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

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

Anwendungen

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

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

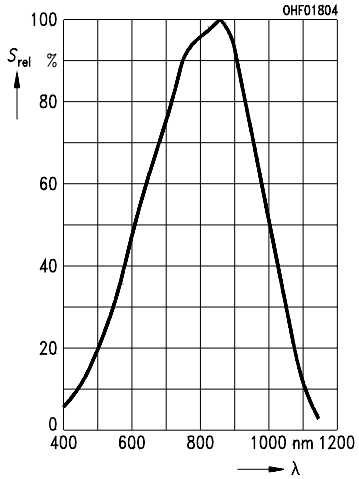
Die Fototransistoren werden nach ihrer Fotoempfindlichkeit gruppiert und mit arabischen Ziffern gekennzeichnet.
The phototransistors are grouped according to their spectral sensitivity and distinguished by arabian figures.

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	–

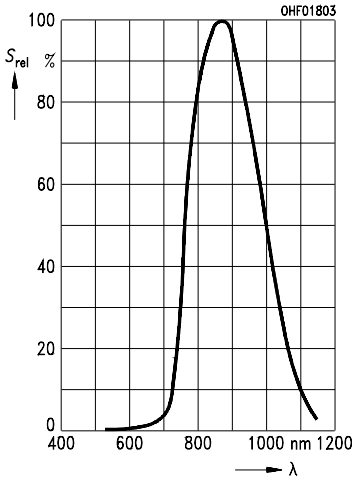
[1] I_{PCEmin} ist der minimale Fotostrom der jeweiligen Gruppe.

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

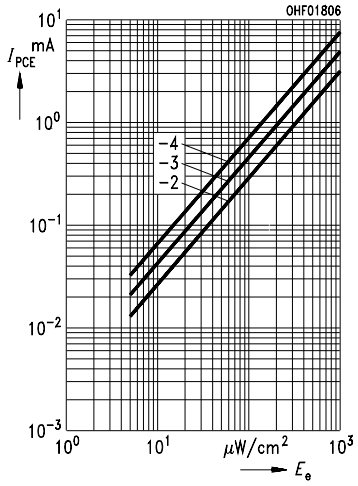
Relative Spectral Sensitivity, SFH 303 $S_{rel} = f(\lambda)$



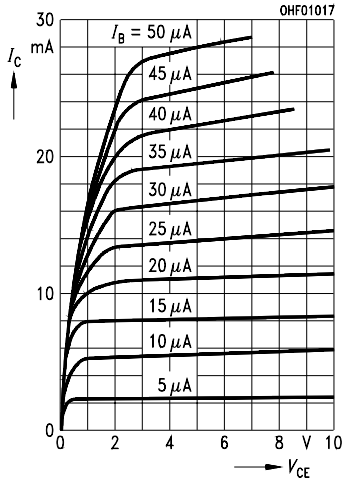
Relative Spectral Sensitivity, SFH 303 FA $S_{rel} = f(\lambda)$



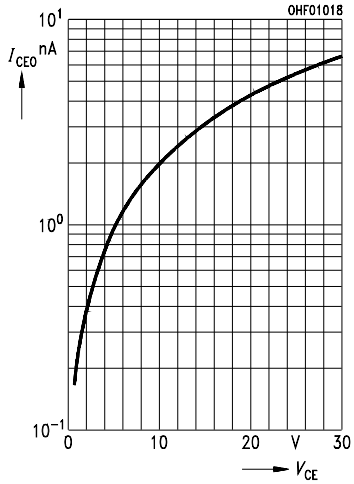
Photocurrent
$I_{PCE} = f(E_e)$, V_{CE} = 5 V



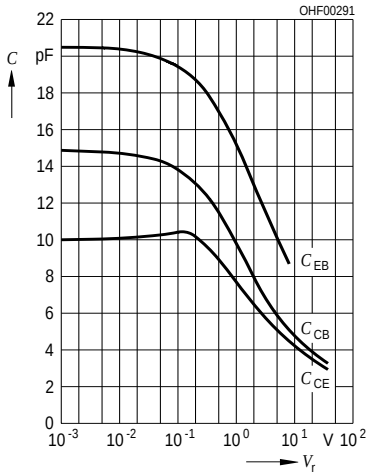
Output Characteristics
$I_C = f(V_{CE})$, I_B = Parameter



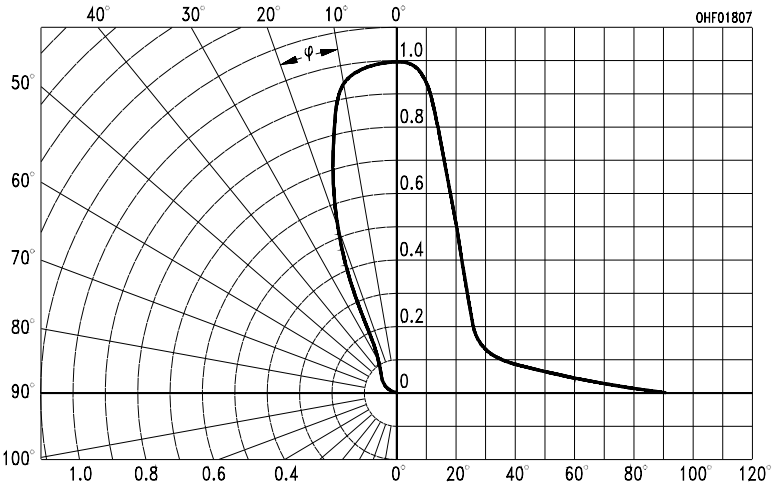
Dark Current
$I_{CEO} = f(V_{CE})$, E = 0



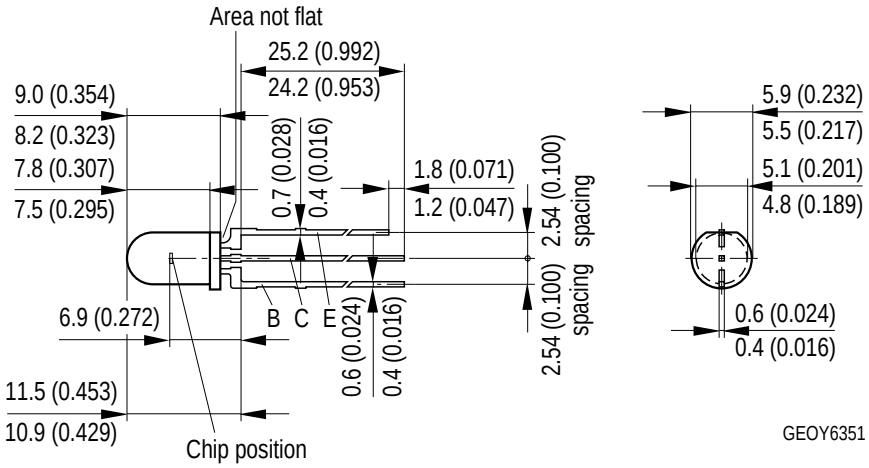
Capacitance
$C = f(V_R)$, f = 1 MHz, E = 0



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



Maßzeichnung
Package Outlines



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

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