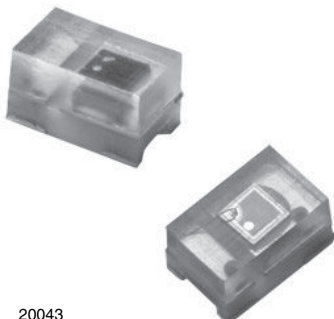


Silicon Phototransistor in 0805 Package



DESCRIPTION

TEMT7000X01 is a high speed silicon NPN epitaxial planar phototransistor in a miniature 0805 package for surface mounting on printed boards. The device is sensitive to visible and near infrared radiation.

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
- High radiant sensitivity
- Suitable for visible and near infrared radiation
- Fast response times
- Angle of half sensitivity: $\phi = \pm 60^\circ$
- Package matched with IR emitter series VSMB1940X01
- 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
- Halogen-free according to IEC 61249-2-21 definition

AUTOMOTIVE
GRADE

RoHS
COMPLIANT
HALOGEN
FREE

APPLICATIONS

- Detector in automotive applications
- Light sensors
- Radiation sensors

PRODUCT SUMMARY

COMPONENT	I_{caE} (A)	θ (deg)	$\lambda_{0.1}$ (nm)
TEMT7000X01	225 to 675	± 60	470 to 1090

Note

- Test condition see table "Basic Characteristics"

ORDERING INFORMATION

ORDERING CODE	PACKAGING	REMARKS	PACKAGE FORM
TEMT7000X01	Tape and reel	MOQ: 3000 pcs, 3000 pcs/reel	0805

Note

- MOQ: minimum order quantity

ABSOLUTE MAXIMUM RATINGS ($T_{amb} = 25^\circ\text{C}$, 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	$T_{amb} \leq 55^\circ\text{C}$	P_V	100	mW
Junction temperature		T_j	100	$^\circ\text{C}$
Operating temperature range		T_{amb}	- 40 to + 100	$^\circ\text{C}$
Storage temperature range		T_{stg}	- 40 to + 100	$^\circ\text{C}$
Soldering temperature	Acc. reflow profile fig. 8	T_{sd}	260	$^\circ\text{C}$
Thermal resistance junction/ambient	Acc. J-STD-051	R_{thJA}	270	K/W

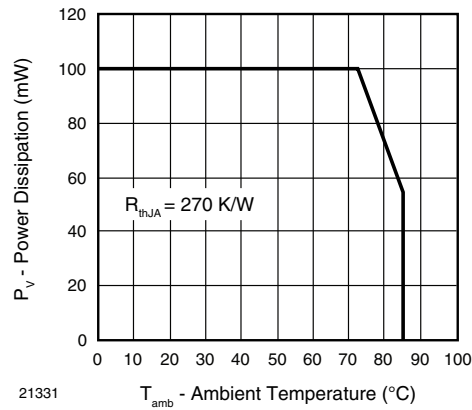


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

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}	20			V
Collector dark current	$V_{CE} = 5\text{ V}, E = 0$	I_{CEO}		1	100	nA
Collector emitter capacitance	$V_{CE} = 0\text{ V}, f = 1\text{ MHz}, E = 0$	C_{CEO}		25		pF
Collector light current	$E_e = 1\text{ mW/cm}^2, \lambda = 950\text{ nm}, V_{CE} = 5\text{ V}$	I_{CA}	225	450	675	μA
Angle of half sensitivity		ϕ		± 60		deg
Wavelength of peak sensitivity		λ_p		850		nm
Range of spectral bandwidth		$\lambda_{0.1}$		470 to 1090		nm
Collector emitter saturation voltage	$I_C = 0.05\text{ mA}$	V_{CEsat}			0.4	V
Temperature coefficient of I_{ca}	$E_e = 1\text{ mW/cm}^2, \lambda = 950\text{ nm}, V_{CE} = 5\text{ V}$	TK_{Ica}		1.1		%/K

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

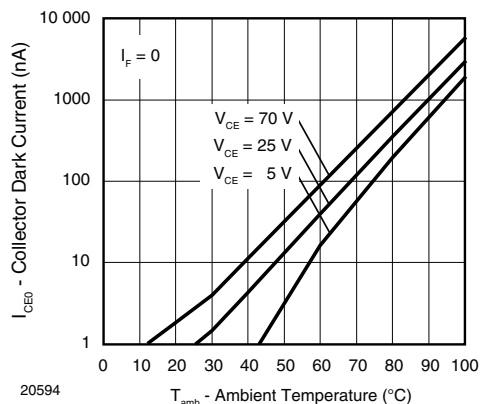


Fig. 2 - Collector Dark Current vs. Ambient Temperature

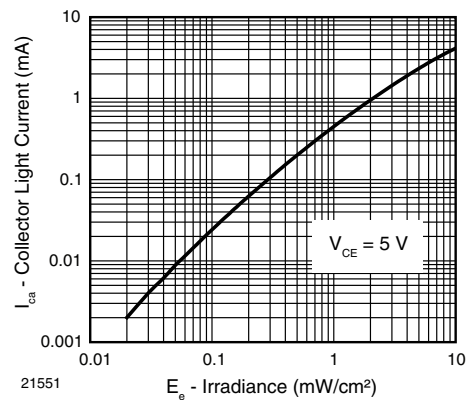
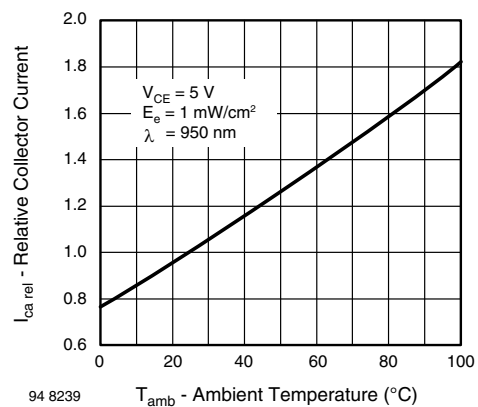
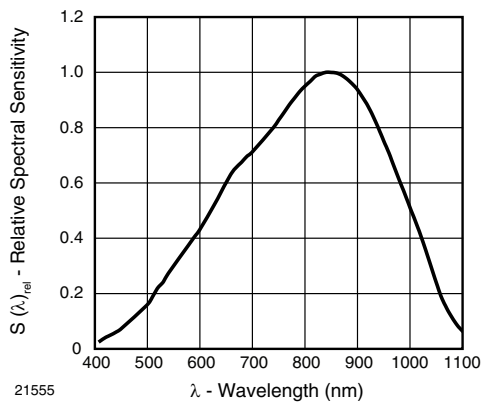
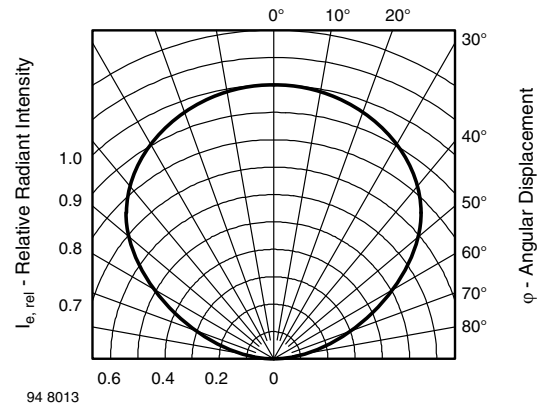
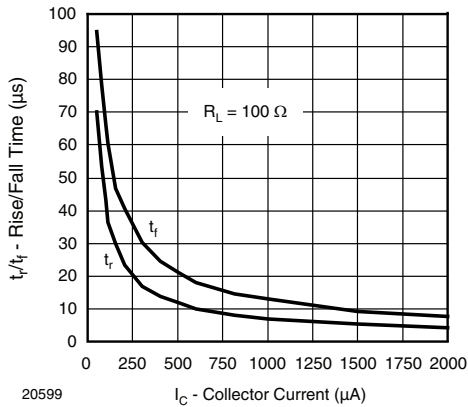
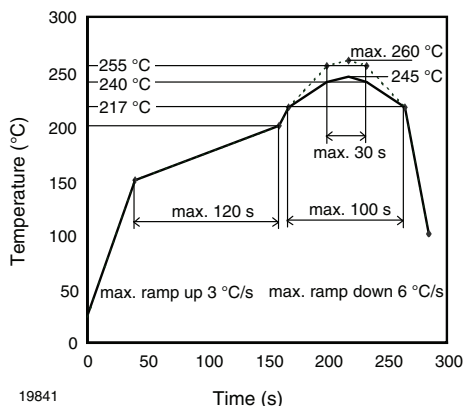


Fig. 3 - Collector Light Current vs. Irradiance



REFLOW SOLDER PROFILE



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

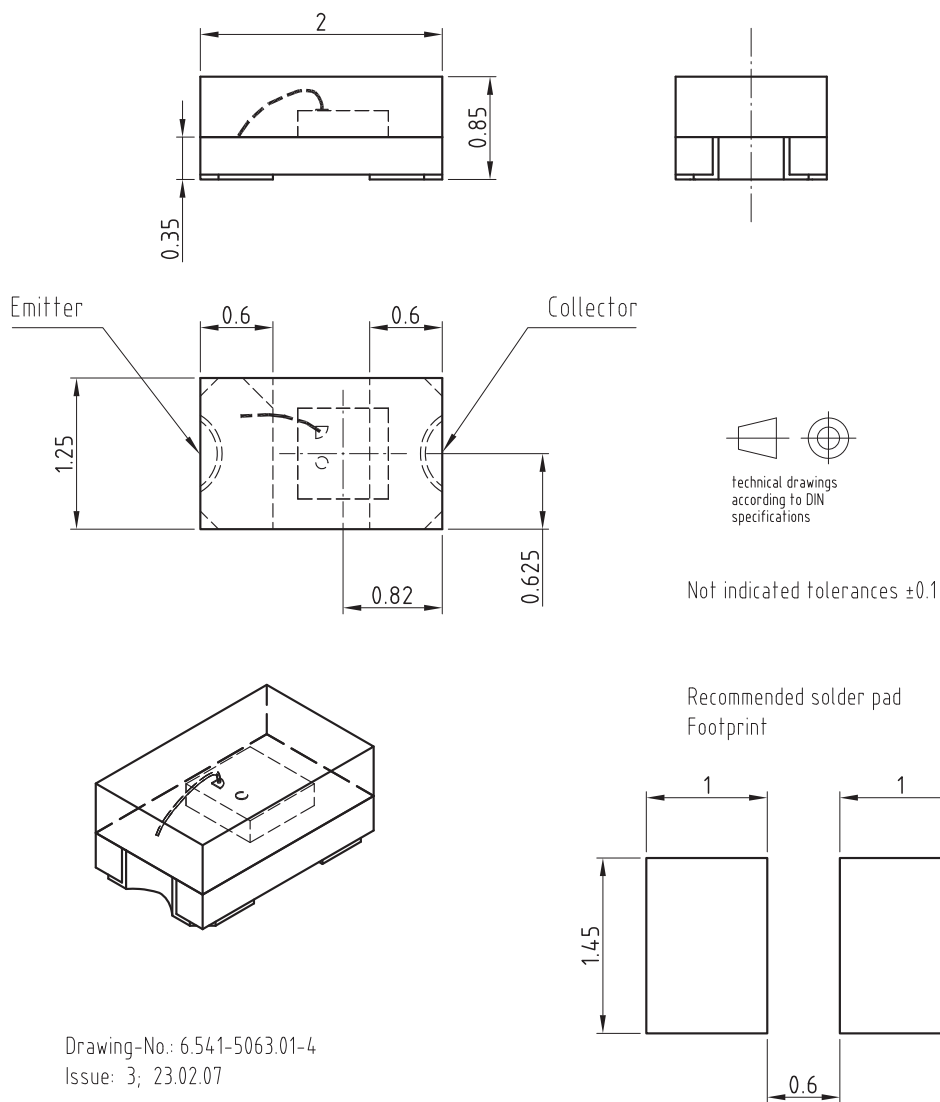
Conditions: $T_{amb} < 30^{\circ}\text{C}$, $RH < 60\%$

Moisture sensitivity level 3, acc. to J-STD-020.

DRYING

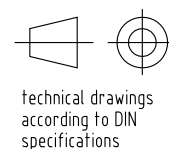
In case of moisture absorption devices should be baked before soldering. Conditions see J-STD-020 or label. Devices taped on reel dry using recommended conditions 192 h at 40°C (+ 5°C), $RH < 5\%$.

PACKAGE DIMENSIONS in millimeters



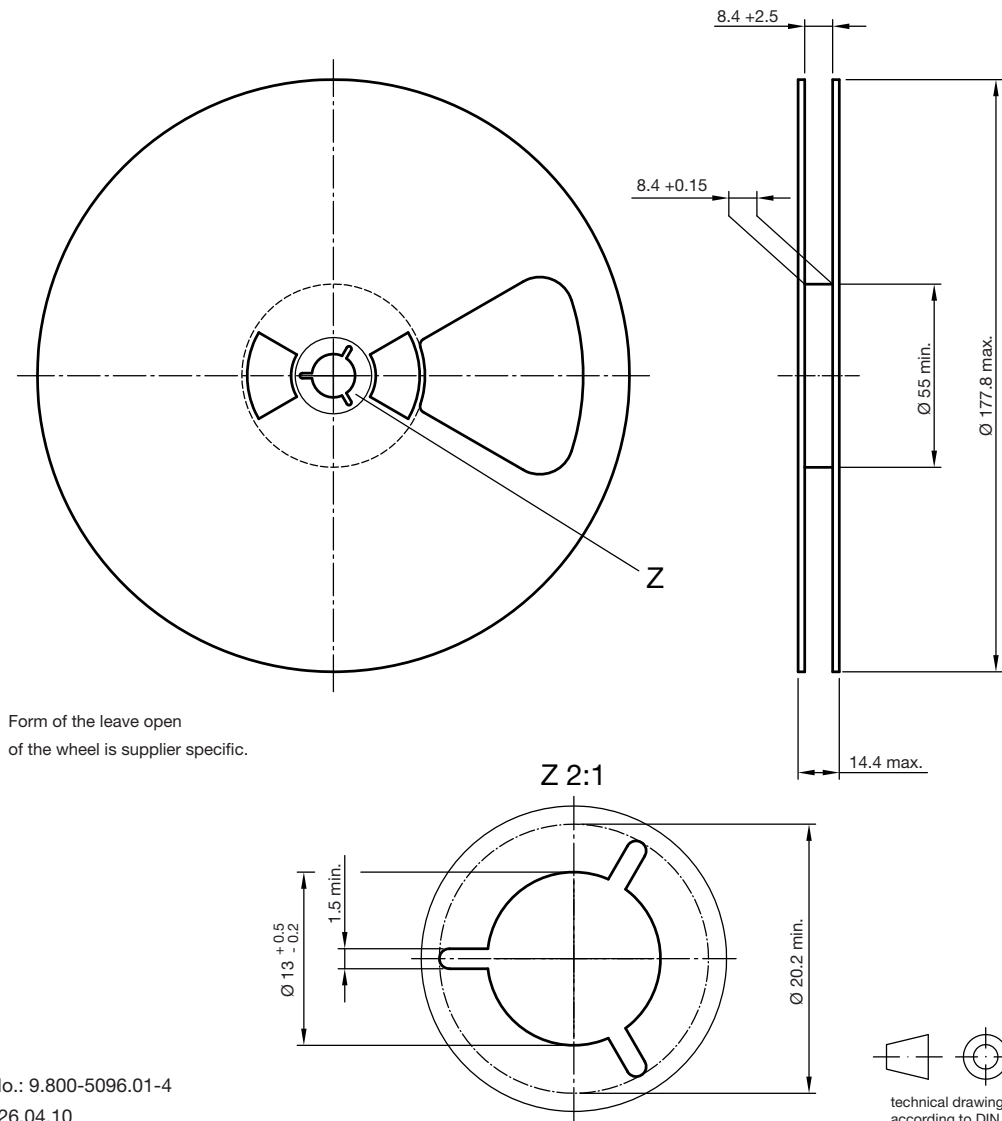
Drawing-No.: 6.541-5063.01-4
Issue: 3; 23.02.07

19757

BLISTER TAPE DIMENSIONS in millimeters

Quantity per reel: 3000 pcs

REEL DIMENSIONS in millimeters



Drawing-No.: 9.800-5096.01-4

Issue: 2; 26.04.10

20875



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Электрон
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