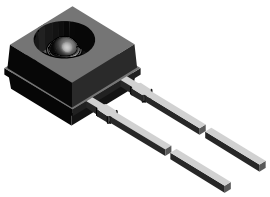
Silicon NPN Phototransistor

Description

TEKT5400S is a high sensitive silicon NPN epitaxial planar phototransistor in a flat side view plastic package.

A small recessed lens provides a high sensitivity in a low profile case.

The molded package itself is an IR filter, spectrum matched to IR emitters (λ_p > 850 nm or 950 nm).



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Features

- High photo sensitivity
- Daylight filter
- Molded package with side view lens
- Angle of half sensitivity φ = ± 37 °
- Matched with IR-Emitter TSKS5400S
- Lead-free component
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC

Applications

Detector in electronic control and drive circuits

Parts Table

Part	Type differentiation	Ordering code
TEKT5400S	200 pcs in Plastic Bags	TEKT5400S
TEKT5400S-ASZ	2.54 mm Pin distance (lead to lead), height of taping 16 mm	TEKT5400S-ASZ

Absolute Maximum Ratings

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

Parameter	Test condition	Symbol	Value	Unit
Collector Emitter Voltage		V_{CEO}	70	V
Emitter Collector Voltage		V_{ECO}	7	V
Collector current		I_C	100	mA
Collector peak current	t_p/T = 0.5, $t_p \leq$ 10 ms	I_{CM}	200	mA
Total Power Dissipation	$T_{amb} \leq$ 40 °C	P_{tot}	150	mW
Junction Temperature		T_j	100	°C
Storage Temperature Range		T_{stg}	- 40 to + 100	°C
Operating Temperature		T_{amb}	- 40 to + 85	°C
Soldering Temperature	t ≤ 5 s	T_{sd}	260	°C
Thermal Resistance Junction/ Ambient		R_{thJA}	400	K/W

Electrical Characteristics

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

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Collector Emitter Voltage	I_C = 1 mA	V_{CEO}	70			V
Emitter Collector Voltage	I_E = 100 µA	V_{ECO}	7			V
Collector dark current	V_{CE} = 20 V, E = 0	I_{CEO}		1	100	nA
Collector-emitter capacitance	V_{CE} = 5 V, f = 1 MHz, E = 0	C_{CEO}		6		pF
Collector Light Current	E_{CE} = 5 V, E_e = 1 mW/cm², λ_p = 950 nm	I_{ca}	2	4		mA

Optical Characteristics

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

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Angle of Half Sensitivity		φ		± 37		deg
Wavelength of Peak Sensitivity		λ_p		920		nm
Range of Spectral Bandwidth		$\lambda_{0.5}$		850 to 980		nm
Collector Emitter Saturation Voltage	E_e = 1 mW/cm², 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}		6		µs
Turn-Off Time	V_S = 5 V, I_C = 5 mA, R_L = 100 Ω	t_{off}		5		µs
Cut-Off Frequency	V_S = 5 V, I_C = 5 mA, R_L = 100 Ω	f_c		110		kHz

Typical Characteristics (Tamb = 25 °C unless otherwise specified)

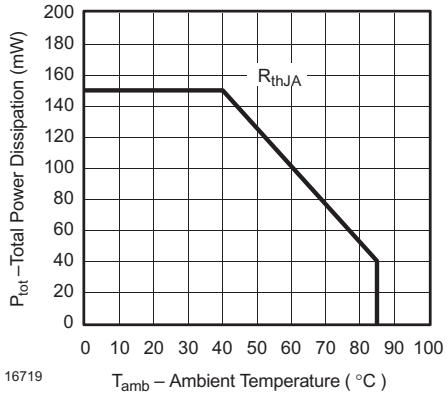


Figure 1. Total Power Dissipation vs. Ambient Temperature

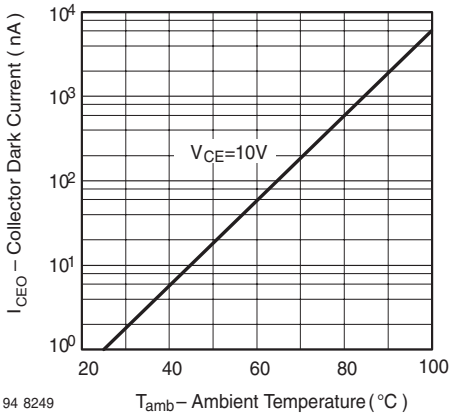


Figure 2. Collector Dark Current vs. Ambient Temperature

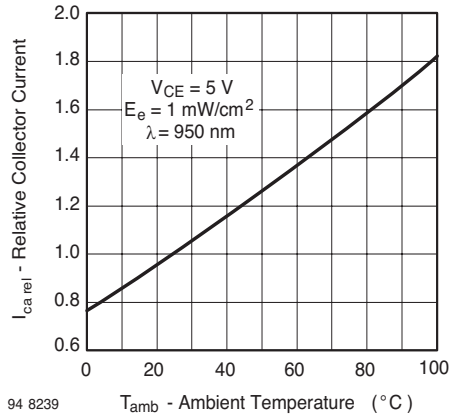


Figure 3. Relative Collector Current vs. Ambient Temperature

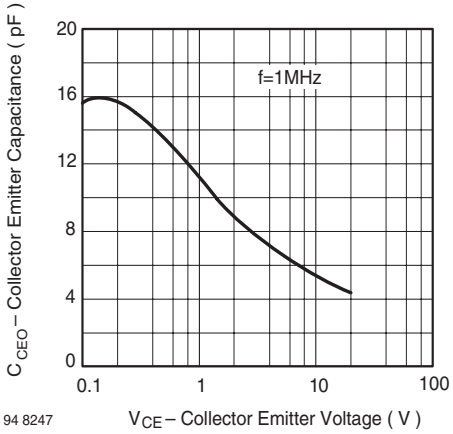


Figure 6. Collector Emitter Capacitance vs. Collector Emitter Voltage

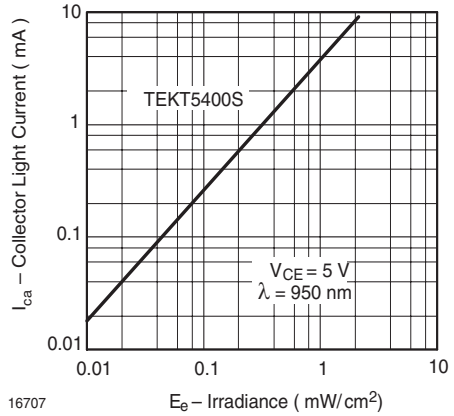


Figure 4. Relative Radiant Intensity vs. Angular Displacement

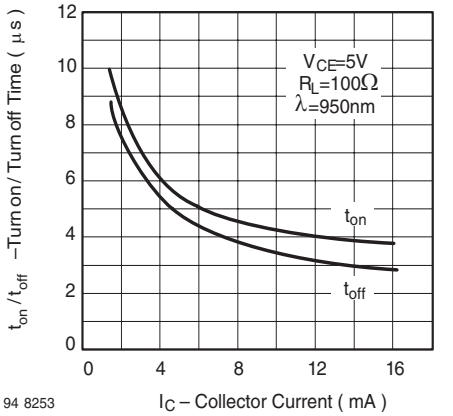


Figure 7. Turn On/Turn Off Time vs. Collector Current

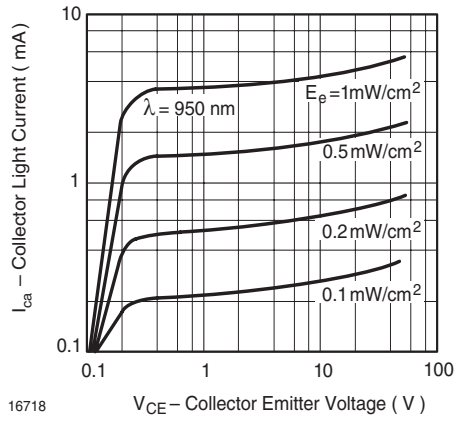


Figure 5. Collector Light Current vs. Collector Emitter Voltage

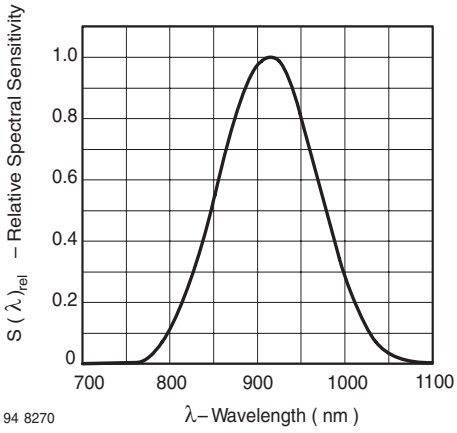


Figure 8. Relative Spectral Sensitivity vs. Wavelength

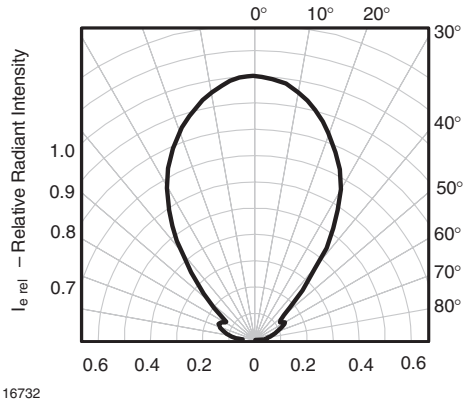
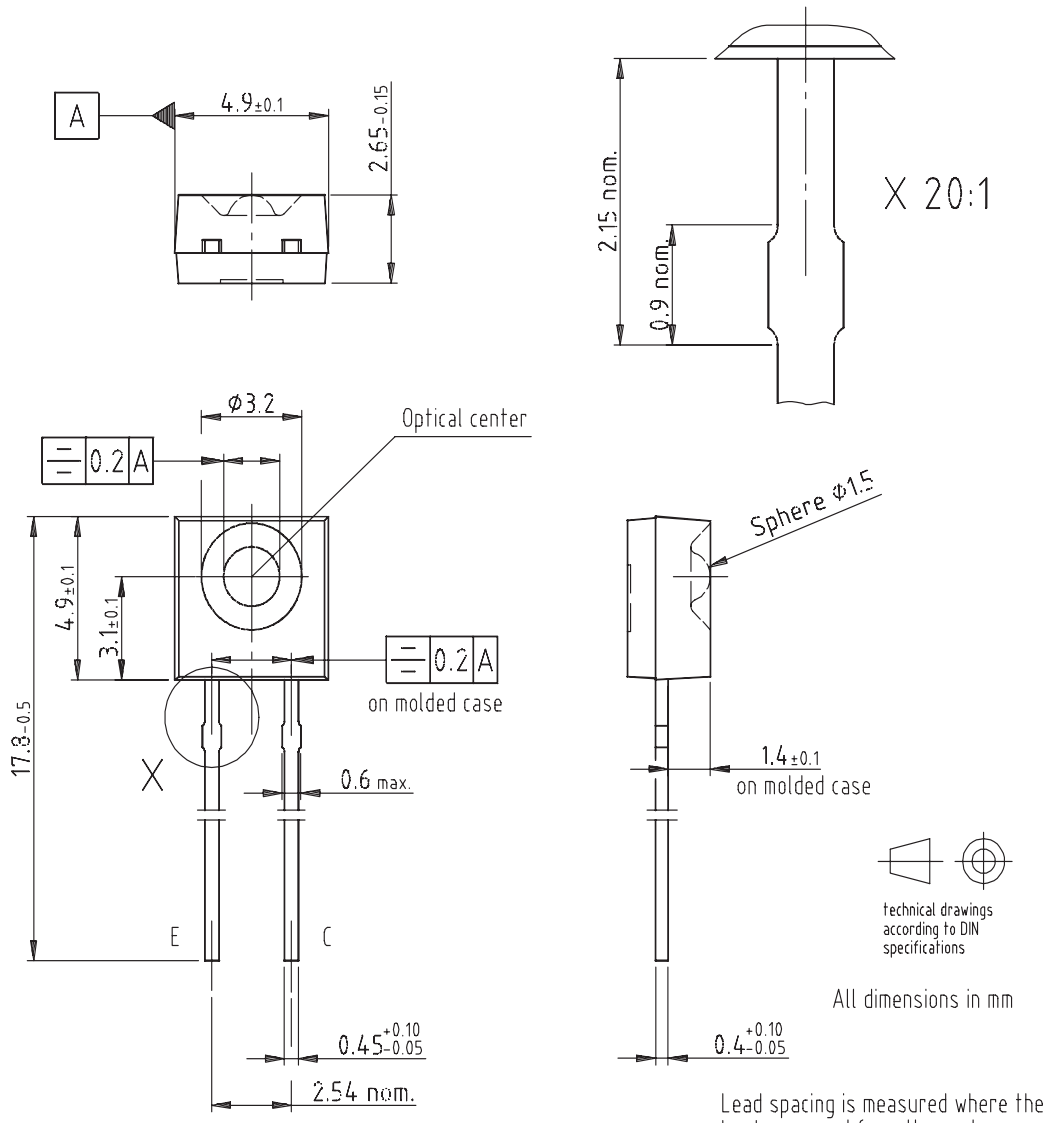


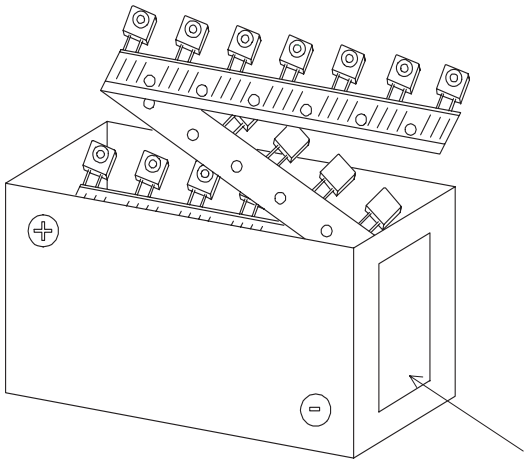
Figure 9. Relative Radiant Intensity vs.Angular Displacement

Package Dimensions in mm

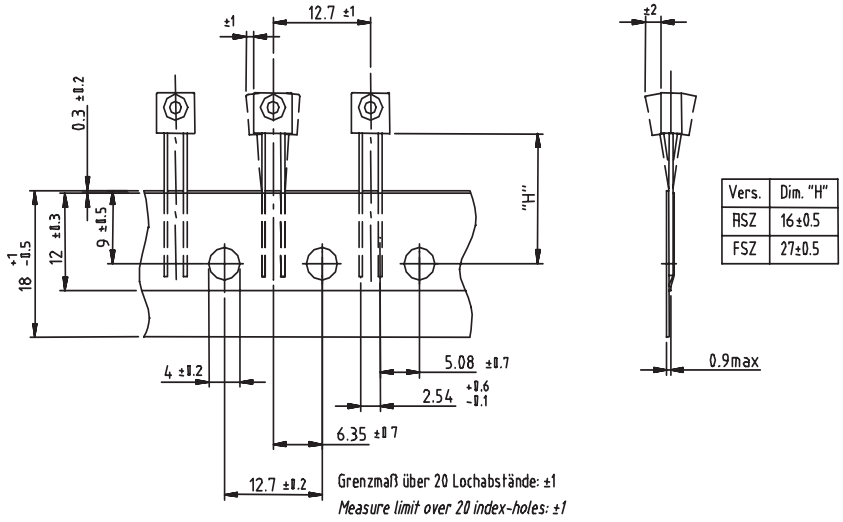


Drawing-No.: 6.544-5347.01-4
Issue: 2; 09.04.03

Tape and Ammopack Standards



Kennzeichnung: Barcode–Etikett siehe 5.6.4
Labeling: Barcode–label see 5.6.4



Vers.	Dim. "H"
RSZ	16±0.5
FSZ	27±0.5

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Ozone Depleting Substances Policy Statement

It is the policy of Vishay Semiconductor GmbH to

1. Meet all present and future national and international statutory requirements.
2. Regularly and continuously improve the performance of our products, processes, distribution and operatingsystems with respect to their impact on the health and safety of our employees and the public, as well as their impact on the environment.

It is particular concern to control or eliminate releases of those substances into the atmosphere which are known as ozone depleting substances (ODSs).

The Montreal Protocol (1987) and its London Amendments (1990) intend to severely restrict the use of ODSs and forbid their use within the next ten years. Various national and international initiatives are pressing for an earlier ban on these substances.

Vishay Semiconductor GmbH has been able to use its policy of continuous improvements to eliminate the use of ODSs listed in the following documents.

1. Annex A, B and list of transitional substances of the Montreal Protocol and the London Amendments respectively
2. Class I and II ozone depleting substances in the Clean Air Act Amendments of 1990 by the Environmental Protection Agency (EPA) in the USA
3. Council Decision 88/540/EEC and 91/690/EEC Annex A, B and C (transitional substances) respectively.

Vishay Semiconductor GmbH can certify that our semiconductors are not manufactured with ozone depleting substances and do not contain such substances.

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