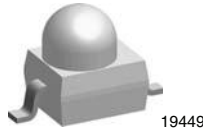


Silicon NPN Phototransistor, RoHS Compliant



FEATURES

- Package type: surface mount
- Package form: gullwing
- Dimensions (L x W x H in mm): 2.5 x 2 x 2.7
- High photo sensitivity
- High radiant sensitivity
- Suitable for visible and near infrared radiation
- Fast response times
- Angle of half sensitivity: $\phi = \pm 15^\circ$
- Floor life: 168 h, MSL 3, acc. J-STD-020
- Lead (Pb)-free reflow soldering
- Lead (Pb)-free component in accordance with RoHS 2002/95/EC and WEEE 2002/96/EC



RoHS
COMPLIANT

DESCRIPTION

TEMT1520 is a silicon NPN phototransistor with high radiant sensitivity in a clear, surface mount plastic package with lens. It is sensitive to visible and near infrared radiation.

APPLICATIONS

- Detector in electronic control and drive circuits
- Detector for light measurement

PRODUCT SUMMARY

COMPONENT	I _{ca} (mA)	ϕ (deg)	$\lambda_{0.1}$ (nm)
TEMT1520	4.5	± 15	450 to 1080

Note

Test conditions see table "Basic Characteristics"

ORDERING INFORMATION

ORDERING CODE	PACKAGING	REMARKS	PACKAGE FORM
TEMT1520	Tape and reel	MOQ: 1000 pcs, 1000 pcs/reel	Gullwing

Note

MOQ: minimum order quantity

ABSOLUTE MAXIMUM RATINGS

PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Emitter collector voltage		V _{ECO}	5	V
Collector current		I _C	50	mA
Collector peak current	t _p /T = 0.5, t _p ≤ 10 ms	I _{CM}	100	mA
Power dissipation	T _{amb} ≤ 55 °C	P _V	100	mW
Junction temperature		T _J	100	°C
Operating temperature range		T _{amb}	- 40 to + 85	°C
Storage temperature range		T _{stg}	- 40 to + 100	°C
Soldering temperature	Acc. reflow solder profile fig. 8	T _{sd}	< 260	°C
Thermal resistance junction/ambient	Soldered on PCB with pad dimensions: 4 mm x 4 mm	R _{thJA}	400	K/W

Note

T_{amb} = 25 °C, unless otherwise specified

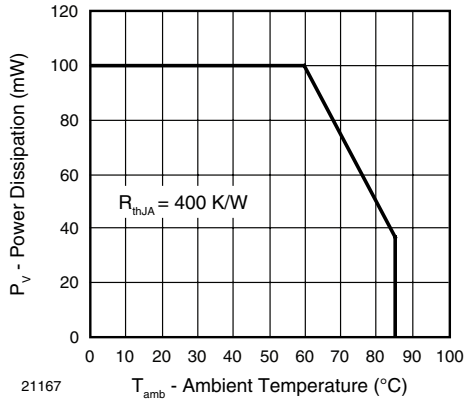


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

BASIC CHARACTERISTICS						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Collector emitter voltage	I _C = 1 mA	V _{CEO}	70			V
Collector emitter dark current	V _{CE} = 20 V, E = 0	I _{CEO}		1	200	nA
Collector emitter capacitance	V _{CE} = 5 V, f = 1 MHz, E = 0	C _{CEO}		3		pF
Collector light current	E _e = 1 mW/cm ² , λ = 950 nm, V _{CE} = 5 V	I _{ca}	2	4.5	8	mA
Angle of half sensitivity		φ		± 15		deg
Wavelength of peak sensitivity		λ _p		850		nm
Range of spectral bandwidth		λ _{0.1}		450 to 1080		nm
Collector emitter saturation voltage	E _e = 1 mW/cm ² , λ = 950 nm, I _C = 0.1 mA	V _{CEsat}			0.3	V
Turn-on time	V _S = 5 V, I _C = 5 mA, R _L = 100 Ω	t _{on}		2.0		μs
Turn-off time	V _S = 5 V, I _C = 5 mA, R _L = 100 Ω	t _{off}		2.3		μs
Cut-off frequency	V _S = 5 V, I _C = 5 mA, R _L = 100 Ω	f _c		180		kHz

Note

 T_{amb} = 25 °C, unless otherwise specified

BASIC CHARACTERISTICS

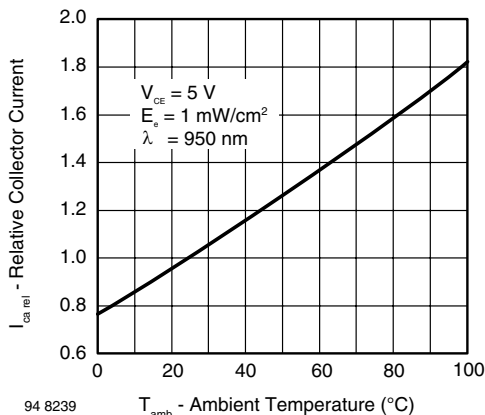
 T_{amb} = 25 °C, unless otherwise specified


Fig. 2 - Relative Collector Current vs. Ambient Temperature

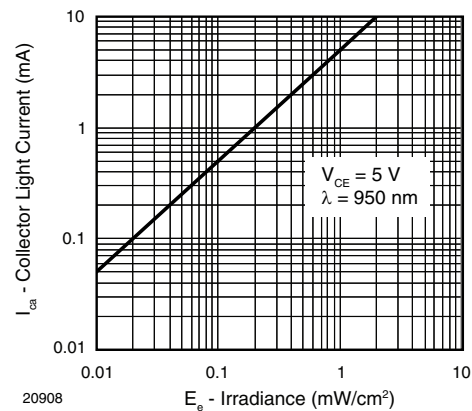


Fig. 3 - Collector Light Current vs. Irradiance

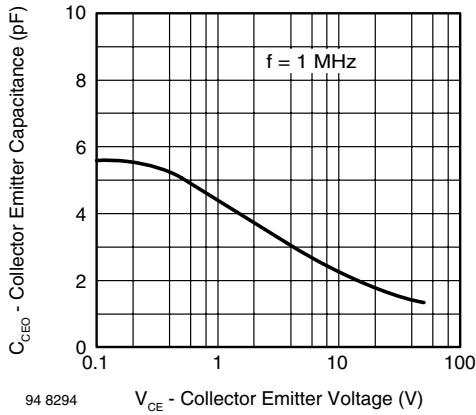


Fig. 4 - Collector Emitter Capacitance vs. Collector Emitter Voltage

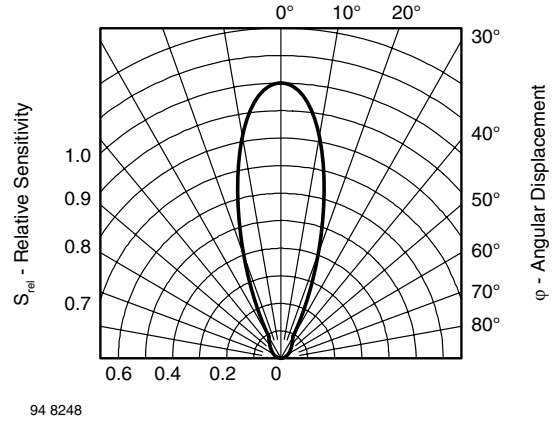


Fig. 7 - Relative Radiant Sensitivity vs. Angular Displacement

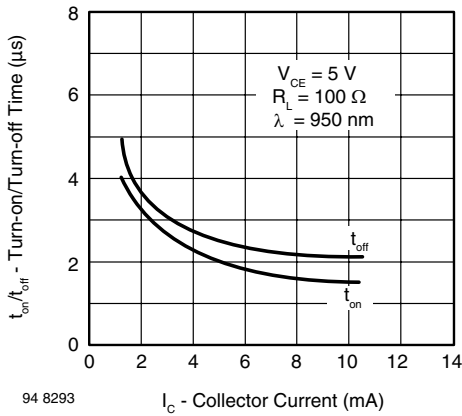


Fig. 5 - Turn-on/Turn-off Time vs. Collector Current

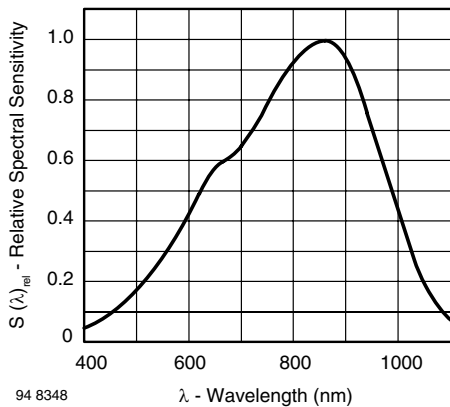


Fig. 6 - Relative Spectral Sensitivity vs. Wavelength

PRECAUTIONS FOR USE

1. Over-current-proof

Customer must apply resistors for protection, otherwise slight voltage shift will cause big current change (burn out will happen).

2. Storage

2.1 Storage temperature and rel. humidity conditions are: 5 °C to 35 °C, R.H. 60 %.

2.2 Floor life must not exceed 168 h, acc. to JEDEC level 3, J-STD-020.

Once the package is opened, the products should be used within a week. Otherwise, they should be kept in a damp proof box with desiccant.

Considering tape life, we suggest to use products within one year from production date.

2.3 If opened more than one week in an atmosphere 5 °C to 35 °C, R.H. 60 %, devices should be treated at 60 °C \pm 5 °C for 15 h.

2.4 If humidity indicator in the package shows pink color (normal blue), then devices should be treated with the same conditions as 2.3.

REFLOW SOLDER PROFILE

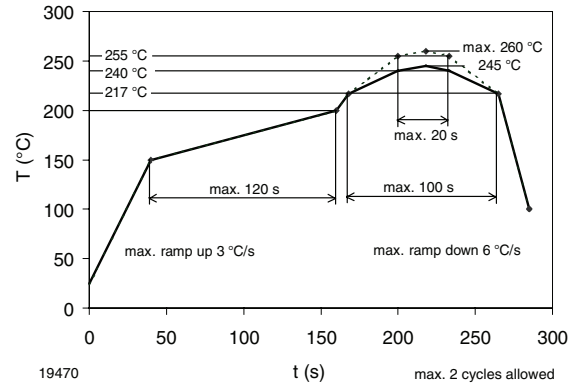
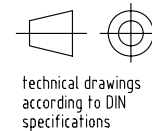
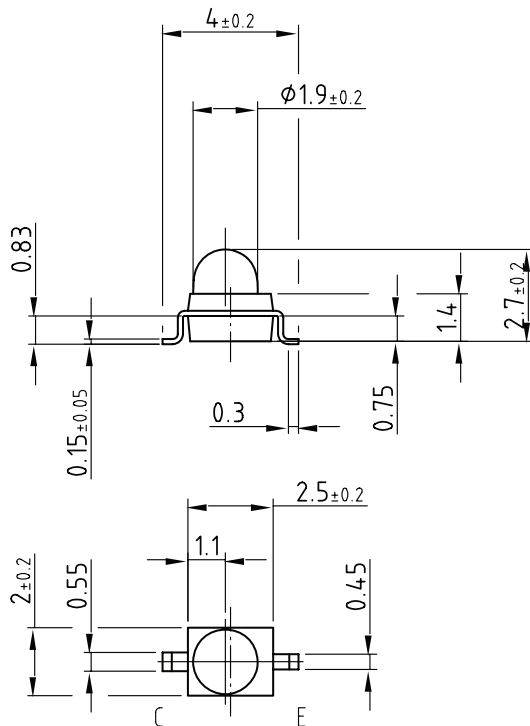
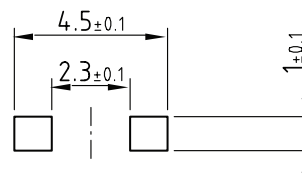


Fig. 8 - Lead (Pb)-free Reflow Solder Profile acc. J-STD-020D

PACKAGE DIMENSIONS in millimeters



Solder pad proposal

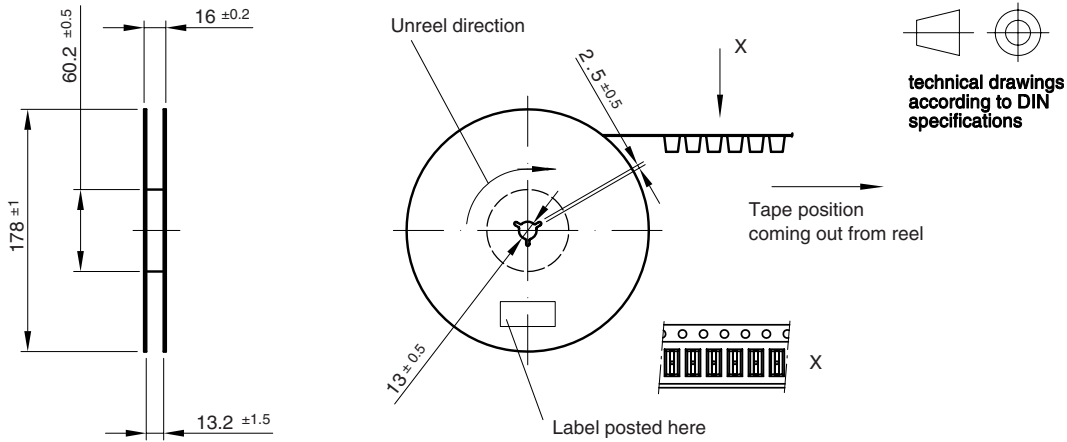


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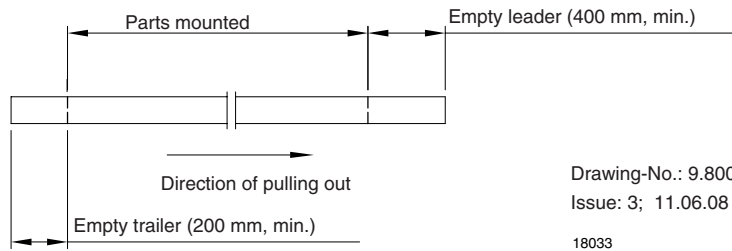
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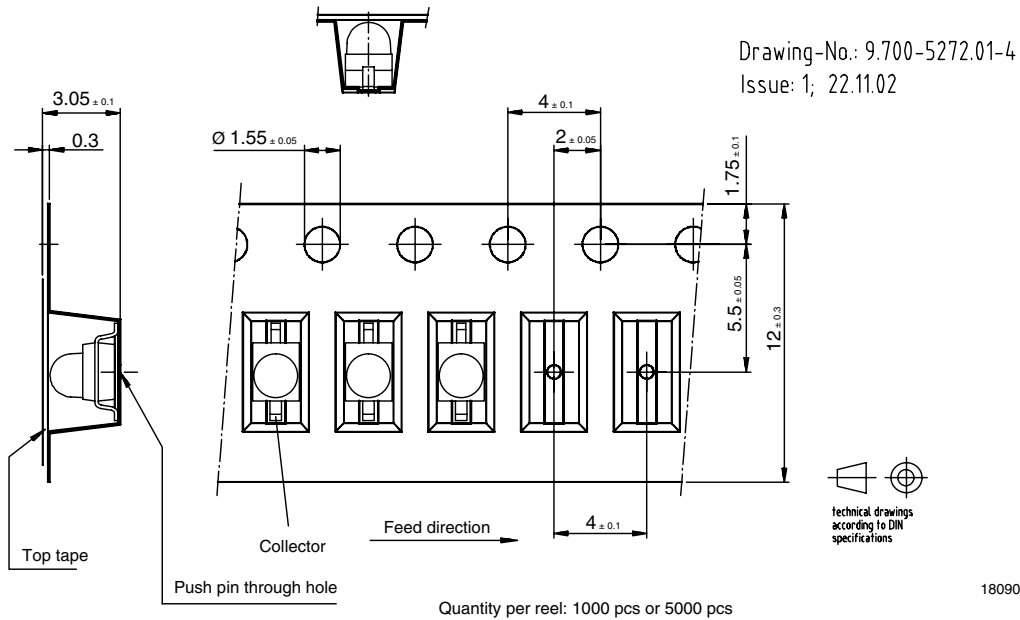
REEL DIMENSIONS in millimeters



Leader and trailer tape:



TAPING DIMENSIONS in millimeters





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All product specifications and data are subject to change without notice.

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