

## Silicon NPN Phototransistor



16733

### DESCRIPTION

TEKT5400S is a silicon NPN phototransistor with high radiant sensitivity, molded in a plastic package with side view lens and daylight blocking filter. Filter bandwidth is matched with 950 nm IR emitters.

### FEATURES

- Package type: leaded
- Package form: side view lens
- Dimensions (L x W x H in mm): 5 x 2.65 x 5
- High radiant sensitivity
- Daylight blocking filter matched with 940 nm emitters
- Fast response times
- Angle of half sensitivity:  $\phi = \pm 37^\circ$
- Package matched with IR emitter series TSKS5400S
- Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC



### Note

\*\* Please see document "Vishay Material Category Policy":  
[www.vishay.com/doc?99902](http://www.vishay.com/doc?99902)

### APPLICATIONS

- Detector in electronic control and drive circuits

### PRODUCT SUMMARY

| COMPONENT | $I_{ca}$ (mA) | $\phi$ (deg) | $\lambda_{0.5}$ (nm) |
|-----------|---------------|--------------|----------------------|
| TEKT5400S | 4             | $\pm 37$     | 850 to 980           |

### Note

- Test condition see table "Basic Characteristics"

### ORDERING INFORMATION

| ORDERING CODE | PACKAGING | REMARKS                      | PACKAGE FORM   |
|---------------|-----------|------------------------------|----------------|
| TEKT5400S     | Bulk      | MOQ: 2000 pcs, 2000 pcs/bulk | Side view lens |

### 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           |                                     | $V_{CEO}$  | 70            | V                |
| Emitter collector voltage           |                                     | $V_{ECO}$  | 7             | V                |
| Collector current                   |                                     | $I_C$      | 100           | mA               |
| Collector peak current              | $t_p/T \leq 0.5$ , $t_p \leq 10$ ms | $I_{CM}$   | 200           | mA               |
| Power dissipation                   | $T_{amb} \leq 40^\circ\text{C}$     | $P_V$      | 150           | mW               |
| Junction temperature                |                                     | $T_j$      | 100           | $^\circ\text{C}$ |
| Operating temperature range         |                                     | $T_{amb}$  | - 40 to + 85  | $^\circ\text{C}$ |
| Storage temperature range           |                                     | $T_{stg}$  | - 40 to + 100 | $^\circ\text{C}$ |
| Soldering temperature               | $t \leq 5$ s                        | $T_{sd}$   | 260           | $^\circ\text{C}$ |
| Thermal resistance junction/ambient | J-STD-051, soldered on PCB          | $R_{thJA}$ | 270           | K/W              |

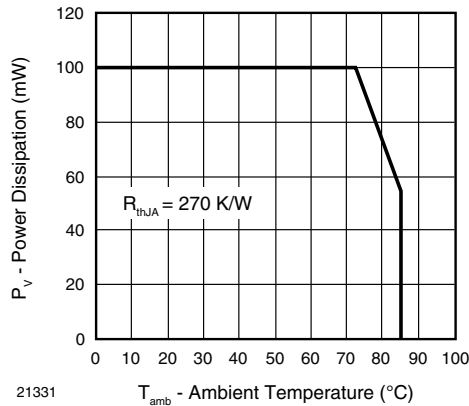


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

| <b>BASIC CHARACTERISTICS</b> ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified) |  |                 |      |            |      |               |
|---|--|-----------------|------|------------|------|---------------|
| PARAMETER   | TEST CONDITION   | SYMBOL          | MIN. | TYP.       | MAX. | UNIT          |
| Collector emitter voltage   | $I_C = 1\text{ mA}$  | $V_{CEO}$       | 70   |            |      | V             |
| Emitter collector voltage   | $I_E = 100\text{ }\mu\text{A}$   | $V_{ECO}$       | 7    |            |      | V             |
| Collector dark current  | $V_{CE} = 20\text{ V}, E = 0$  | $I_{CEO}$       |      | 1          | 100  | nA            |
| Collector emitter capacitance   | $V_{CE} = 5\text{ V}, f = 1\text{ MHz}, E = 0$                         | $C_{CEO}$       |      | 6          |      | pF            |
| Collector light current   | $E_e = 1\text{ mW/cm}^2, \lambda = 950\text{ nm}, V_{CE} = 5\text{ V}$ | $I_{ca}$        | 2    | 4          |      | mA            |
| Angle of half sensitivity   |  | $\phi$          |      | $\pm 37$   |      | deg           |
| Wavelength of peak sensitivity  |  | $\lambda_p$     |      | 920        |      | nm            |
| Range of spectral bandwidth   |  | $\lambda_{0.5}$ |      | 850 to 980 |      | nm            |
| Collector emitter saturation voltage  | $E_e = 1\text{ mW/cm}^2, \lambda = 950\text{ nm}, I_C = 0.1\text{ mA}$ | $V_{CEsat}$     |      |            | 0.3  | V             |
| Turn-on time  | $V_S = 5\text{ V}, I_C = 5\text{ mA}, R_L = 100\text{ }\Omega$         | $t_{on}$        |      | 6          |      | $\mu\text{s}$ |
| Turn-off time   | $V_S = 5\text{ V}, I_C = 5\text{ mA}, R_L = 100\text{ }\Omega$         | $t_{off}$       |      | 5          |      | $\mu\text{s}$ |
| Cut-off frequency   | $V_S = 5\text{ V}, I_C = 5\text{ mA}, R_L = 100\text{ }\Omega$         | $f_c$           |      | 110        |      | kHz           |

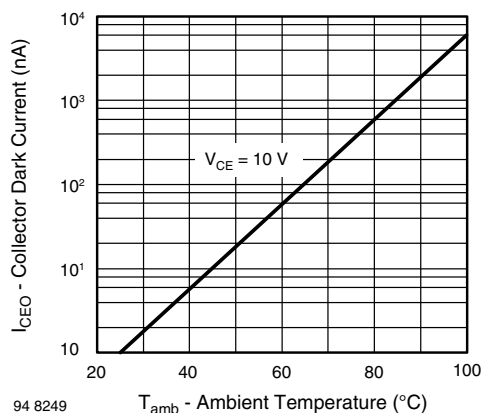
**BASIC CHARACTERISTICS** ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)


Fig. 1 - Collector Dark Current vs. Ambient Temperature

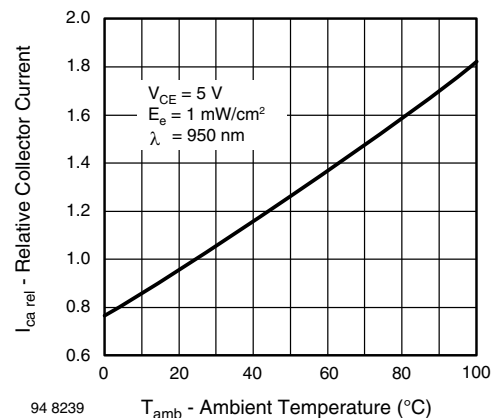
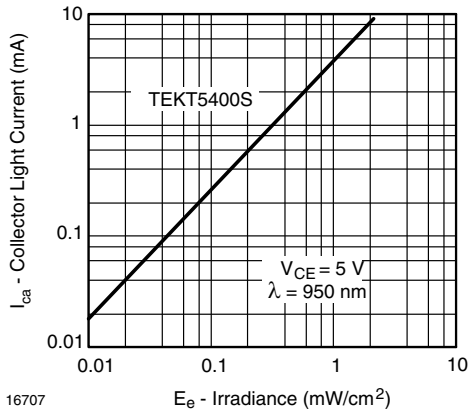
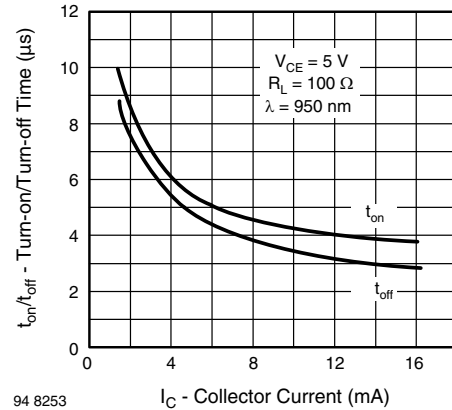


Fig. 2 - Relative Collector Current vs. Ambient Temperature



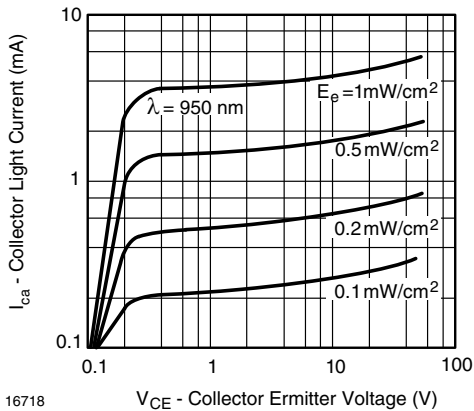
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Fig. 3 - Collector Light Current vs. Irradiance



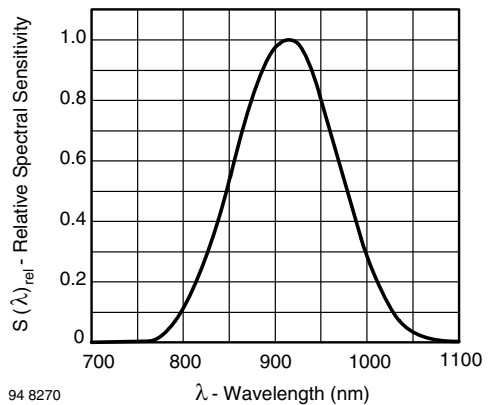
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Fig. 6 - Turn-on/Turn-off Time vs. Collector Current



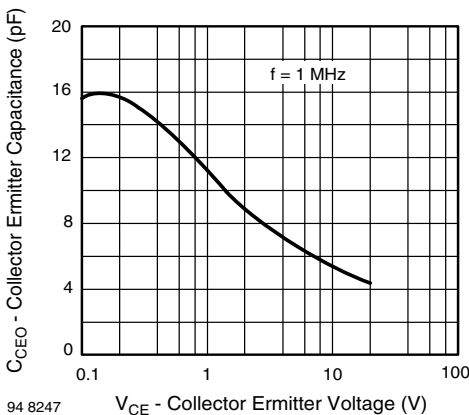
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Fig. 4 - Collector Light Current vs. Collector Emitter Voltage



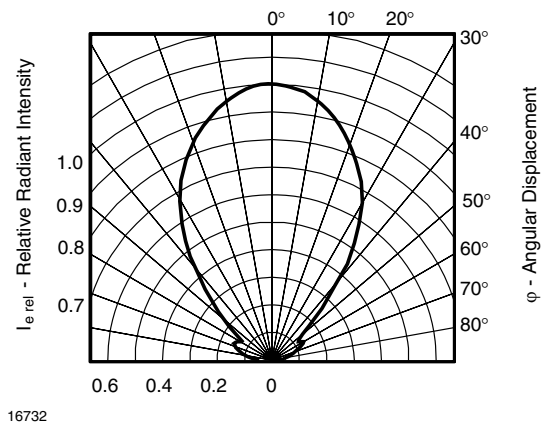
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Fig. 7 - Relative Spectral Sensitivity vs. Wavelength



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Fig. 5 - Collector Emitter Capacitance vs. Collector Emitter Voltage



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Fig. 8 - Relative Radiant Intensity vs. Angular Displacement



PACKAGE DIMENSIONS in millimeters



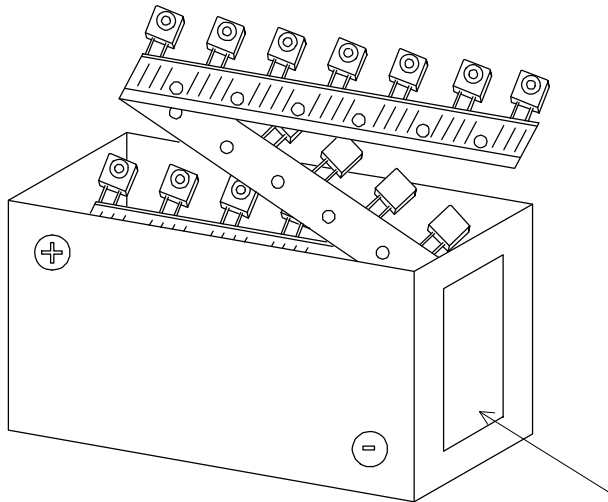
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Issue: 2; 09.04.03

Protruded resin area where the leads emerged from the package  $0.8$  max.

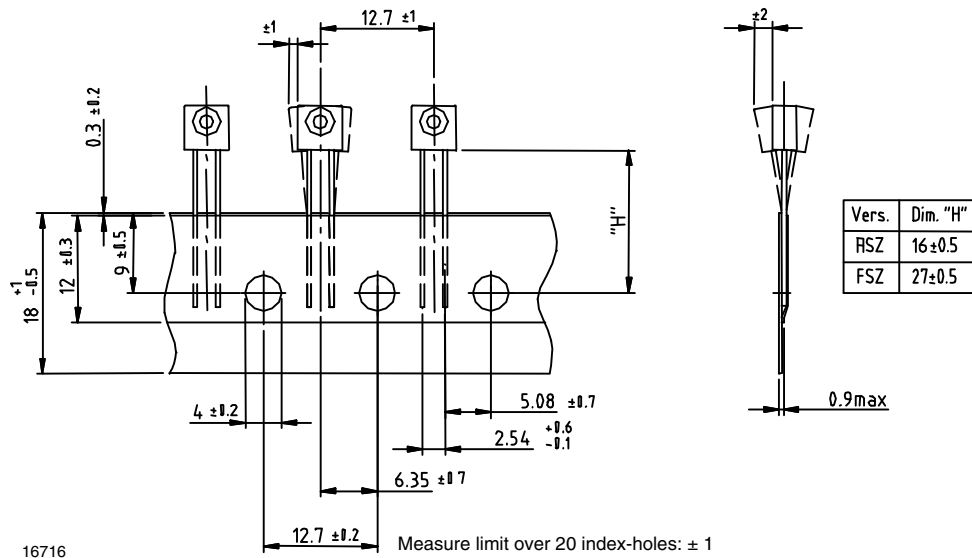
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TAPE AND AMMOPACK STANDARDS Dimensions in millimeters



Labeling: barcode-label see 5.6.4





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