NPN-Silizium-Fototransistor; mit Tageslichtsperrfilter
Silicon NPN Phototransistor; with Daylight Filter

SFH 303
SFH 303 FA

SFH 303

SFH 303 FA

Wesentliche Merkmale

- Speziell geeignet für Anwendungen im Bereich von 450 nm bis 1100 nm (SFH 303) und von 730 nm bis 1100 nm (SFH 303 FA)
- Hohe Linearität
- 5 mm-Plastikbauform im LED-Gehäuse
- Auch gegurtet und gruppiert lieferbar

Anwendungen

- Lichtschranken für Gleich- und Wechsellichtbetrieb
- Industrieelektronik
- „Messen/Steuern/Regeln“

Features

- Especially suitable for applications from 450 nm to 1100 nm (SFH 303) and from 730 nm to 1100 nm (SFH 303 FA)
- High linearity
- 5 mm LED plastic package
- Also available on tape and reel and in groups

Applications

- Light-reflecting switches for steady and varying intensity
- Industrial electronics
- For control and drive circuits

Typ Type	Bestellnummer Ordering Code
SFH 303	Q62702-P957
SFH 303-3/-4	Q62702-P3588
SFH 303 FA	Q62702-P958
SFH 303 FA-3/-4	Q62702-P3587

Grenzwerte
Maximum Ratings

Bezeichnung **Parameter**	**Symbol** **Symbol**	**Wert** **Value**	**Einheit** **Unit**
Betriebs- und Lagertemperatur Operating and storage temperature range	T_{op}; T_{stg}	– 40 … + 100	°C
Löttemperatur bei Tauchlötung Lötstelle ≥ 2 mm vom Gehäuse, Lötzeit $t \leq 5$ s Dip soldering temperature ≥ 2 mm distance from case bottom, soldering time $t \leq 5$ s	T_S	260	°C
Löttemperatur bei Kolbenlötung Lötstelle ≥ 2 mm vom Gehäuse, Lötzeit $t \leq 3$ s Iron soldering temperature ≥ 2 mm distance from case bottom, soldering time $t \leq 3$ s	T_S	300	°C
Kollektor-Emitterspannung Collector-emitter voltage	V_{CE} V_{CE} ($t < 2$ min)	35 70	V
Kollektorstrom Collector current	I_C	50	mA
Kollektorspitzenstrom, $\tau < 10$ µs Collector surge current	I_{CS}	100	mA
Emitter-Basisspannung Emitter-base voltage	V_{EB}	7	V
Verlustleistung, $T_A = 25$ °C Total power dissipation	P_{tot}	200	mW
Wärmewiderstand Thermal resistance	R_{thJA}	375	K/W

Kennwerte (T_A = 25 °C, λ = 950 nm)
Characteristics

Bezeichnung **Parameter**	**Symbol** **Symbol**	**Wert** **Value**		**Einheit** **Unit**
		SFH 303	**SFH 303 FA**	
Wellenlänge der max. Fotoempfindlichkeit Wavelength of max. sensitivity	$\lambda_{S\ max}$	850	870	nm
Spektraler Bereich der Fotoempfindlichkeit S = 10% von S_{max} Spectral range of sensitivity S = 10% of S_{max}	λ	440 … 1100	730 … 1100	nm
Bestrahlungsempfindliche Fläche Radiant sensitive area	A	0.20	0.20	mm^2
Abmessung der Chipfläche Dimensions of chip area	$L \times B$ $L \times W$	0.65 × 0.65	0.65 × 0.65	mm × mm
Abstand Chipoberfläche zu Gehäuseoberfläche Distance chip front to case surface	H	4.0 … 4.6	4.0 … 4.6	mm
Halbwinkel Half angle	φ	± 20	± 20	Grad deg.
Fotostrom der Kollektor-Basis-Fotodiode Photocurrent of collector-base photodiode E_e = 0.5 mW/cm², V_{CB} = 5 V E_v = 1000 lx, Normlicht/standard light A, V_{CB} = 5 V	 I_{PCB} I_{PCB}	 – 15.8	 4.5 –	 µA µA
Kapazität Capacitance V_{CE} = 0 V, f = 1 MHz, E = 0 V_{CB} = 0 V, f = 1 MHz, E = 0 V_{EB} = 0 V, f = 1 MHz, E = 0	 C_{CE} C_{CB} C_{EB}	 10 15 21	 10 15 21	 pF pF pF
Dunkelstrom Dark current V_{CEO} = 10 V, E = 0	I_{CEO}	2 (≤ 50)	2 (≤ 50)	nA

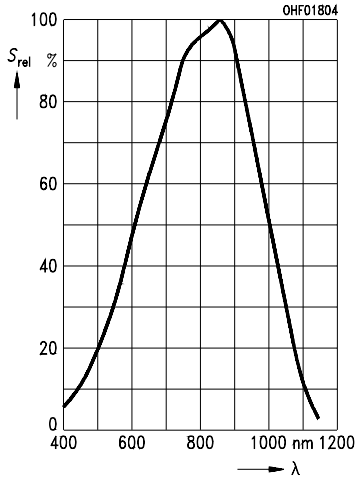
Die Fototransistoren werden nach ihrer Fotoempfindlichkeit gruppiert und mit arabischen Ziffern gekennzeichnet.
The phototransistors are grouped according to their spectral sensitivity and distinguished by arabian figures.

Bezeichnung **Parameter**	**Symbol** **Symbol**	**Wert** **Value**			**Einheit** **Unit**
		-2	**-3**	**-4**	
Fotostrom, $\lambda = 950$ nm Photocurrent E_e = 0.5 mW/cm², V_{CE} = 5 V	I_{PCE}	1.0 … 2.0	1.6 … 3.2	≥ 2.5	mA
SFH 303: E_v = 1000 lx, Normlicht/standard light A, V_{CE} = 5 V	I_{PCE}	5.2	8.4	13.1	mA
Anstiegszeit/Abfallzeit Rise and fall time I_C = 1 mA, V_{CC} = 5 V, R_L = 1 kΩ	t_r, t_f	11	13	15	µs
Kollektor-Emitter-Sättigungsspannung Collector-emitter saturation voltage $I_C = I_{PCEmin}$ [1] × 0.3, E_e = 0.5 mW/cm²	V_{CEsat}	150	150	150	mV
Stromverstärkung Current gain E_e = 0.5 mW/cm², V_{CE} = 5 V	$\frac{I_{PCE}}{I_{PCB}}$	330	530	830	–

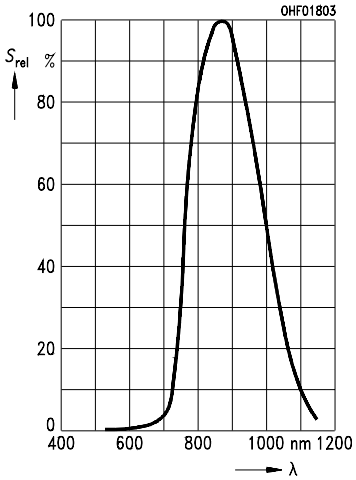
[1] I_{PCEmin} ist der minimale Fotostrom der jeweiligen Gruppe.

[1] I_{PCEmin} is the min. photocurrent of the specified group.

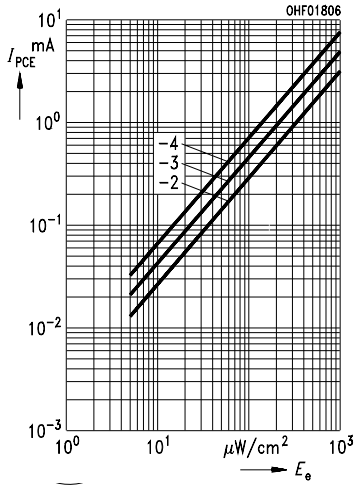
Relative Spectral Sensitivity, SFH 303 $S_{rel} = f(\lambda)$



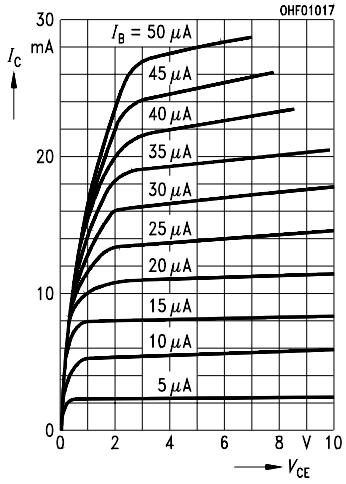
Relative Spectral Sensitivity, SFH 303 FA $S_{rel} = f(\lambda)$



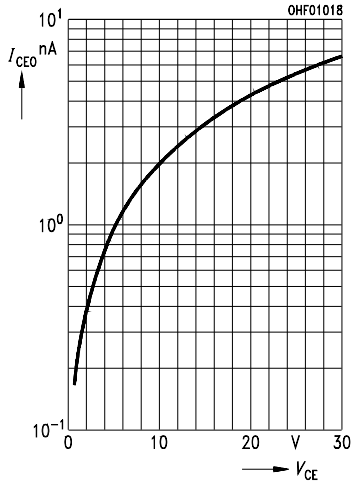
Photocurrent
$I_{PCE} = f(E_e)$, V_{CE} = 5 V



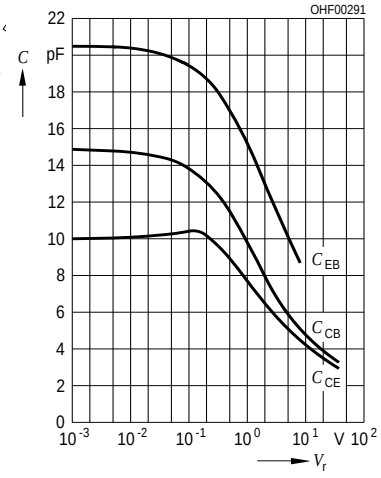
Output Characteristics
$I_C = f(V_{CE})$, I_B = Parameter



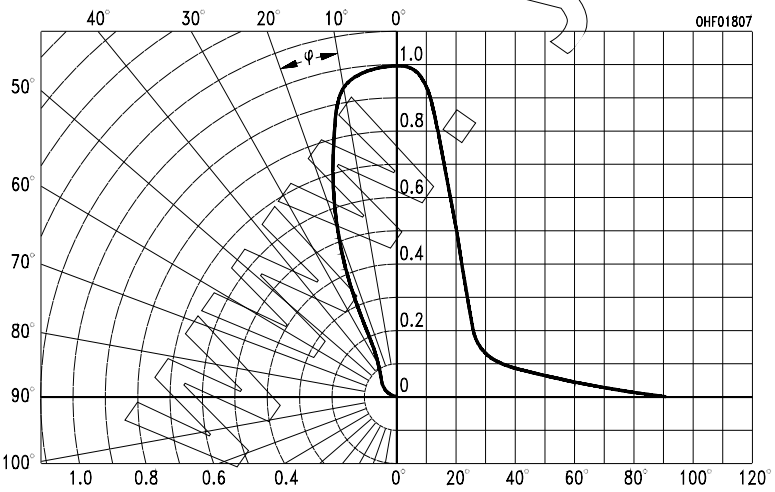
Dark Current
$I_{CEO} = f(V_{CE})$, E = 0



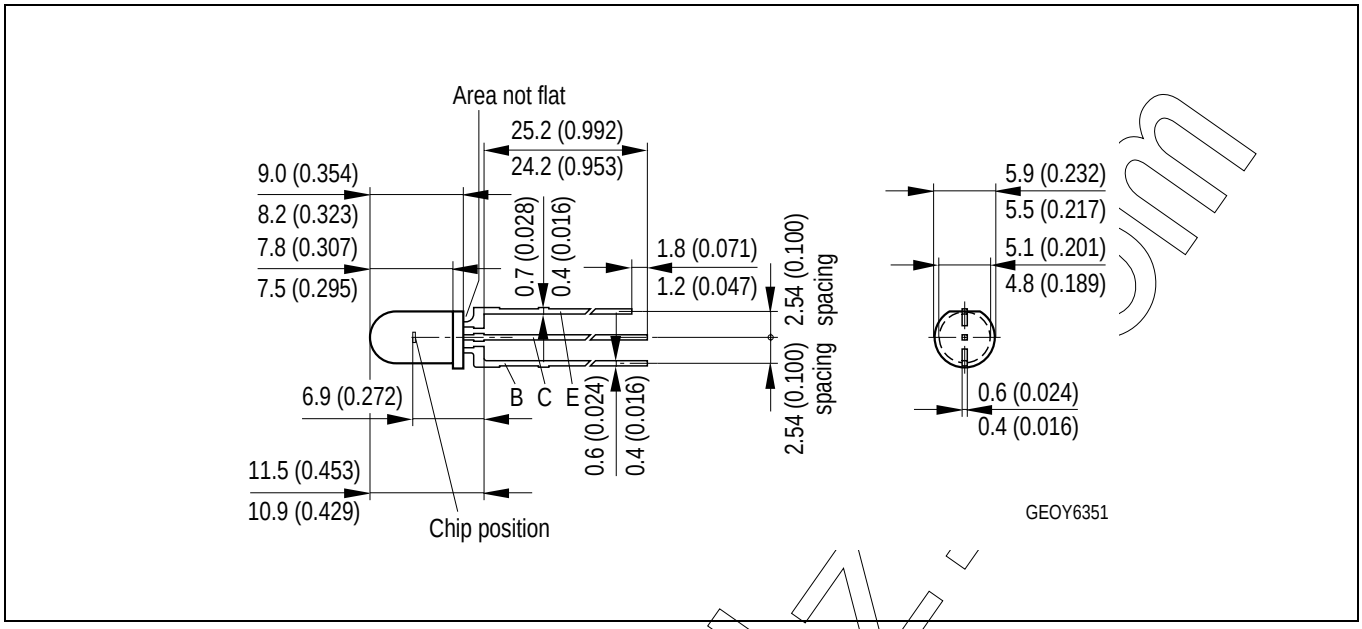
Capacitance
$C = f(V_R)$, f = 1 MHz, E = 0



Directional Characteristics
$S_{rel} = f(\varphi)$



Maßzeichnung
Package Outlines



Maße werden wie folgt angegeben: mm (inch) / Dimensions are specified as follows: mm (inch).

Attention please!

The information describes the type of component and shall not be considered as assured characteristics.
Terms of delivery and rights to change design reserved. Due to technical requirements components may contain dangerous substances. For information on the types in question please contact our Sales Organization.

Packing

Please use the recycling operators known to you. We can also help you – get in touch with your nearest sales office. By agreement we will take packing material back, if it is sorted. You must bear the costs of transport. For packing material that is returned to us unsorted or which we are not obliged to accept, we shall have to invoice you for any costs incurred.

Components used in life-support devices or systems must be expressly authorized for such purpose! Critical components [1] , may only be used in life-support devices or systems [2] with the express written approval of OSRAM OS.

[1] A critical component is a component usedin a life-support device or system whose failure can reasonably be expected to cause the failure of that life-support device or system, or to affect its safety or effectiveness of that device or system.

[2] Life support devices or systems are intended (a) to be implanted in the human body, or (b) to support and/or maintain and sustain human life. If they fail, it is reasonable to assume that the health of the user may be endangered.