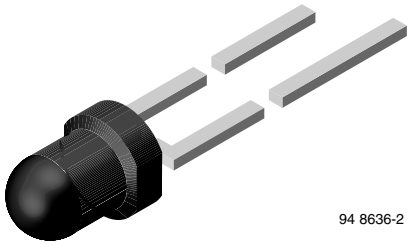
# Silicon NPN Phototransistor




## FEATURES

- Package type: leaded
- Package form: T-1
- Dimensions (in mm): Ø 3
- High radiant sensitivity
- Daylight blocking filter matched with 940 nm emitters
- Fast response times
- Angle of half sensitivity: φ = ± 30°
- Package matched with IR emitter series TSUS4300 and TSAL4400
- Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC

Pb-free

e2

RoHS COMPLIANT

GREEN (5-2008)**

**Note**

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

## DESCRIPTION

TEFT4300 is a silicon NPN phototransistor with high radiant sensitivity in black, T-1 plastic package with daylight blocking filter. Filter bandwitdth is matched with 900 nm to 950 nm IR emitters.

## APPLICATIONS

- Optical switches
- Counters and sorters
- Interrupters
- Encoders
- Position sensors

| PRODUCT SUMMARY | | | |
|---|---|---|---|
| COMPONENT | $I_{ca}$ (mA) | φ (deg) | $\lambda_{0.5}$ (nm) |
| TEFT4300 | 3.2 | ± 30 | 875 to 1000 |

**Note**

- Test condition see table “Basic Characteristics”

| ORDERING INFORMATION | | | |
|---|---|---|---|
| ORDERING CODE | PACKAGING | REMARKS | PACKAGE FORM |
| TEFT4300 | Bulk | MOQ: 5000 pcs, 5000 pcs/bulk | T-1 |

**Note**

- MOQ: minimum order quantity

| ABSOLUTE MAXIMUM RATINGS ($T_{amb}$ = 25 °C, unless otherwise specified) | | | | |
|---|---|---|---|---|
| PARAMETER | TEST CONDITION | SYMBOL | VALUE | UNIT |
| Collector emitter voltage | | $V_{CEO}$ | 70 | V |
| 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 + 100 | °C |
| Storage temperature range | | $T_{stg}$ | - 40 to + 100 | °C |
| Soldering temperature | t ≤ 3 s, 2 mm from case | $T_{sd}$ | 260 | °C |
| Thermal resistance junction/ambient | Connected with Cu wire, 0.14 mm² | $R_{thJA}$ | 450 | K/W |

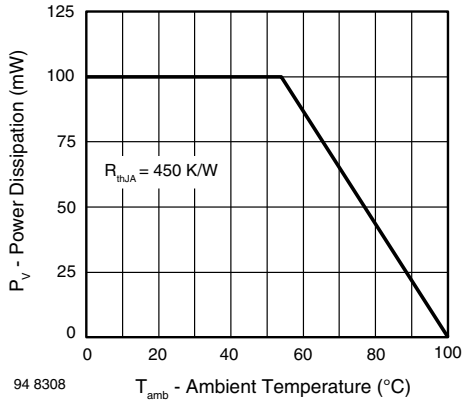



Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

| **BASIC CHARACTERISTICS** ($T_{amb}$ = 25 °C, unless otherwise specified) | | | | | | |
|---|---|---|---|---|---|---|
| **PARAMETER** | **TEST CONDITION** | **SYMBOL** | **MIN.** | **TYP.** | **MAX.** | **UNIT** |
| Collector emitter breakdown voltage | $I_C$ = 1 mA | $V_{(BR)CEO}$ | 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/cm², λ = 950 nm, $V_{CE}$ = 5 V | $I_{ca}$ | 0.8 | 3.2 | | mA |
| Angle of half sensitivity | | φ | | ± 30 | | deg |
| Wavelength of peak sensitivity | | $\lambda_p$ | | 925 | | nm |
| Range of spectral bandwidth | | $\lambda_{0.5}$ | | 875 to 1000 | | 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 | $t_{on}$ | | 2 | | 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 |

## **BASIC CHARACTERISTICS** ($T_{amb}$ = 25 °C, unless otherwise specified)

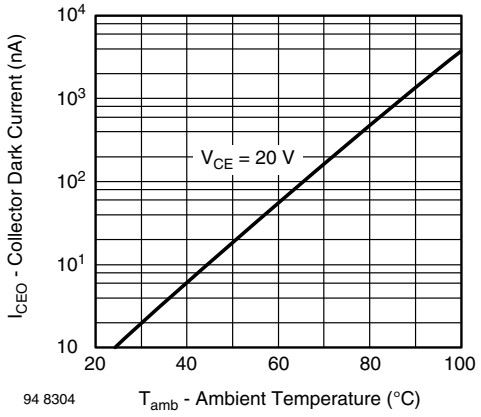



Fig. 1 - Collector Dark Current vs. Ambient Temperature

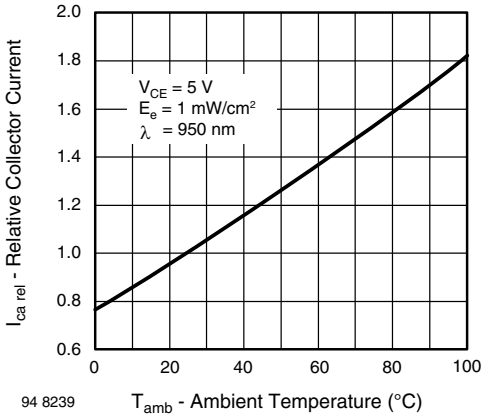



Fig. 2 - Relative Collector Current vs. Ambient Temperature

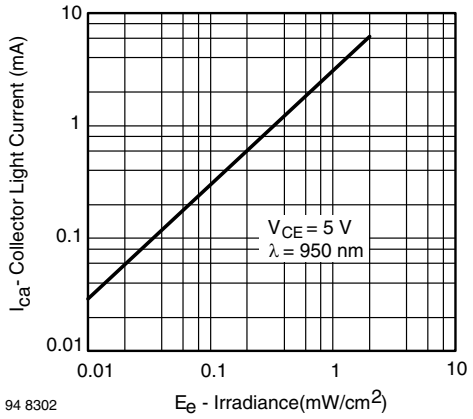



Fig. 3 - Collector Light Current vs. Irradiance

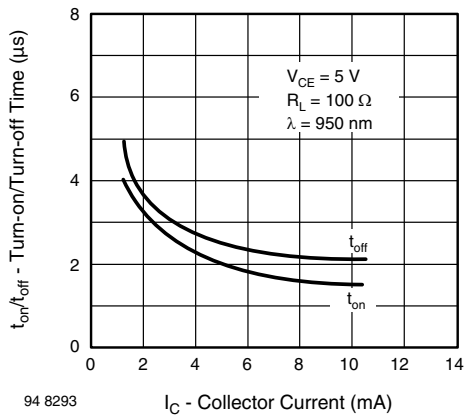



Fig. 6 - Turn-on/Turn-off Time vs. Collector Current

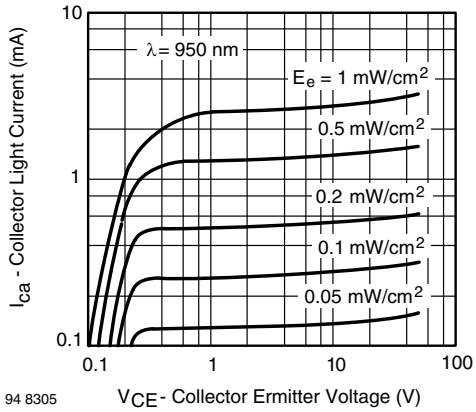



Fig. 4 - Collector Light Current vs. Collector Emitter Voltage

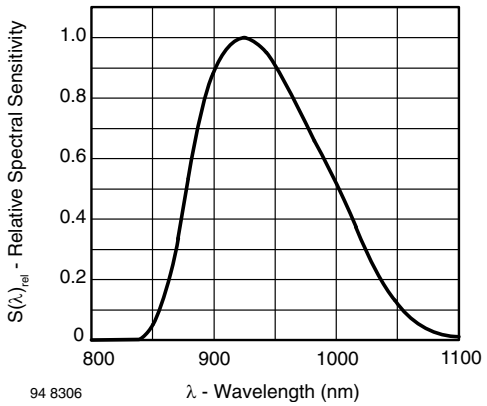



Fig. 7 - Relative Spectral Sensitivity vs. Wavelength

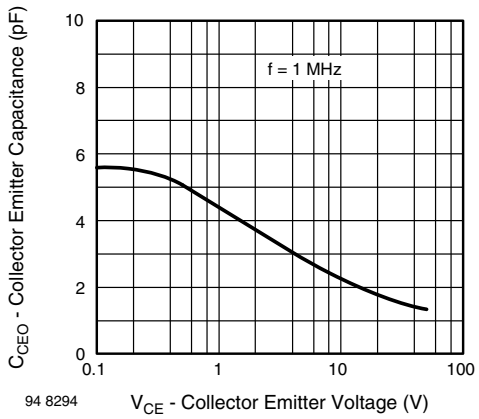



Fig. 5 - Collector Emitter Capacitance vs. Collector Emitter Voltage

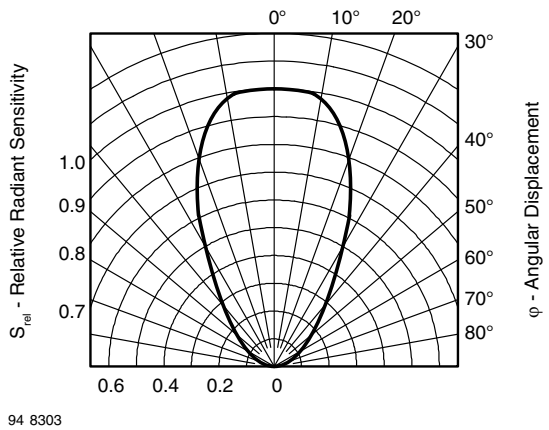
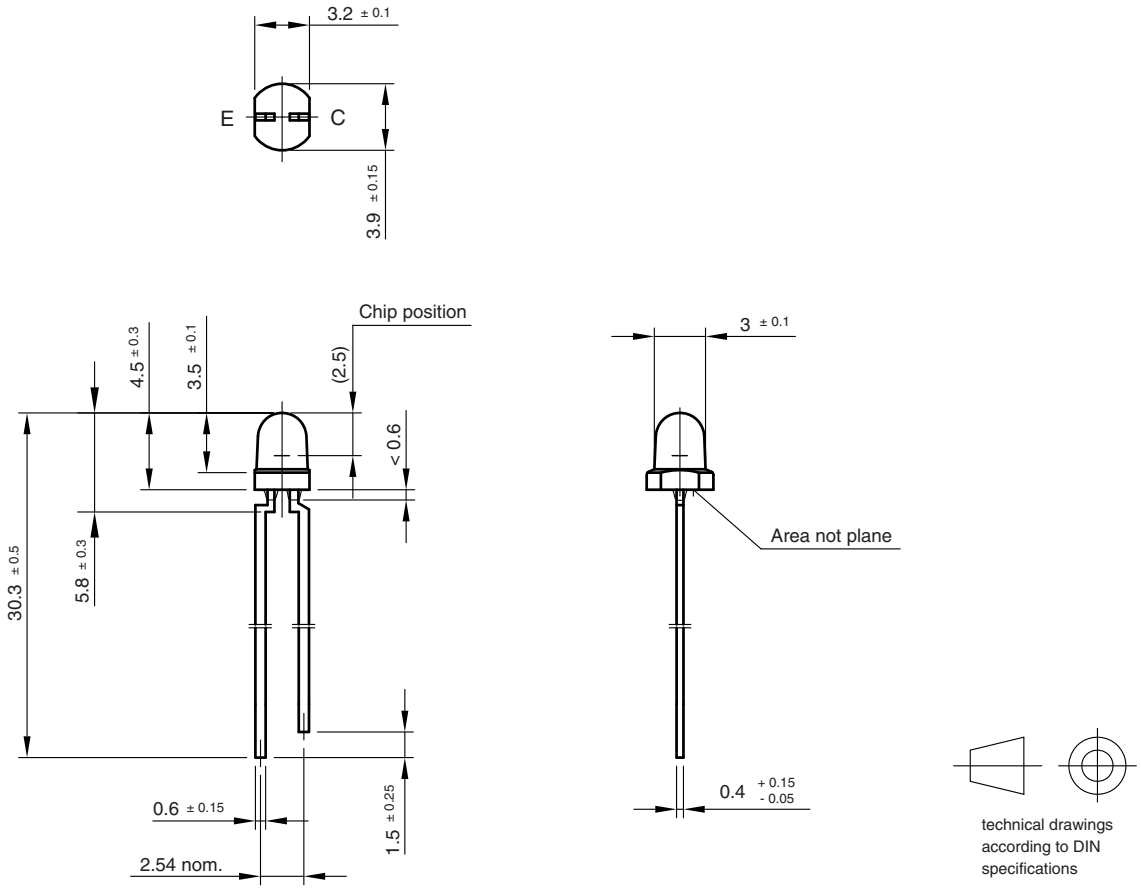



Fig. 8 - Relative Radiant Sensitivity vs. Angular Displacement

**PACKAGE DIMENSIONS** in millimeters

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