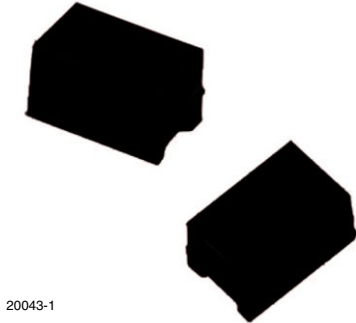




Silicon Phototransistor in 0805 Package



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
- Daylight blocking filter matches with 830 nm to 950 nm IR emitters
- 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



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.

Note

** Please see document "Vishay Material Category Policy": www.vishay.com/doc?99902

APPLICATIONS

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

| PRODUCT SUMMARY | | | |
|-----------------|-----------------------|---------|-----------------------|
| COMPONENT | I _{caE} (μA) | φ (deg) | λ _{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 °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} ≤ 55 °C | 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. 8 | T _{sd} | 260 | °C |
| Thermal resistance junction/ambient | Acc. J-STD-051 | R _{thJA} | 270 | K/W |

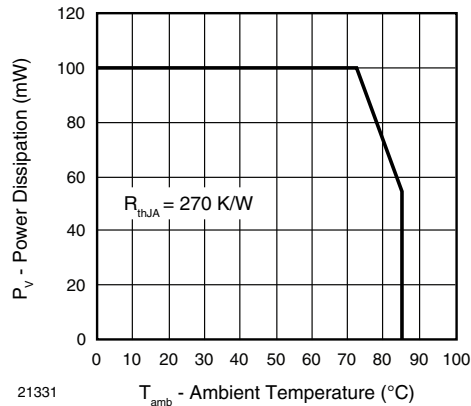


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

| 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_{CE0} | 20 | | | V |
| Collector dark current | $V_{CE} = 5\text{ V}, E = 0$ | I_{CE0} | | 1 | 100 | nA |
| Collector emitter capacitance | $V_{CE} = 0\text{ V}, f = 1\text{ MHz}, E = 0$ | C_{CE0} | | 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 | | 870 | | nm |
| Range of spectral bandwidth | | $\lambda_{0.5}$ | | 750 to 1010 | | 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 |

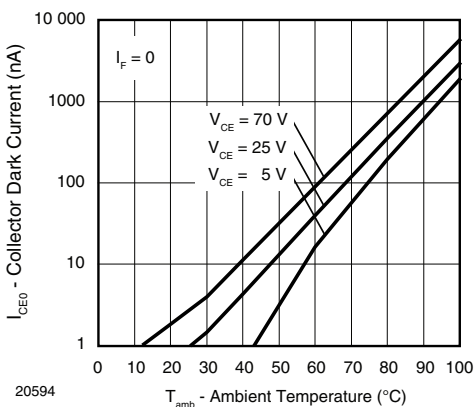
BASIC CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)


Fig. 2 - Collector Dark Current vs. Ambient Temperature

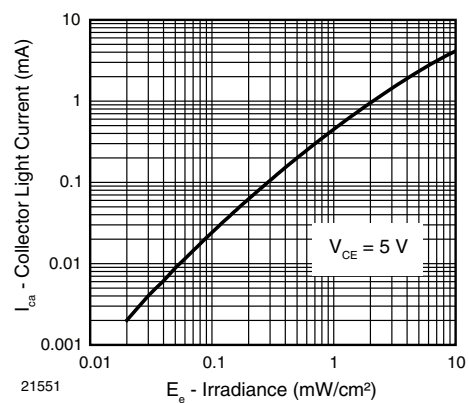


Fig. 3 - Collector Light Current vs. Irradiance

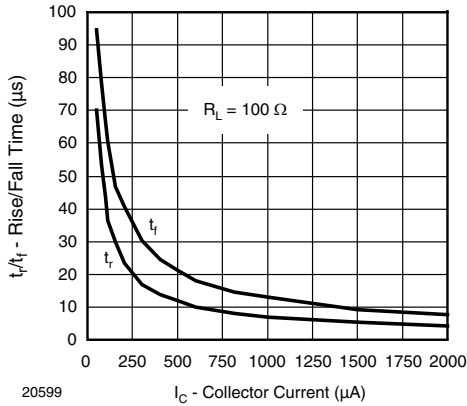


Fig. 4 - Rise/Fall Time vs. Collector Current

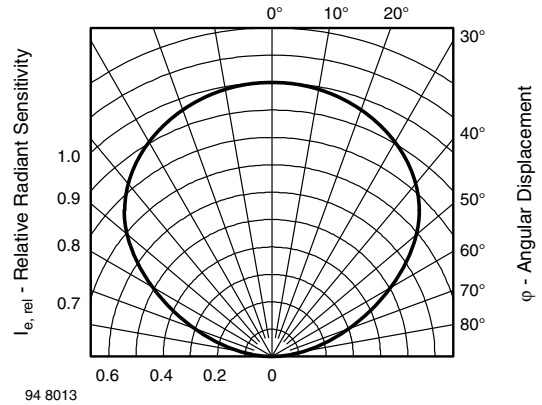


Fig. 6 - Relative Radiant Sensitivity vs. Angular Displacement

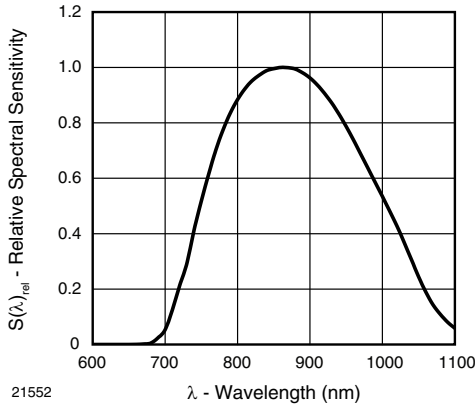


Fig. 5 - Relative Spectral Sensitivity vs. Wavelength

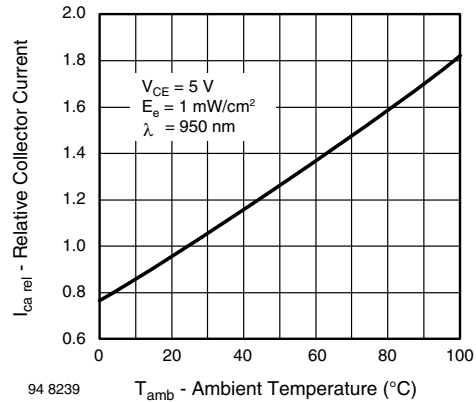


Fig. 7 - Relative Collector Current vs. Ambient Temperature

REFLOW SOLDER PROFILE

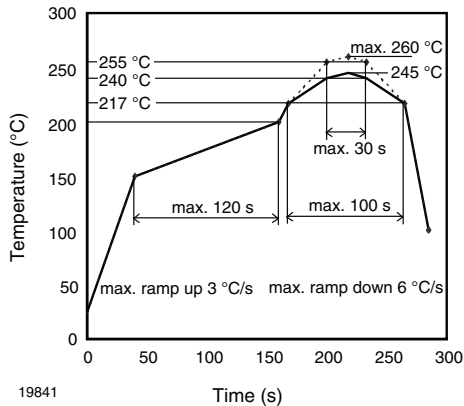


Fig. 8 - Lead (Pb)-free Reflow Solder Profile acc. J-STD-020

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

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

Floor life: 168 h

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

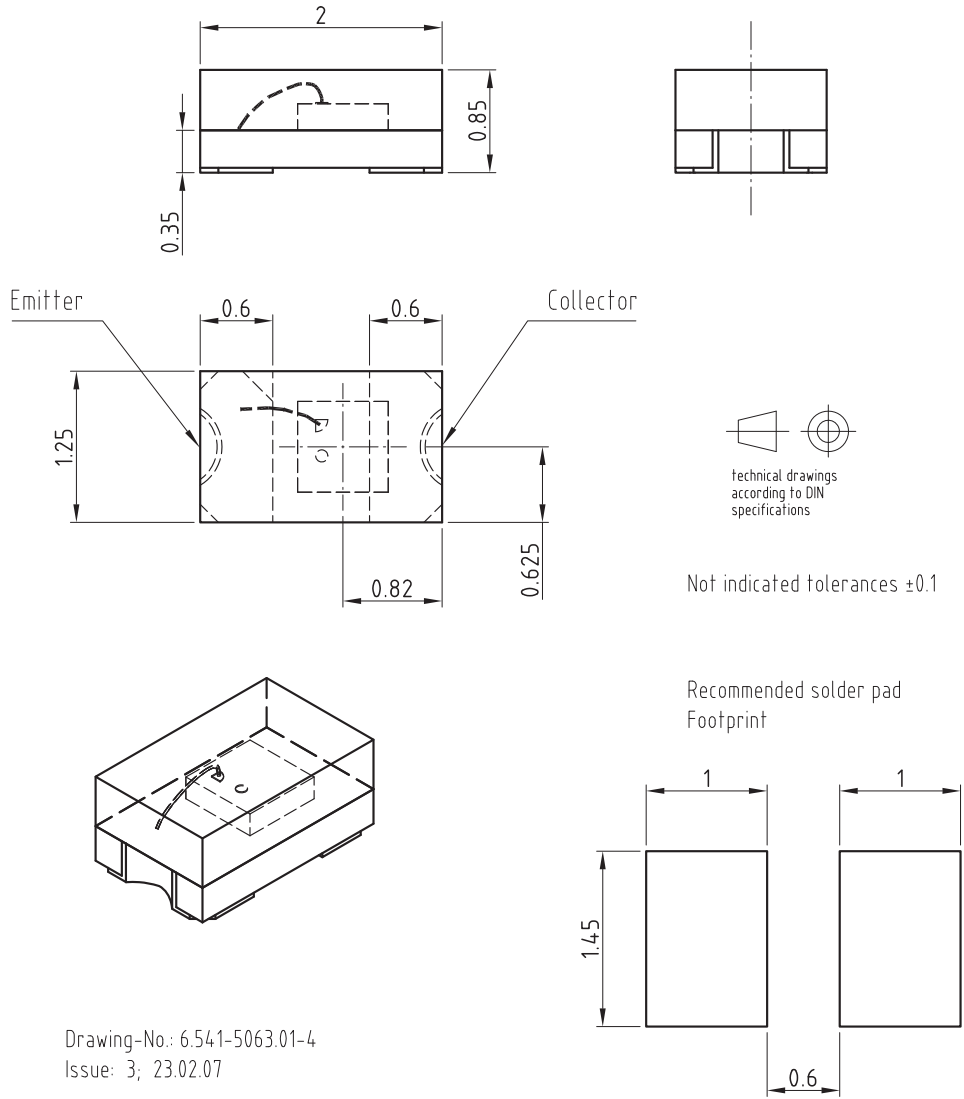
Moisture sensitivity level 3, acc. to J-STD-020.

DRYING

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



PACKAGE DIMENSIONS in millimeters





BLISTER TAPE DIMENSIONS in millimeters



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

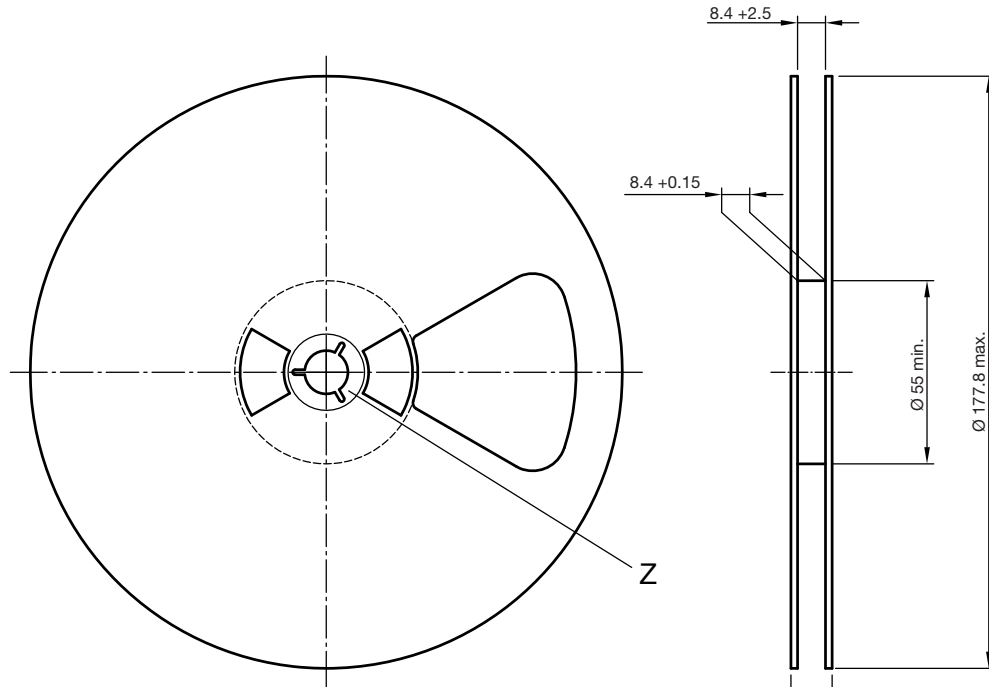
Not indicated tolerances ±0.1

Quantity per reel: 3000 pcs

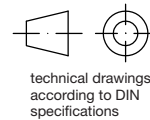
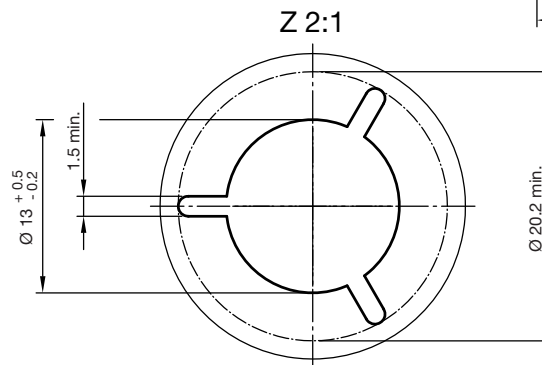
technical drawings according to DIN specifications



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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