

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, $T_A = 25 \text{ °C}$ 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	$\lambda_{S\text{ max}}$	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, $V_{\text{CE}} = 5\text{ V}$, $f = 1\text{ MHz}$, $E = 0$ Capacitance	C_{CE}	10	10	pF
Dunkelstrom Dark current $V_{\text{CE}} = 20\text{ V}$, $E = 0$	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.

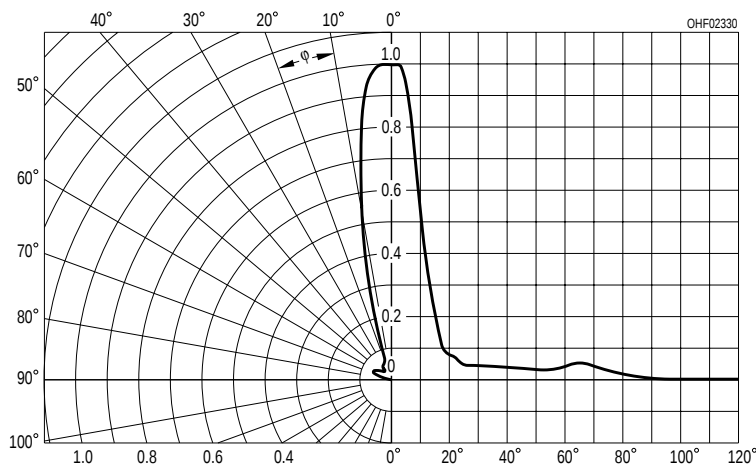
Bezeichnung Parameter	Symbol Symbol	Wert Value				Einheit Unit
		-1	-2	-3	-4	
Fotostrom, $\lambda = 950 \text{ nm}$ Photocurrent $E_e = 0.5 \text{ mW/cm}^2$, $V_{CE} = 5 \text{ V}$	I_{PCE}	2.5 ... 5	4 ... 8	6.3 ... 12.5	≥ 10	mA
Anstiegszeit/Abfallzeit Rise and fall time $I_C = 1 \text{ mA}$, $V_{CC} = 5 \text{ V}$, $R_L = 1 \text{ k}\Omega$	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.

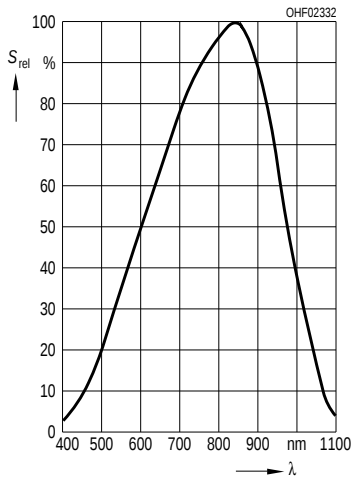
Directional Characteristics

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

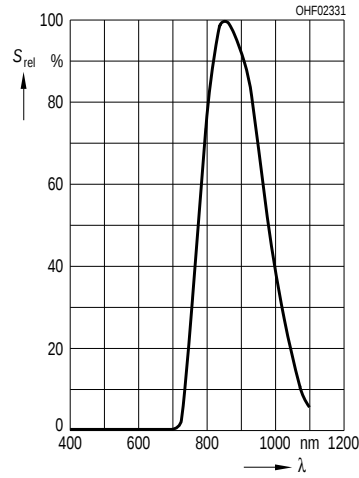


$T_A = 25^\circ\text{C}$, $\lambda = 950\text{ nm}$

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

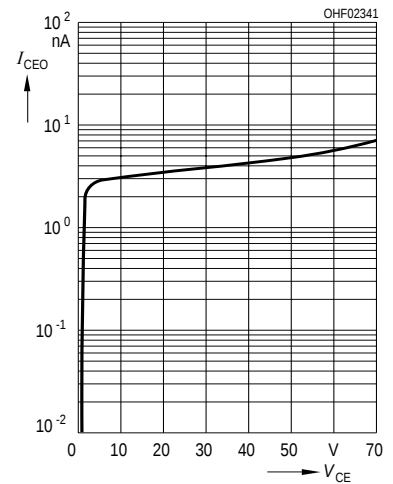


Relative Spectral Sensitivity,
SFH 313 FA $S_{\text{rel}} = f(\lambda)$

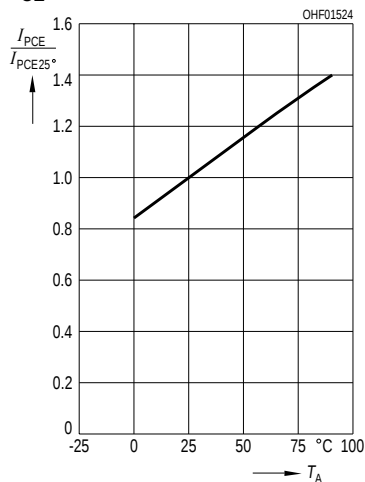


Dark Current

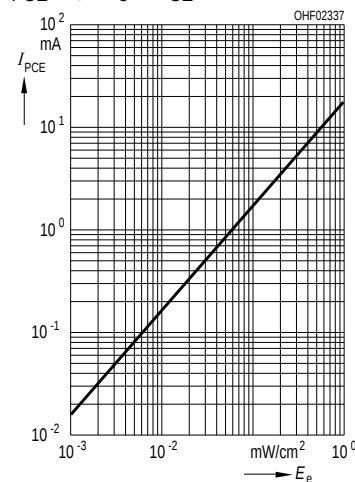
$I_{\text{CEO}} = f(V_{\text{CE}})$, $E = 0$



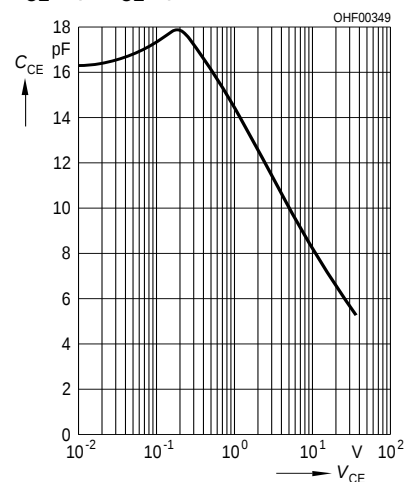
Photocurrent $I_{\text{PCE}} = f(T_A)$,
 $V_{\text{CE}} = 5\text{ V}$, normalized to 25°C



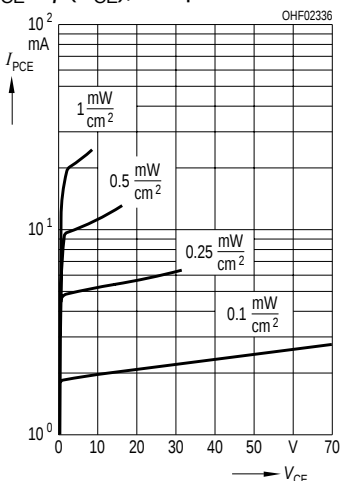
Photocurrent
 $I_{\text{PCE}} = f(E_e)$, $V_{\text{CE}} = 5\text{ V}$



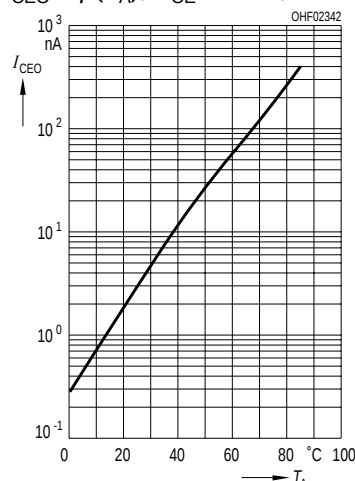
Collector-Emitter Capacitance
 $C_{\text{CE}} = f(V_{\text{CE}})$, $f = 1\text{ MHz}$



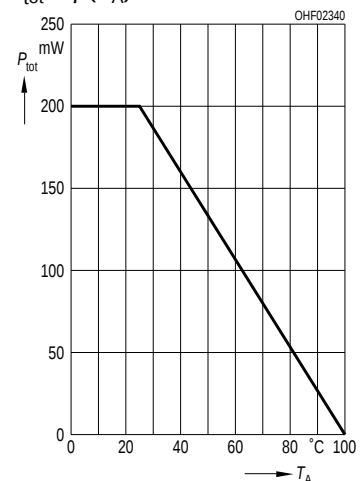
Photocurrent
 $I_{\text{PCE}} = f(V_{\text{CE}})$, $E = \text{parameter}$



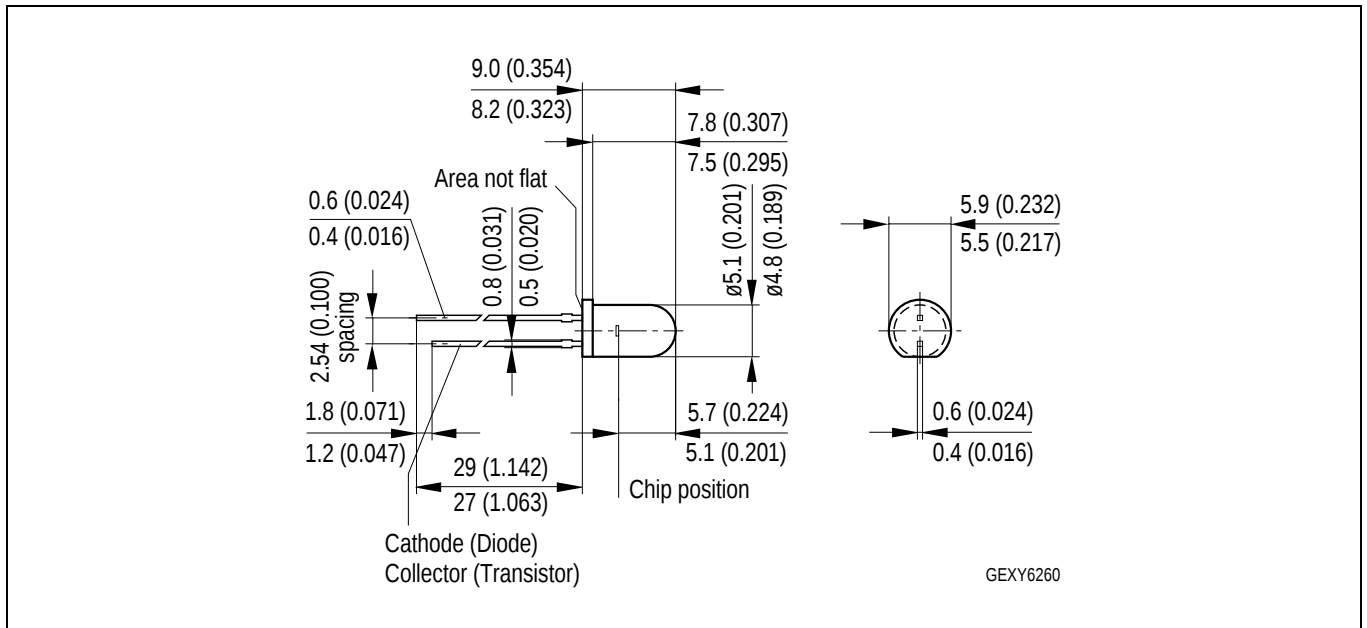
Dark Current
 $I_{\text{CEO}} = f(T_A)$, $V_{\text{CE}} = 10\text{ V}$, $E = 0$



Total Power Dissipation
 $P_{\text{tot}} = f(T_A)$



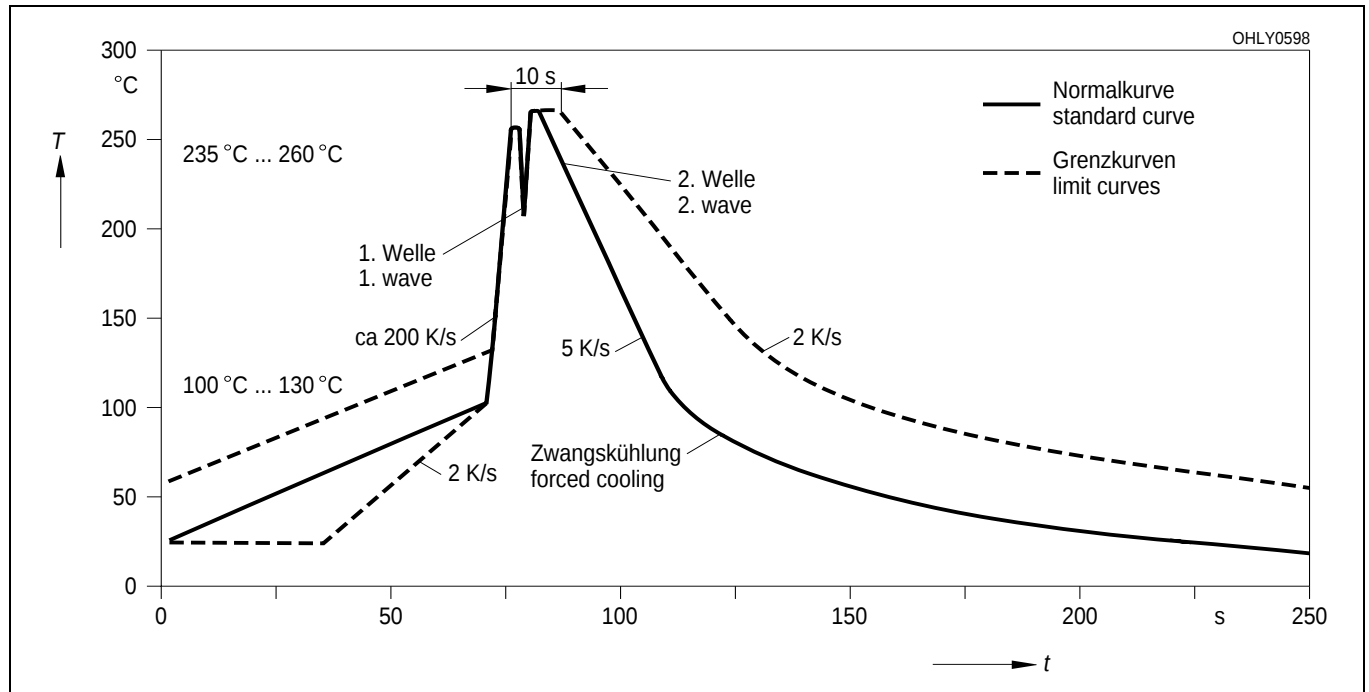
Maßzeichnung Package Outlines



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.