

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} $V_{CE} (t < 2 \text{ min})$	35 70	V
Kollektorstrom Collector current	I_C	50	mA
Kollektorspitzenstrom, $\tau < 10 \mu\text{s}$ Collector surge current	I_{CS}	100	mA
Emitter-Basisspannung Emitter-base voltage	V_{EB}	7	V
Verlustleistung, $T_A = 25 \text{ °C}$ Total power dissipation	P_{tot}	200	mW
Wärmewiderstand Thermal resistance	R_{thJA}	375	K/W

Kennwerte ($T_A = 25\text{ °C}$, $\lambda = 950\text{ nm}$)

Characteristics

Bezeichnung Parameter	Symbol Symbol	Wert Value		Einheit Unit
		SFH 303	SFH 303 FA	
Wellenlänge der max. Fotoempfindlichkeit Wavelength of max. sensitivity	$\lambda_{S\text{ max}}$	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 $E_e = 0.5\text{ mW/cm}^2$, $V_{CB} = 5\text{ V}$ $E_v = 1000\text{ lx}$, Normlicht/standard light A, $V_{CB} = 5\text{ V}$	I_{PCB} I_{PCB}	– 15.8	4.5 –	μA μA
Kapazität Capacitance $V_{CE} = 0\text{ V}$, $f = 1\text{ MHz}$, $E = 0$ $V_{CB} = 0\text{ V}$, $f = 1\text{ MHz}$, $E = 0$ $V_{EB} = 0\text{ V}$, $f = 1\text{ MHz}$, $E = 0$	C_{CE} C_{CB} C_{EB}	10 15 21	10 15 21	pF pF pF
Dunkelstrom Dark current $V_{CEO} = 10\text{ V}$, $E = 0$	I_{CEO}	2 (≤ 50)	2 (≤ 50)	nA

Die Fototransistoren werden nach ihrer Fotoempfindlichkeit gruppiert und mit arabischen Ziffern gekennzeichnet.

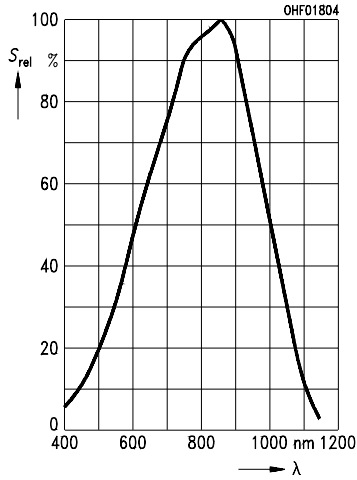
The phototransistors are grouped according to their spectral sensitivity and distinguished by arabian figures.

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

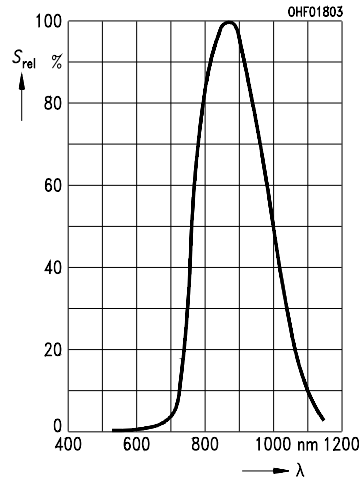
¹⁾ I_{PCEmin} ist der minimale Fotostrom der jeweiligen Gruppe.

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

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

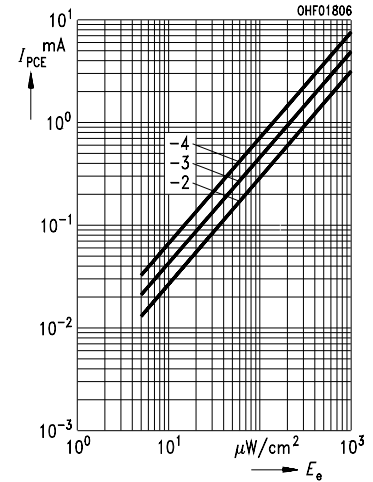


Relative Spectral Sensitivity,
SFH 303 FA $S_{rel} = f(\lambda)$

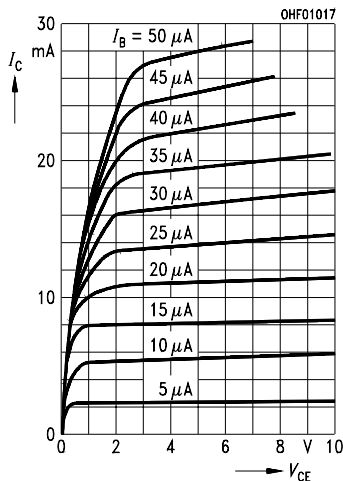


Photocurrent

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

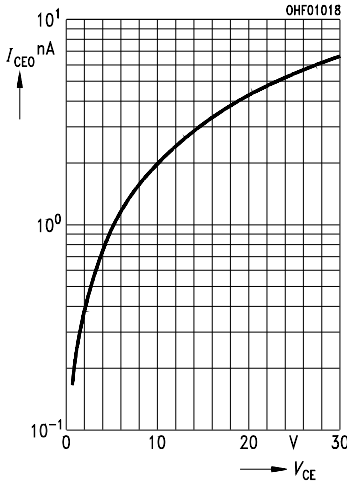


Output Characteristics
 $I_C = f(V_{CE}), I_B = \text{Parameter}$



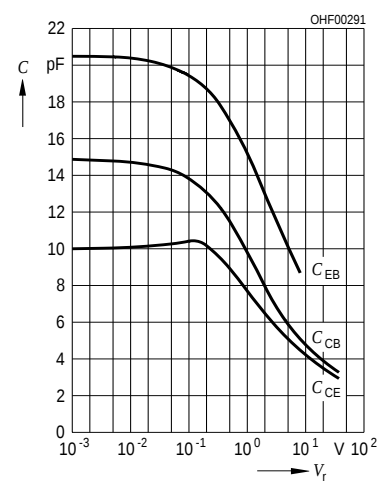
Dark Current

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



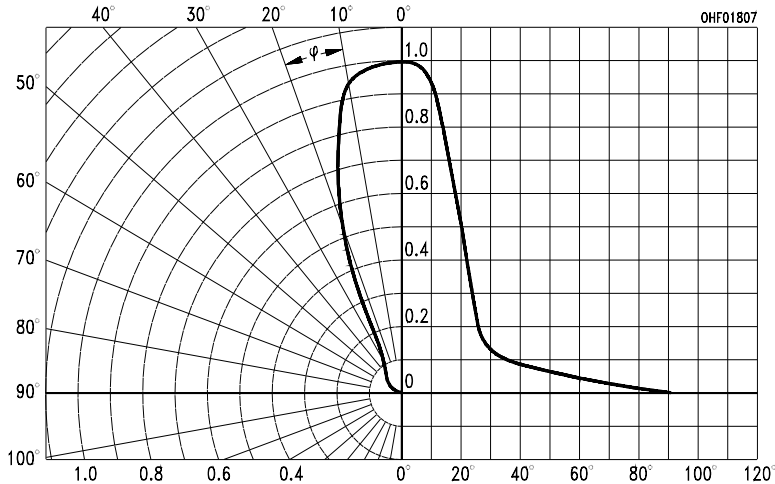
Capacitance

$$C = f(V_R), f = 1 \text{ MHz}, E = 0$$

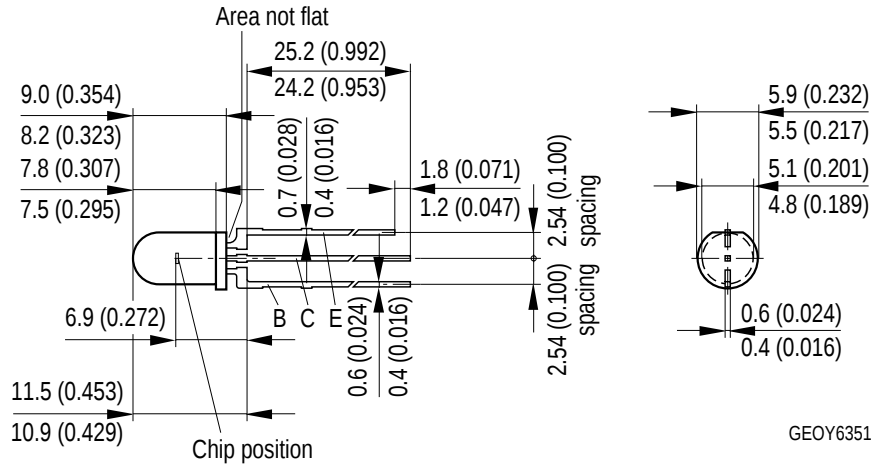


Directional Characteristics

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



Maßzeichnung Package Outlines



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

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