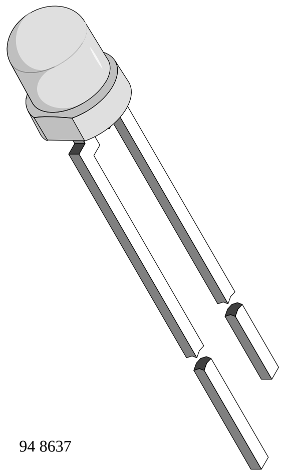
TEFT4300

Silicon NPN Phototransistor

Description

TEFT4300 is a high speed and high sensitive silicon NPN epitaxial planar phototransistor in a standard T–1 (ø 3 mm) plastic package.
The epoxy package itself is an IR filter, spectrally matched to GaAs IR emitters with $\lambda_p \geqq$ 900nm).
The plastic lens provides a wide viewing angle of ± 30˚.



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Features

- High radiant sensitivity
- Fast response times
- T1 (ø 3 mm) plastic package with IR filter
- Additional polarity sign
- Wide viewing angle φ = ± 30˚
- Suitable for near infrared radiation
- Matches with TSUS 4300 GaAs infrared emitter

Applications

Optical switches
Counters and sorters
Interrupters
Tape and card readers
Encoders
Position sensors

Absolute Maximum Ratings

T_{amb} = 25°C

Parameter	Test Conditions	Symbol	Value	Unit
Collector Emitter Voltage		V_{CEO}	70	V
Emitter Collector Voltage		V_{ECO}	5	V
Collector Current		I_C	50	mA
Peak Collector Current	$t_p/T = 0.5$, $t_p \leqq 10$ ms	I_{CM}	100	mA
Total Power Dissipation	$T_{amb} \leqq 55$ ˚C	P_{tot}	100	mW
Junction Temperature		T_j	100	˚C
Storage Temperature Range		T_{stg}	–55...+100	˚C
Soldering Temperature	t ≦ 3 s, 2 mm from case	T_{sd}	260	˚C
Thermal Resistance Junction/Ambient		R_{thJA}	450	K/W

Basic Characteristics

T_{amb} = 25°C

Parameter	Test Conditions	Symbol	Min	Typ	Max	Unit
Collector Emitter Breakdown Voltage	I_C = 1 mA	$V_{(BR)CEO}$	70			V
Collector 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=1mW/cm^2, λ=950nm, V_{CE}=5V	I_{ca}	0.8	3.2		mA
Angle of Half Sensitivity		φ		±30		deg
Wavelength of Peak Sensitivity		λ_p		925		nm
Range of Spectral Bandwidth		$\lambda_{0.5}$		875...1000		nm
Collector Emitter Saturation Voltage	E_e=1mW/cm^2, λ=950nm, I_C=0.1mA	V_{CEsat}			0.3	V
Turn–On Time	V_S=5V, I_C=5mA, R_L=100Ω	t_{on}		2.0		μs
Turn–Off Time	V_S=5V, I_C=5mA, R_L=100Ω	t_{off}		2.3		μs
Cut–Off Frequency	V_S=5V, I_C=5mA, R_L=100Ω	f_c		180		kHz

Typical Characteristics (T$_{amb}$ = 25°C unless otherwise specified)

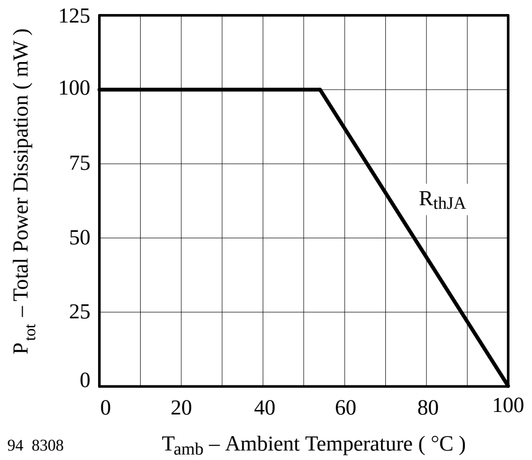


Figure 1. Total Power Dissipation vs. Ambient Temperature

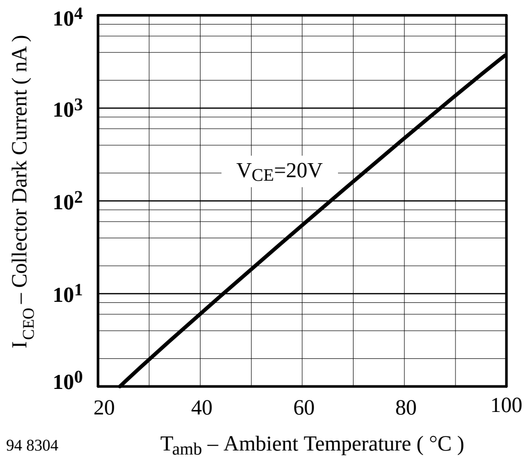


Figure 2. Collector Dark Current vs. Ambient Temperature

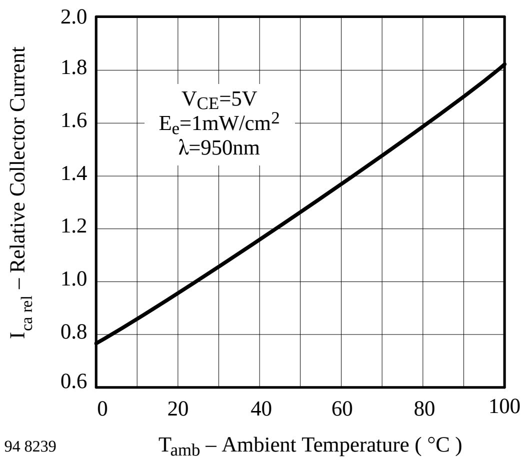


Figure 3. Relative Collector Current vs. Ambient Temperature

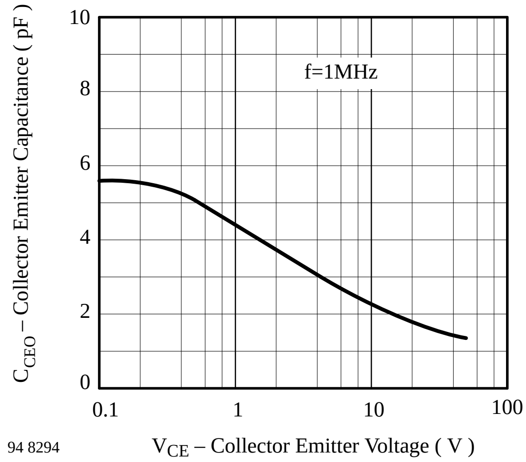


Figure 6. Collector Emitter Capacitance vs. Collector Emitter Voltage

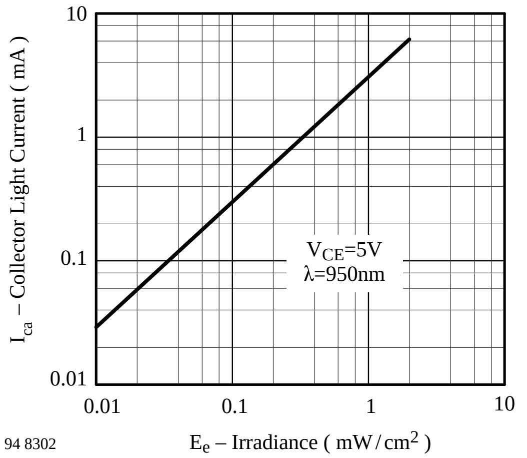


Figure 4. Collector Light Current vs. Irradiance

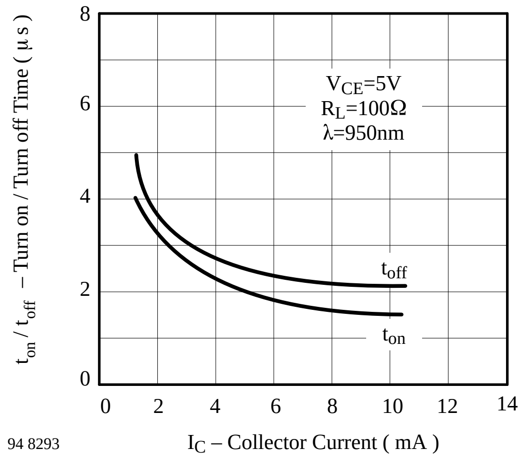


Figure 7. Turn On/Turn Off Time vs. Collector Current

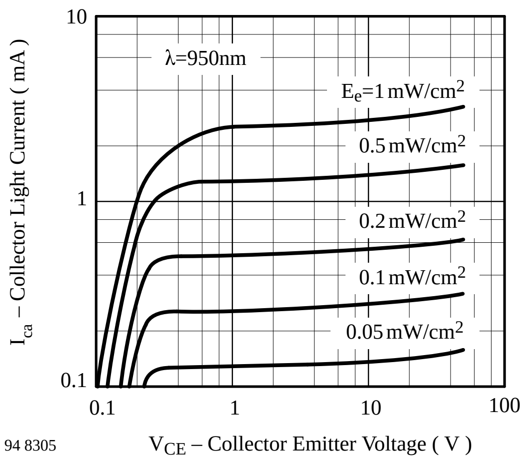


Figure 5. Collector Light Current vs. Collector Emitter Voltage

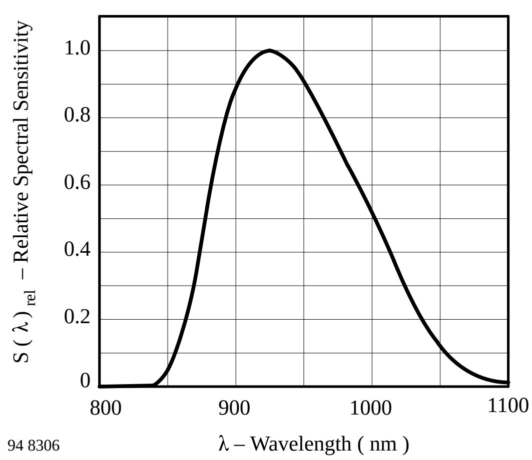


Figure 8. Relative Spectral Sensitivity vs. Wavelength

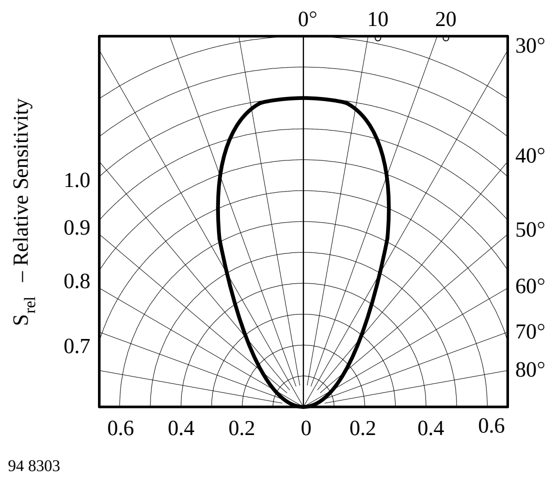
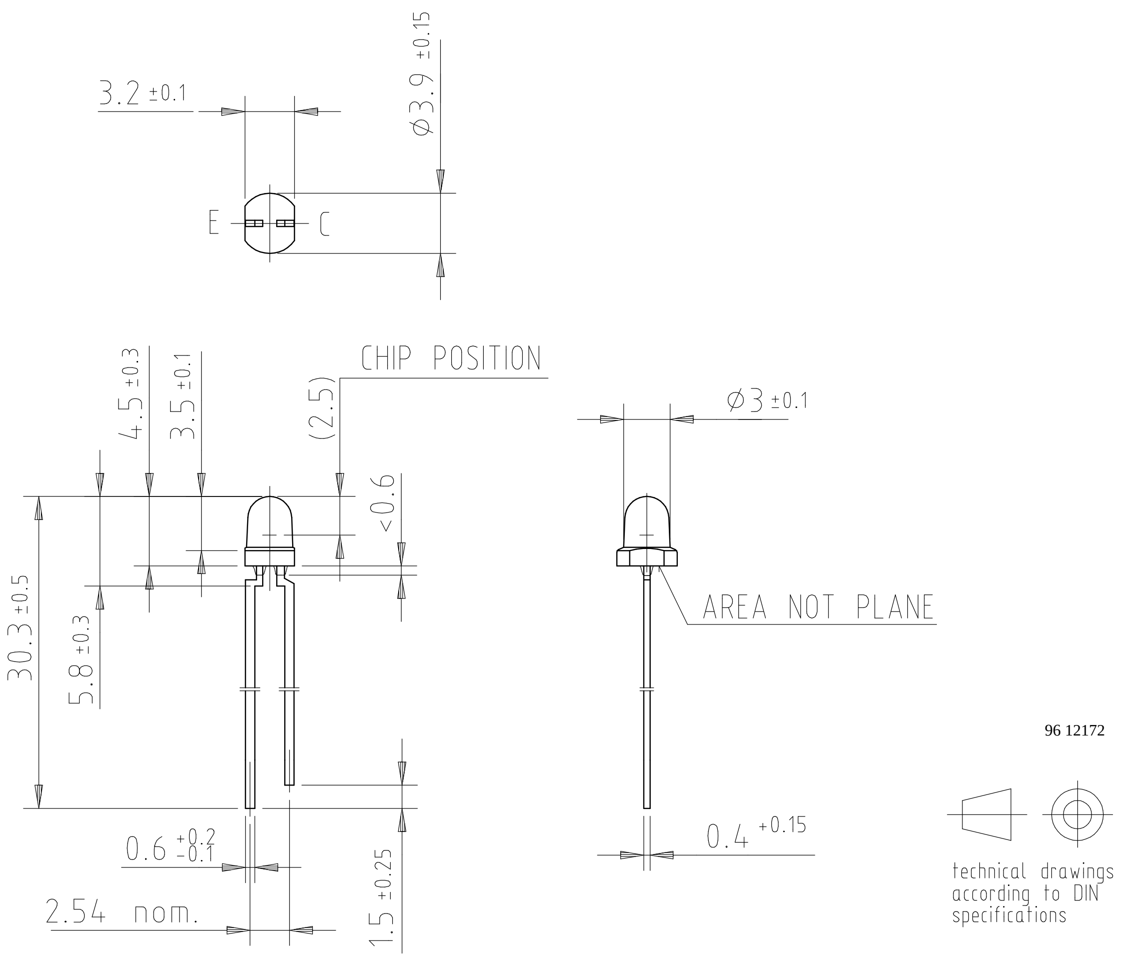


Figure 9. Relative Radiant Sensitivity vs. Angular Displacement

Dimensions in mm



Ozone Depleting Substances Policy Statement

It is the policy of **TEMIC TELEFUNKEN microelectronic 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 operating systems 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.

TEMIC TELEFUNKEN microelectronic GmbH semiconductor division 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.

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

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