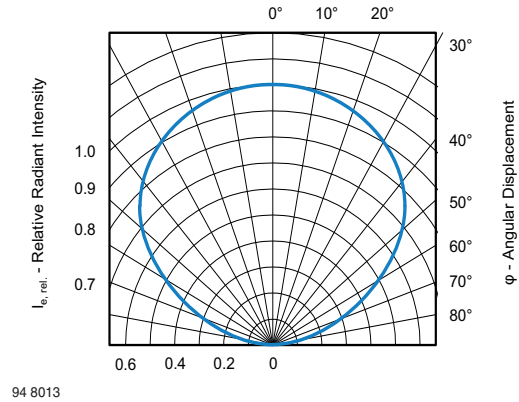


Fig. 6 - Relative Radiant Sensitivity vs. Angular Displacement

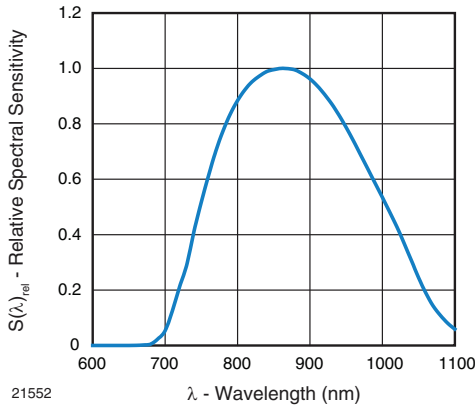


Fig. 5 - Relative Spectral Sensitivity vs. Wavelength

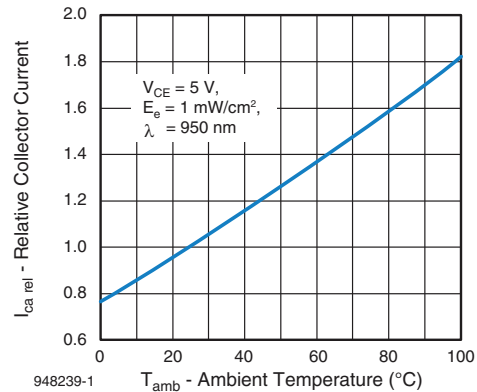


Fig. 7 - Relative Collector Current vs. Ambient Temperature

REFLOW SOLDER PROFILE

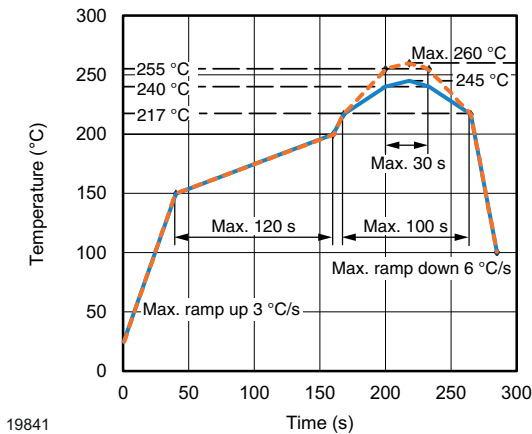


Fig. 8 - Lead (Pb)-free Reflow Solder Profile According to J-STD-020

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

Floor life (time between soldering and removing from MBB) must not exceed the time indicated on MBB label:

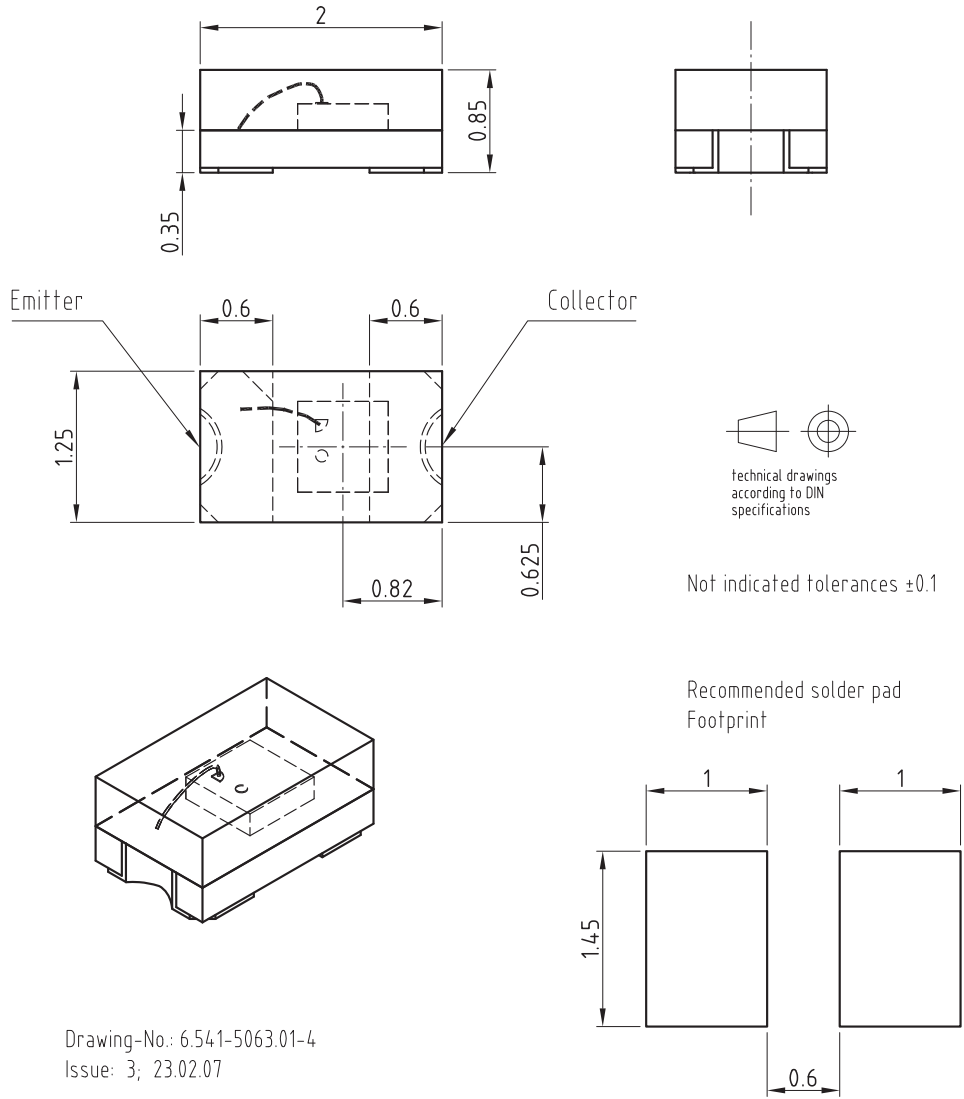
Floor life: 168 h
 Conditions: $T_{amb} < 30\text{ °C}$, $RH < 60\%$
 Moisture sensitivity level 3, acc. to J-STD-020.

DRYING

In case of moisture absorption devices should be baked before soldering. Conditions see J-STD-033D or label. Devices taped on reel dry using recommended conditions 192 h at 40 °C (+ 5 °C), $RH < 5\%$.



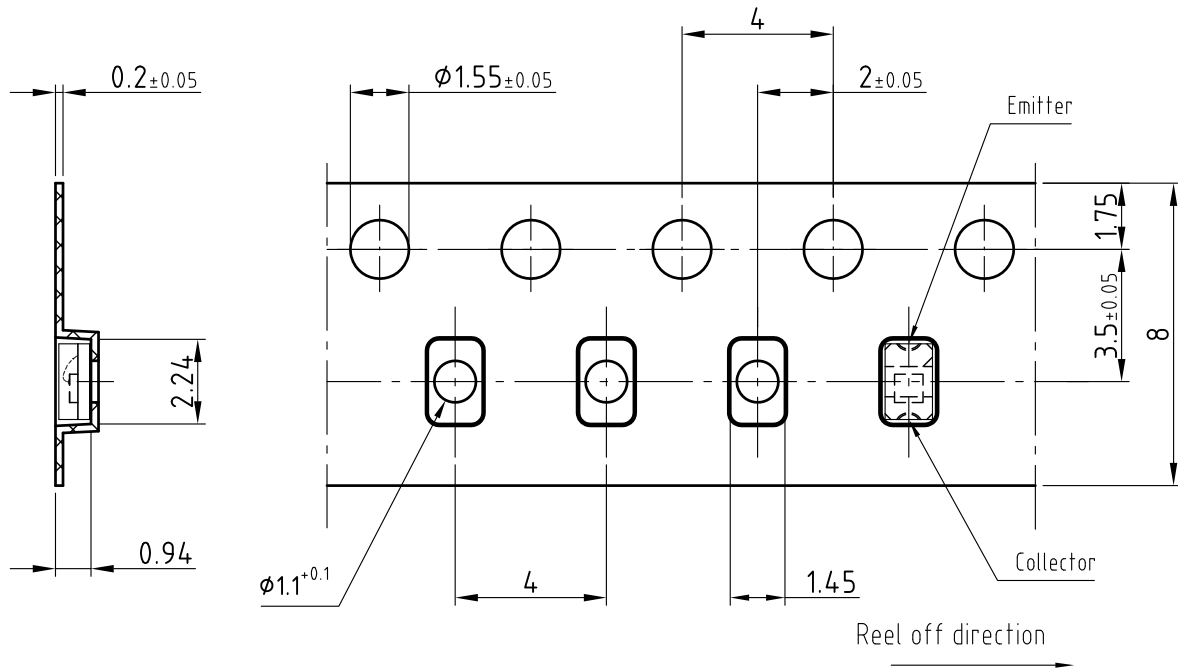
PACKAGE DIMENSIONS in millimeters



Drawing-No.: 6.541-5063.01-4
Issue: 3; 23.02.07
19757



BLISTER TAPE DIMENSIONS in millimeters



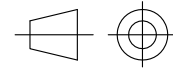
Drawing-No.: 9.700-5310.01-4

Issue: 2; 14.08.07

20690

Not indicated tolerances ±0.1

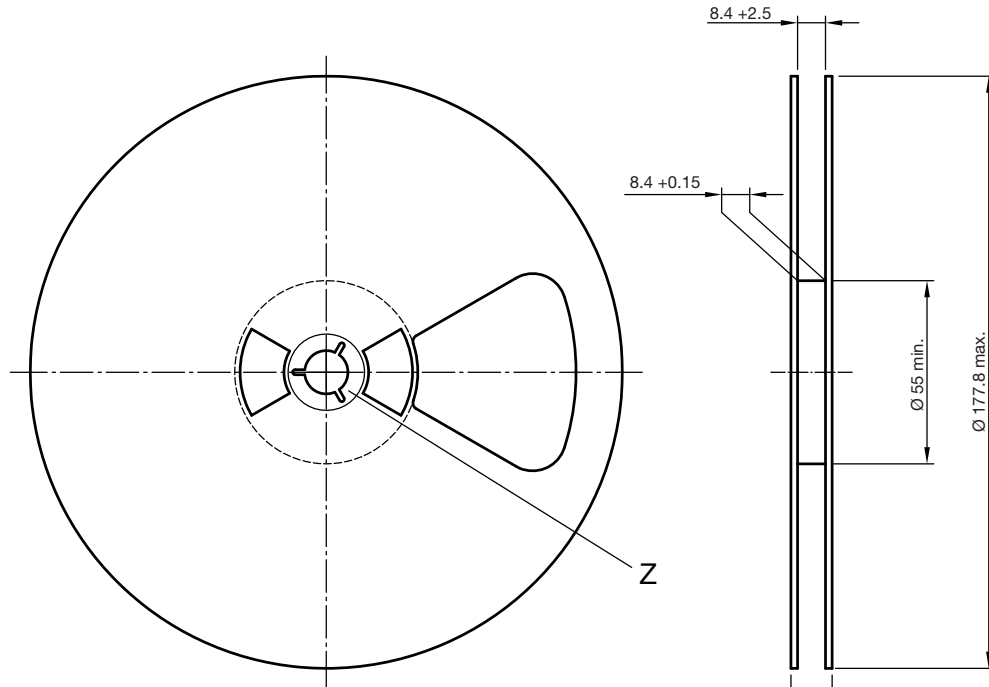
Quantity per reel: 3000 pcs



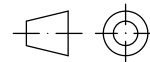
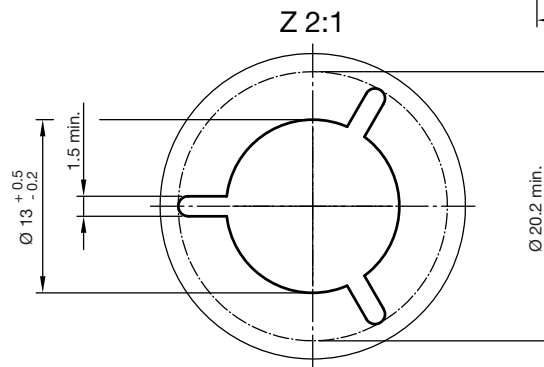
technical drawings according to DIN specifications



REEL DIMENSIONS in millimeters



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



technical drawings according to DIN specifications

Drawing-No.: 9.800-5096.01-4

Issue: 2; 26.04.10

20875



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