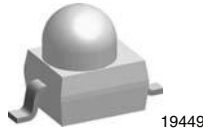


Silicon NPN Phototransistor, RoHS Compliant



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	$t_p/T = 0.5, t_p \leq 10$ ms	I_{CM}	100	mA
Power dissipation	$T_{amb} \leq 55$ °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

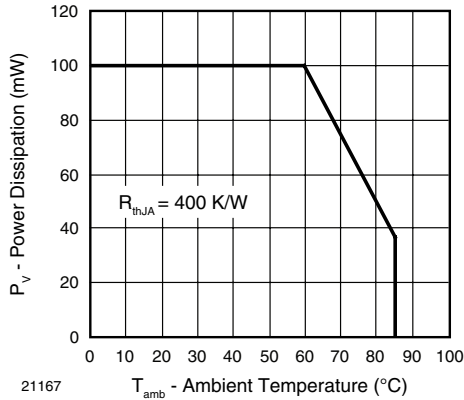


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

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

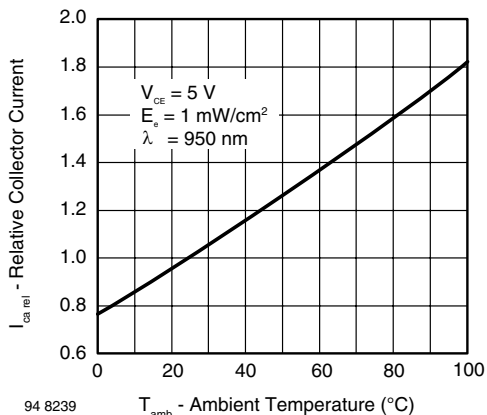
 T_{amb} = 25 °C, unless otherwise specified


Fig. 2 - Relative Collector Current vs. Ambient Temperature

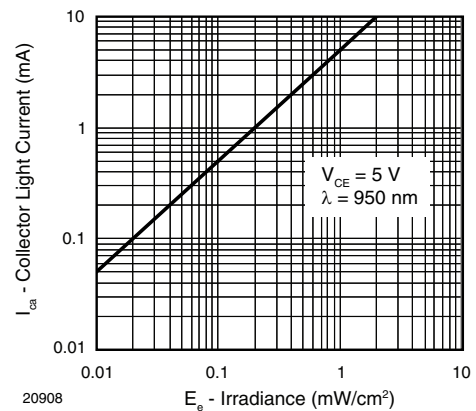


Fig. 3 - Collector Light Current vs. Irradiance

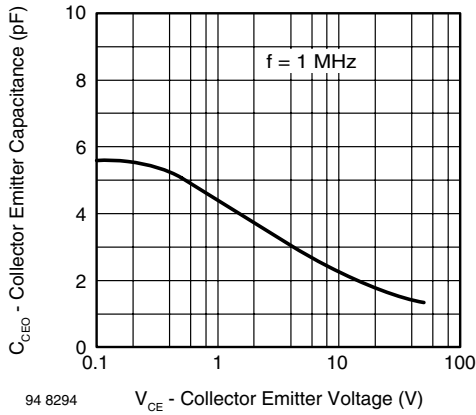


Fig. 4 - Collector Emitter Capacitance vs. Collector Emitter Voltage

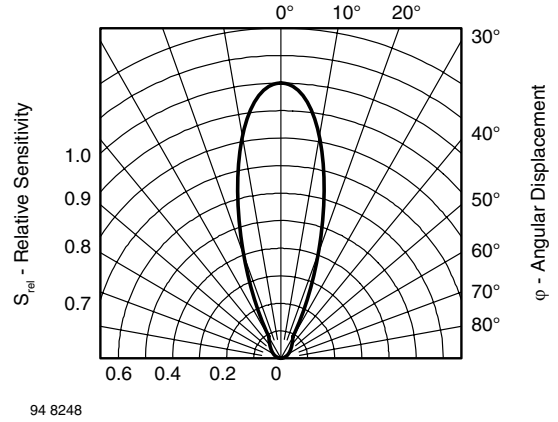


Fig. 7 - Relative Radiant Sensitivity vs. Angular Displacement

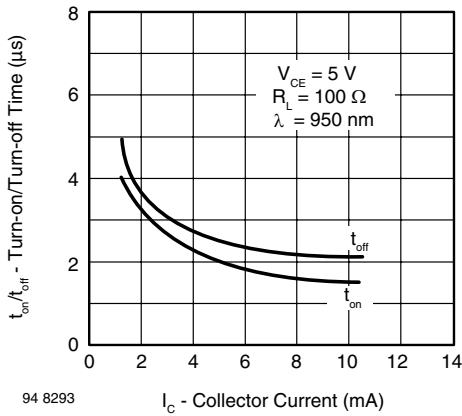


Fig. 5 - Turn-on/Turn-off Time vs. Collector Current

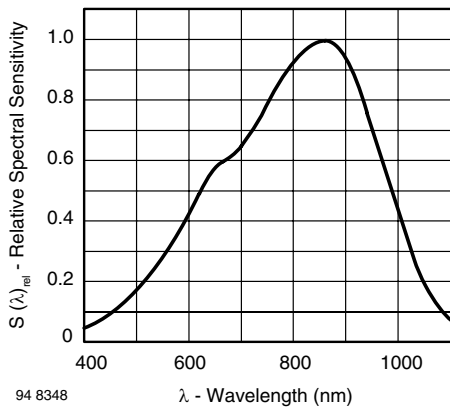


Fig. 6 - Relative Spectral Sensitivity vs. Wavelength

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 ± 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

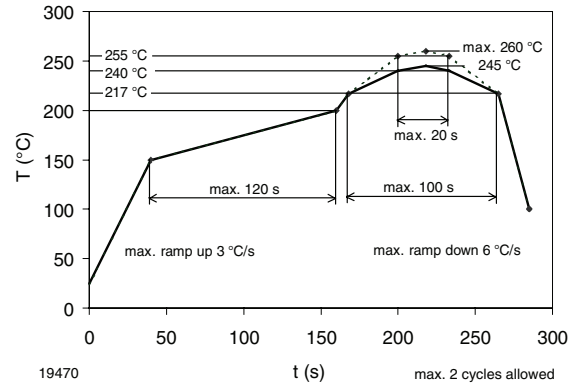
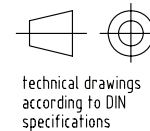
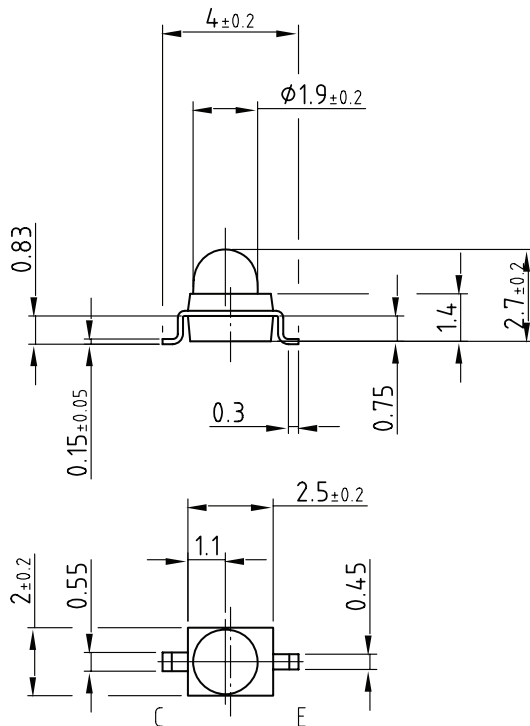
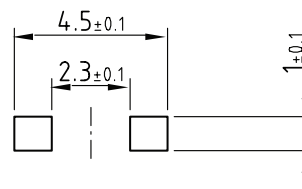


Fig. 8 - Lead (Pb)-free Reflow Solder Profile acc. J-STD-020D

PACKAGE DIMENSIONS in millimeters



Solder pad proposal

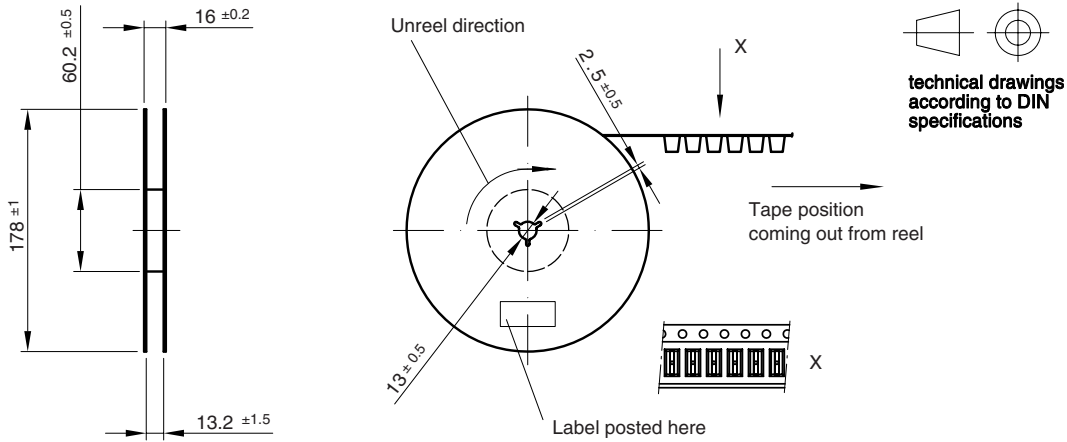


Drawing-No.: 6.544-5325.01-4

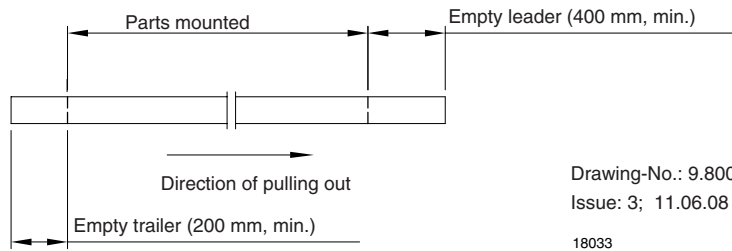
Issue: 5; 19.01.06

16105

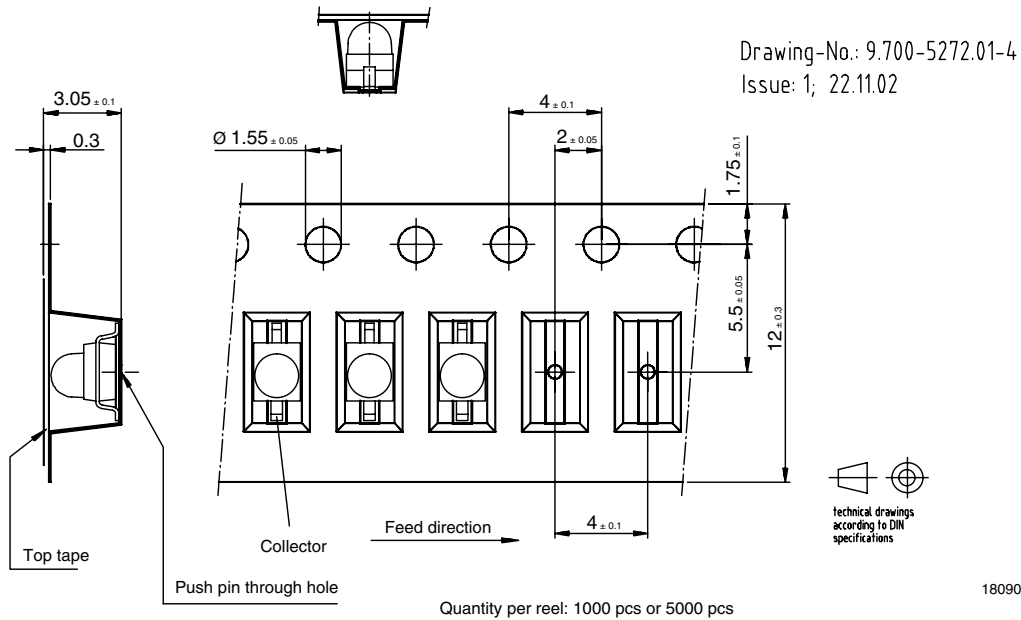
REEL DIMENSIONS in millimeters



Leader and trailer tape:



TAPING DIMENSIONS in millimeters





Disclaimer

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

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained herein or in any other disclosure relating to any product.

Vishay disclaims any and all liability arising out of the use or application of any product described herein or of any information provided herein to the maximum extent permitted by law. The product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein, which apply to these products.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications unless otherwise expressly indicated. Customers using or selling Vishay products not expressly indicated for use in such applications do so entirely at their own risk and agree to fully indemnify Vishay for any damages arising or resulting from such use or sale. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

Product names and markings noted herein may be trademarks of their respective owners.