

NPN-Silizium-Fototransistor
Silicon NPN Phototransistor
Lead (Pb) Free Product - RoHS Compliant

SFH 313
SFH 313 FA



SFH 313



SFH 313 FA

Wesentliche Merkmale

- Speziell geeignet für Anwendungen im Bereich von 460 nm bis 1080 nm (SFH 313) und bei 880 nm (SFH 313 FA)
- Hohe Linearität
- 5 mm-Plastikbauform

Anwendungen

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

Features

- Especially suitable for applications from 460 nm to 1080 nm (SFH 313) and of 880 nm (SFH 313 FA)
- High linearity
- 5 mm plastic package

Applications

- Computer-controlled flashes
- Photointerrupters
- Industrial electronics
- For control and drive circuits

| Typ Type | Bestellnummer Ordering Code |
|---------------------------|--|
| SFH 313 | Q62702P1667 |
| SFH 313-2/3 | Q62702P3598 |
| SFH 313 FA | Q62702P1674 |
| SFH 313 FA-2/3 | Q62702P3597 |
| SFH 313 FA-3/4 | Q62702P5196 |

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} | 70 | V |
| Kollektorstrom Collector current | I_C | 50 | mA |
| Kollektorspitzenstrom, $\tau < 10 \mu s$ Collector surge current | I_{CS} | 100 | mA |
| Emitter-Kollektorspannung Emitter-collector voltage | V_{EC} | 7 | V |
| Verlustleistung, $T_A = 25 \text{ }^\circ\text{C}$ 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 313 | SFH 313 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 | 460 ... 1080 | 740 ... 1080 | nm |
| Bestrahlungsempfindliche Fläche Radiant sensitive area | A | 0.55 | 0.55 | mm ² |
| Abmessungen der Chipfläche Dimensions of chip area | $L \times B$ $L \times W$ | 1 × 1 | 1 × 1 | mm × mm |
| Halbwinkel Half angle | φ | ± 10 | ± 10 | Grad deg. |
| Kapazität, $V_{CE} = 5\text{ V}$, $f = 1\text{ MHz}$, $E = 0$ Capacitance | C_{CE} | 10 | 10 | pF |
| Dunkelstrom Dark current $V_{CE} = 20\text{ V}$, $E = 0$ | I_{CEO} | 3 (≤ 200) | 3 (≤ 200) | 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.

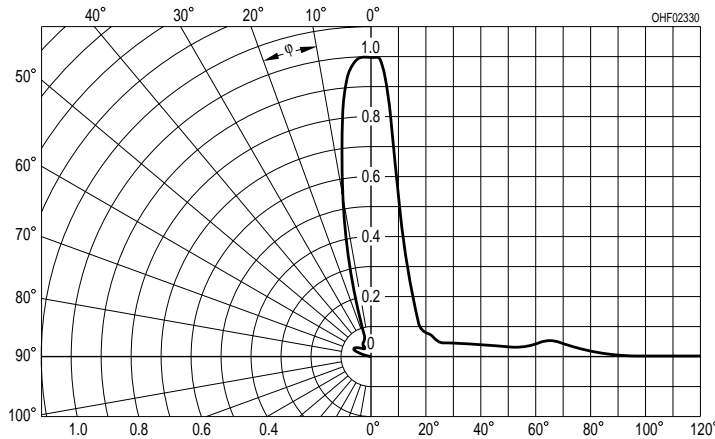
| Bezeichnung Parameter | Symbol Symbol | Wert Value | | | | Einheit Unit |
|---|------------------|---------------|---------|--------------|-----------|-----------------|
| | | -1 | -2 | -3 | -4 | |
| Fotostrom, $\lambda = 950 \text{ nm}$ Photocurrent $E_e = 0.5 \text{ mW/cm}^2, V_{CE} = 5 \text{ V}$ | I_{PCE} | 2.5 ... 5 | 4 ... 8 | 6.3 ... 12.5 | ≥ 10 | 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 | 8 | 10 | 12 | 14 | 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 | 150 | mV |

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

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

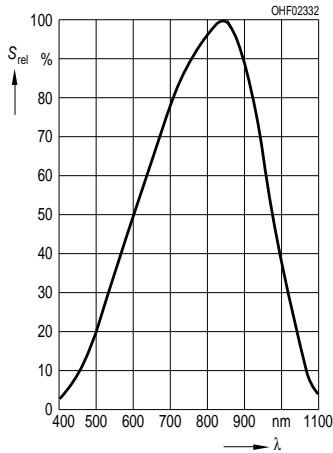
Directional Characteristics

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

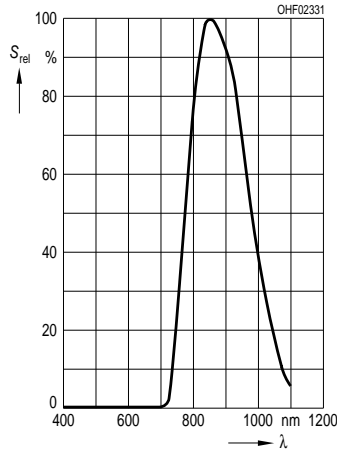


$T_A = 25\text{ }^\circ\text{C}$, $\lambda = 950\text{ nm}$

Relative Spectral Sensitivity,
SFH 313 $S_{rel} = f(\lambda)$

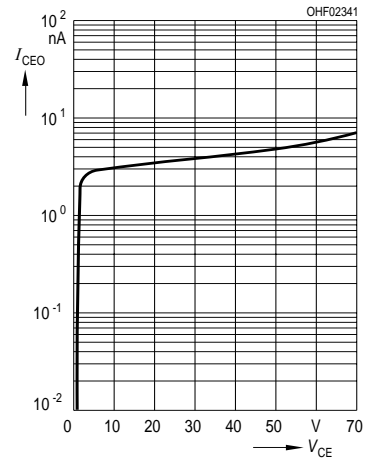


Relative Spectral Sensitivity,
SFH 313 FA $S_{rel} = f(\lambda)$

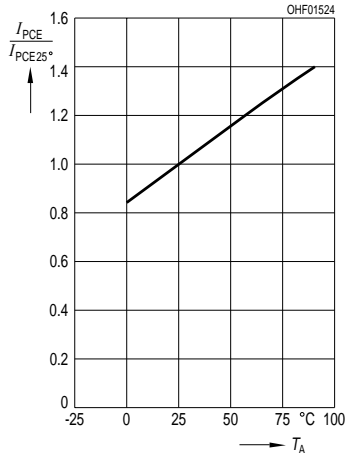


Dark Current

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

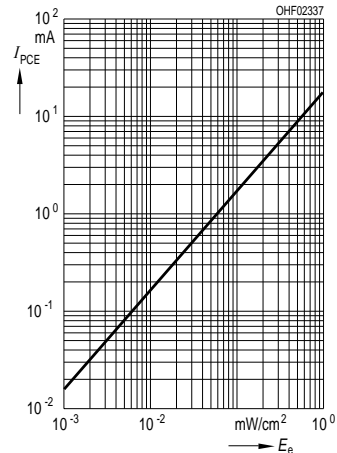


Photocurrent $I_{PCE} = f(T_A)$,
 $V_{CE} = 5\text{ V}$, normalized to $25\text{ }^\circ\text{C}$



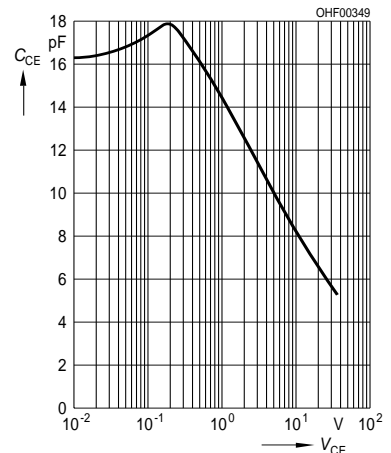
Photocurrent

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



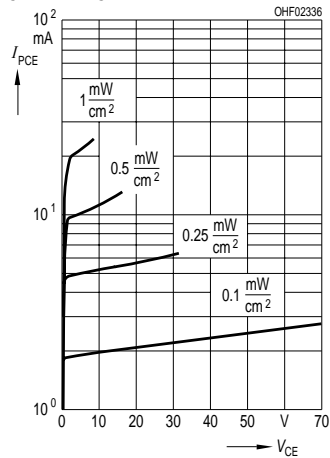
Collector-Emitter Capacitance

$C_{CE} = f(V_{CE})$, $f = 1\text{ MHz}$



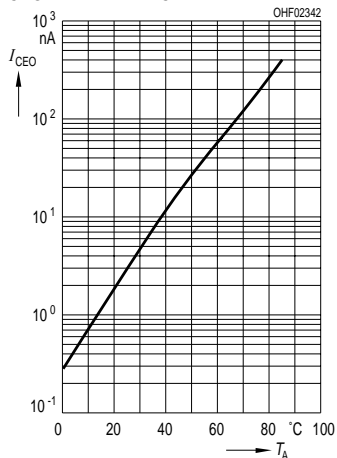
Photocurrent

$I_{PCE} = f(V_{CE})$, $E = \text{parameter}$



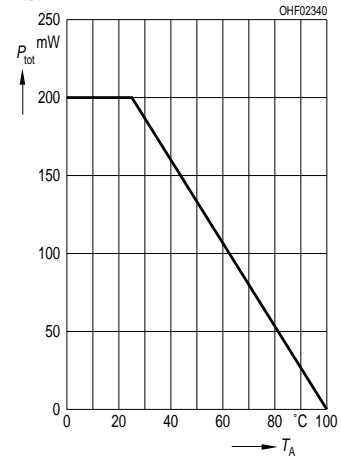
Dark Current

$I_{CEO} = f(T_A)$, $V_{CE} = 10\text{ V}$, $E = 0$

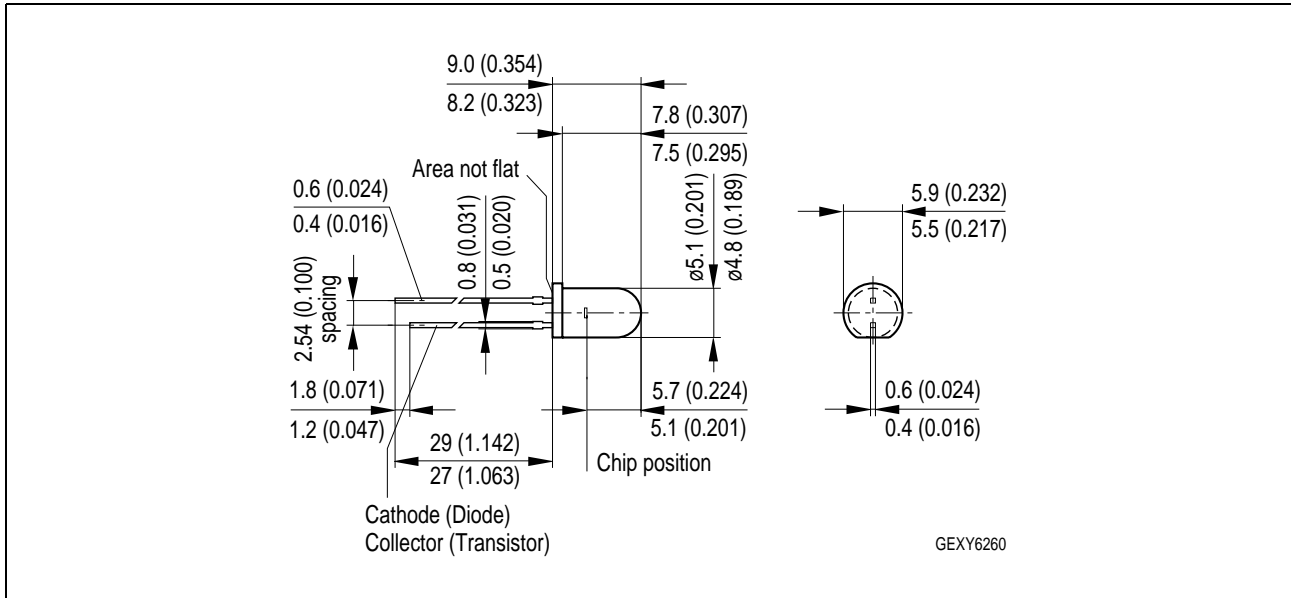


Total Power Dissipation

$P_{tot} = f(T_A)$



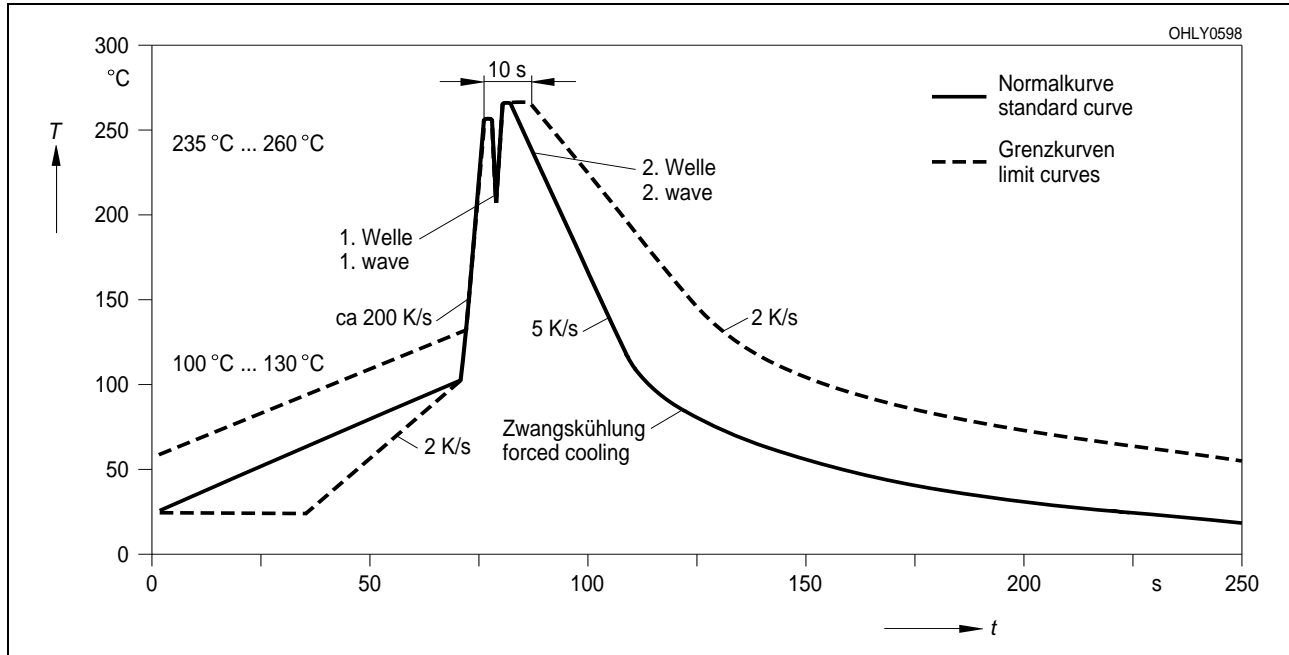
Maßzeichnung
Package Outlines



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

Lötbedingungen
Soldering Conditions
Wellenlöt (TTW)
TTW Soldering

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



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EU RoHS and China RoHS compliant product



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