

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

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 with base connection
- 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 | 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} $V_{CE} (t < 2 \text{ min})$ | 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 |
| Halbwinkel Half angle | φ | ± 20 | ± 20 | Grad deg. |
| Fotostrom der Kollektor-Basis-Fotodiode Photocurrent of collector-base photodiode $E_e = 0.5\text{ mW/cm}^2$, $V_{\text{CB}} = 5\text{ V}$ $E_v = 1000\text{ lx}$, Normlicht/standard light A, $V_{\text{CB}} = 5\text{ V}$ | I_{PCB} I_{PCB} | – 15.8 | 4.5 – | μA μA |
| Kapazität Capacitance $V_{\text{CE}} = 0\text{ V}$, $f = 1\text{ MHz}$, $E = 0$ $V_{\text{CB}} = 0\text{ V}$, $f = 1\text{ MHz}$, $E = 0$ $V_{\text{EB}} = 0\text{ V}$, $f = 1\text{ MHz}$, $E = 0$ | C_{CE} C_{CB} C_{EB} | 10 15 21 | 10 15 21 | pF pF pF |
| Dunkelstrom Dark current $V_{\text{CEO}} = 10\text{ V}$, $E = 0$ | I_{CEO} | 5 (≤ 50) | 5 (≤ 50) | nA |

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

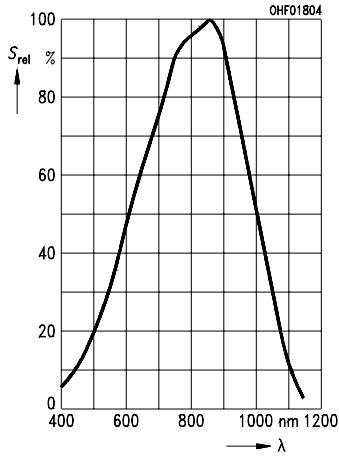
The phototransistors are grouped according to their spectral sensitivity and distinguished by arabian figures.

| Bezeichnung Parameter | Symbol Symbol | Wert Value | | | Einheit Unit |
|--|---------------------------|---------------|-------------|------------|-----------------|
| | | -2 | -3 | -4 | |
| Fotostrom, $\lambda = 950 \text{ nm}$ 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 | – |

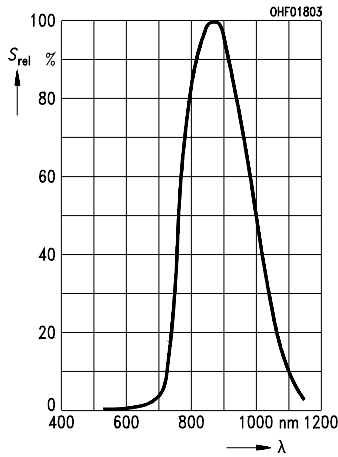
¹⁾ I_{PCEmin} ist der minimale Fotostrom der jeweiligen Gruppe.

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

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

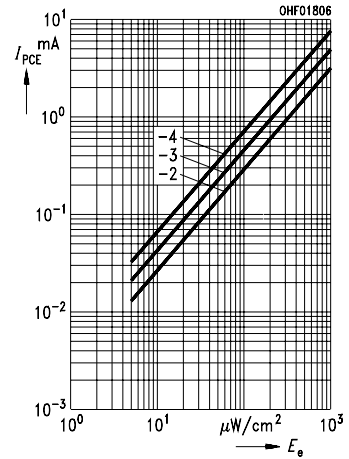


Relative Spectral Sensitivity,
SFH 303 FA $S_{rel} = f(\lambda)$

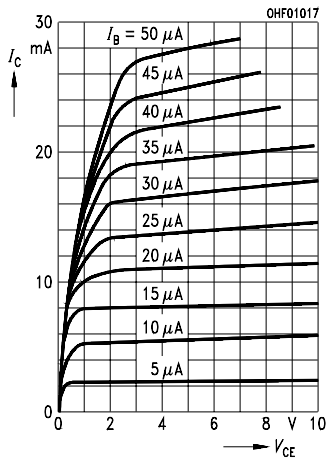


Photocurrent

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

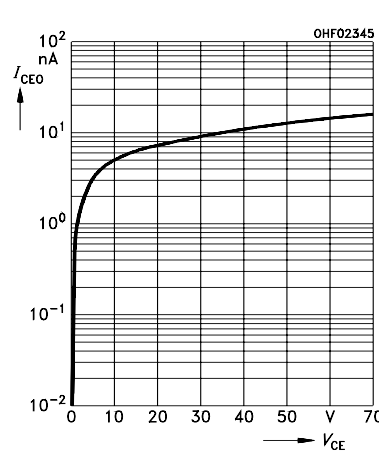


Output Characteristics
 $I_C = f(V_{CE}), I_B = \text{Parameter}$



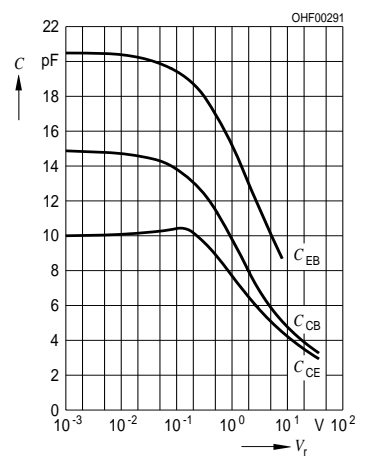
Dark Current

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



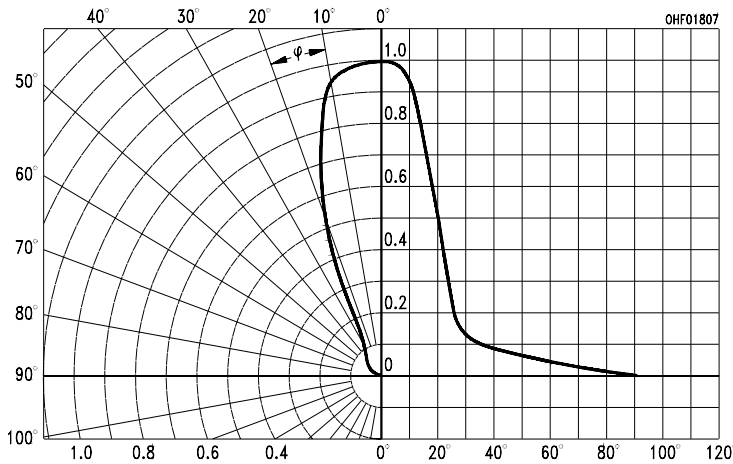
Capacitance

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

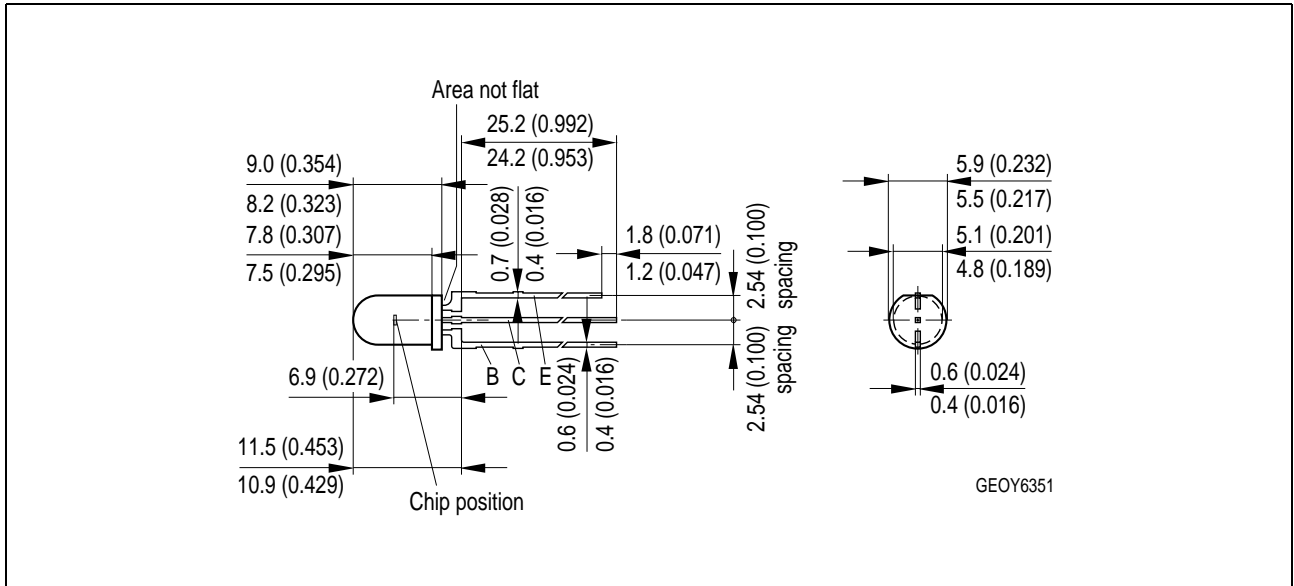


Directional Characteristics

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



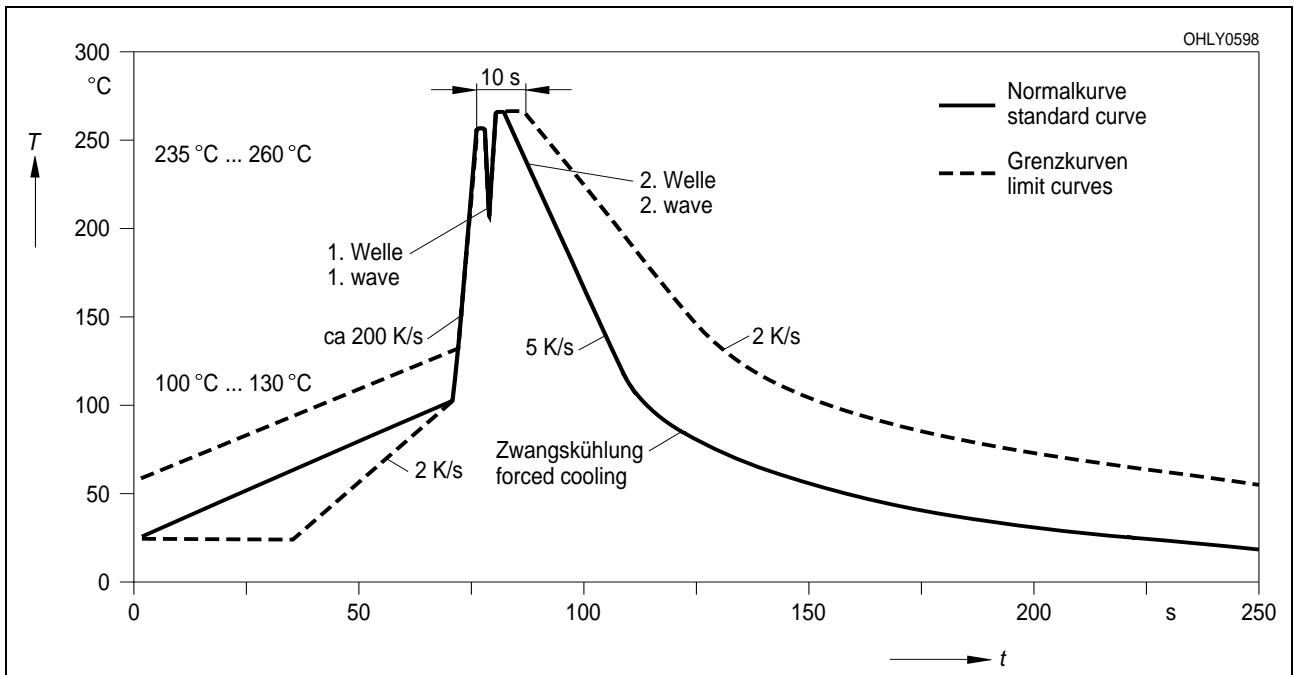
**Maßzeichnung
Package Outlines**



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

**Lötbedingungen
Soldering Conditions
Wellenlöten (TTW)
TTW Soldering**

(nach CECC 00802)
(acc. to CECC 00802)



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¹ A critical component is a component used in 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.

EU RoHS and China RoHS compliant product



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