NPN-Silizium-Fototransistor; mit Tageslichtsperrfilter
Silicon NPN Phototransistor; with Daylight Filter
Lead (Pb) Free Product - RoHS Compliant

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 mit Basisanschluss
- 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 with base connection
- 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	Q62702P0957
SFH 303-3/4	Q62702P3588
SFH 303 FA	Q62702P0958
SFH 303 FA-3/4	Q62702P3587

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
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
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}	5 (≤ 50)	5 (≤ 50)	nA

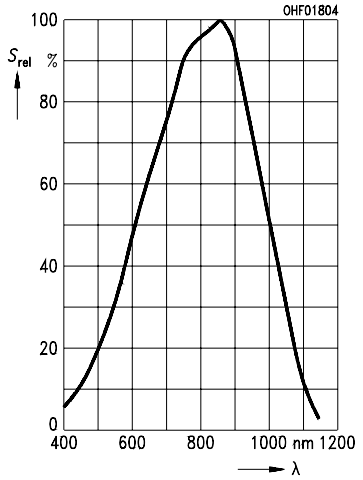
Die Fototransistoren werden nach ihrer Fotoempfindlichkeit gruppiert und mit arabischen Ziffern gekennzeichnet.
The phototransistors are grouped according to their spectral sensitivity and distinguished by arabian figures.

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	–

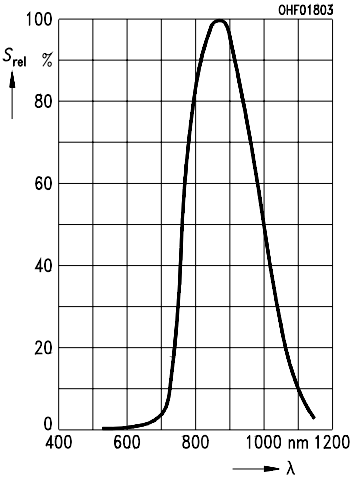
[1] I_{PCEmin} ist der minimale Fotostrom der jeweiligen Gruppe.

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

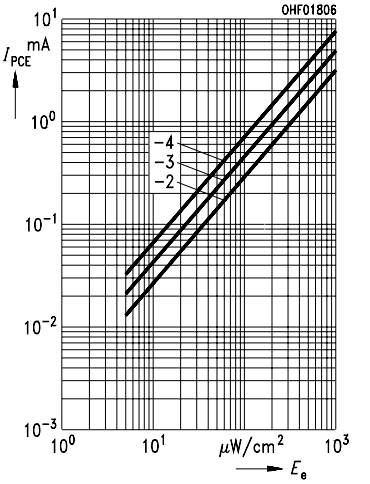
Relative Spectral Sensitivity, SFH 303 $S_{rel} = f(\lambda)$



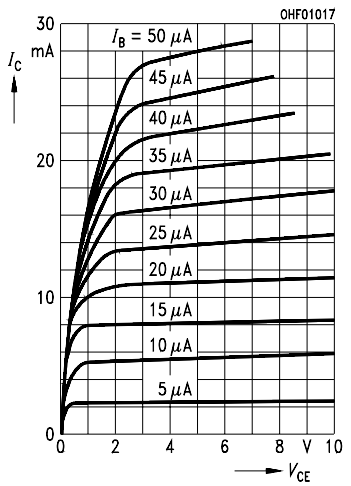
Relative Spectral Sensitivity, SFH 303 FA $S_{rel} = f(\lambda)$



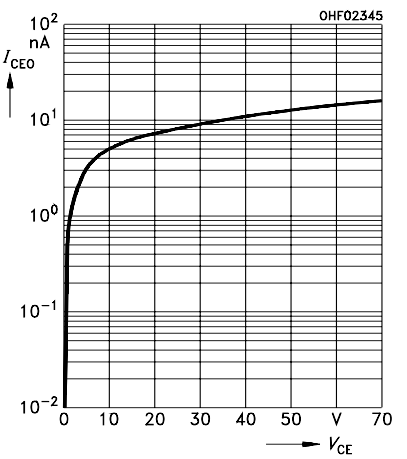
Photocurrent
$I_{PCE} = f(E_e)$, V_{CE} = 5 V



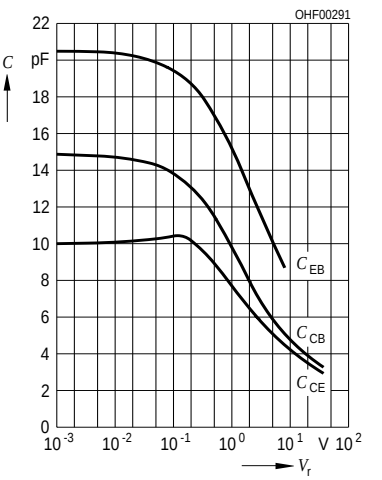
Output Characteristics
$I_C = f(V_{CE})$, I_B = Parameter



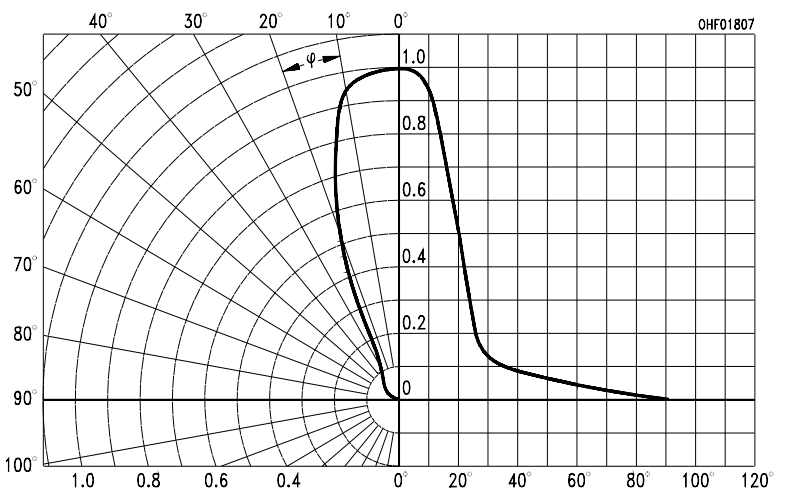
Dark Current
$I_{CEO} = f(V_{CE})$, E = 0



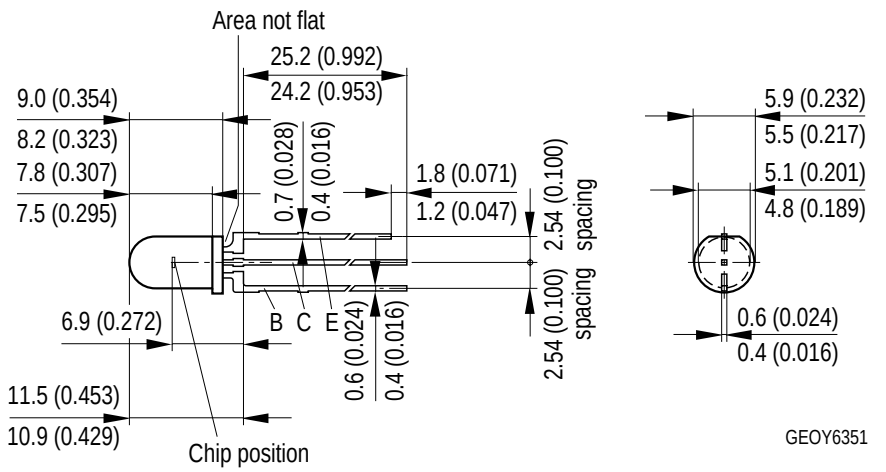
Capacitance
$C = f(V_R)$, f = 1 MHz, E = 0



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

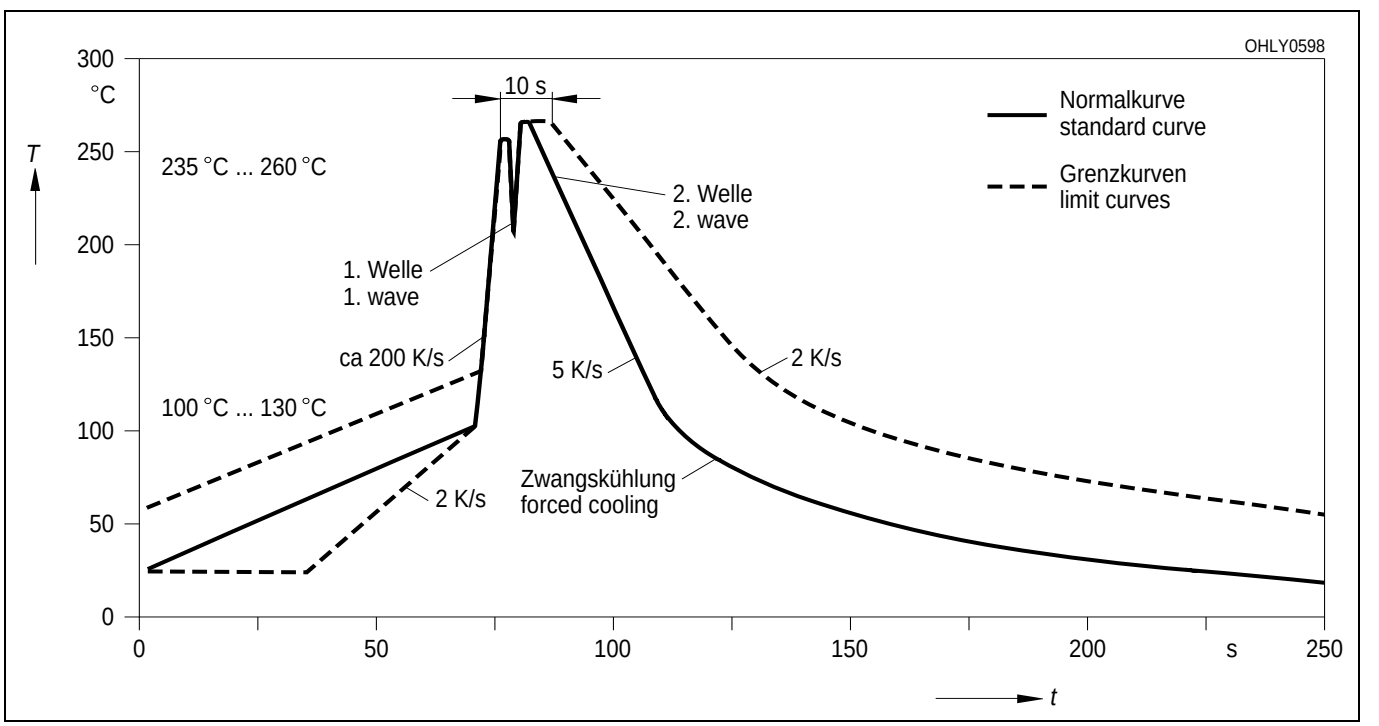


Maßzeichnung
Package Outlines



Maße in mm (inch) / Dimensions in mm (inch).

Lötbedingungen
Soldering Conditions
Wellenlöten (TTW) (nach CECC 00802)
TTW Soldering (acc. to CECC 00802)



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