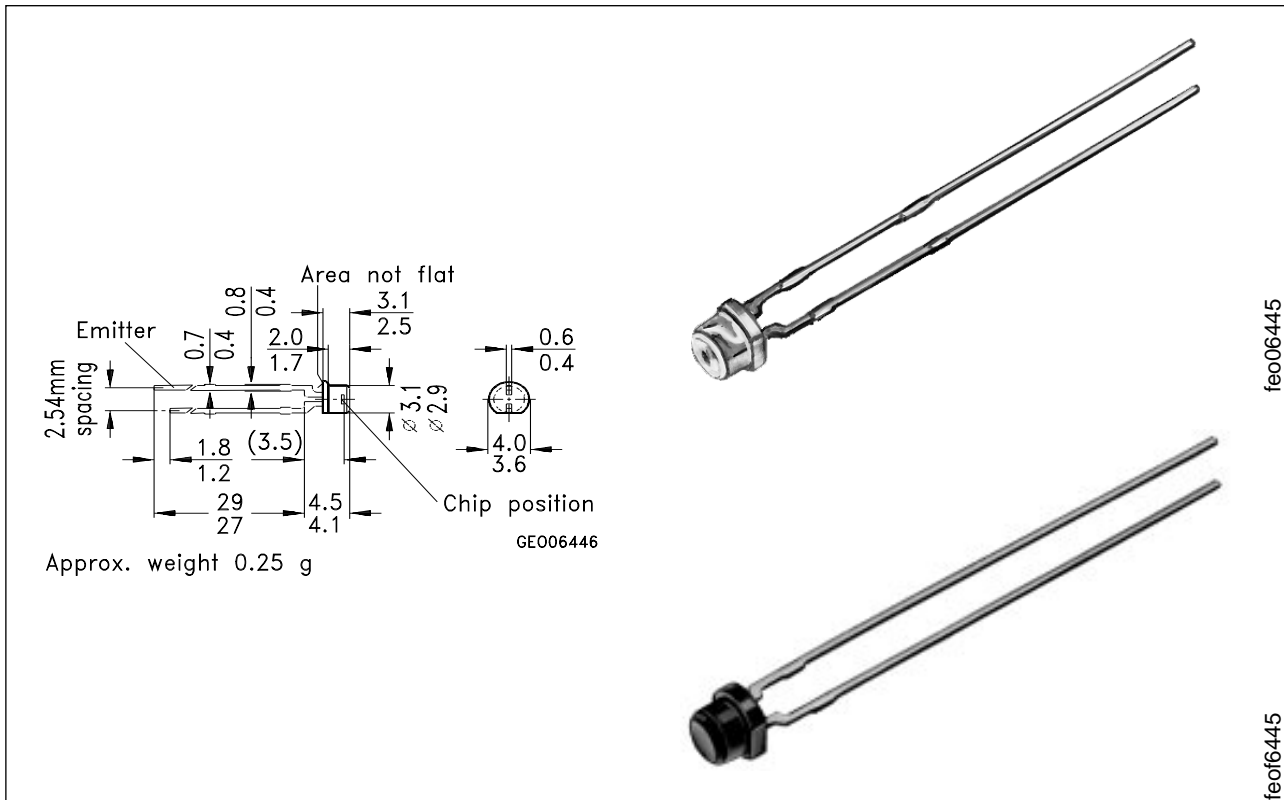


NPN-Silizium-Fototransistor Silicon NPN Phototransistor

SFH 309 P
SFH 309 PFA



Maße in mm, wenn nicht anders angegeben/Dimensions in mm, unless otherwise specified

Wesentliche Merkmale

- Speziell geeignet für Anwendungen im Bereich von 380 nm bis 1180 nm (SFH 309 P) und bei 880 nm (SFH 309 PFA)
- Hohe Linearität
- 3 mm plane Plastikbauform im LED-Gehäuse
- Gruppierbar

Anwendungen

- Lichtschranken für Gleich- und Wechsellichtbetrieb
- Industrieelektronik
- "Messen/Steuern/Regeln"

Features

- Especially suitable for applications from 380 nm to 1180 nm (SFH 309 P) and of 880 nm (SFH 309 PFA)
- High linearity
- 3 mm plane LED plastic package
- Available in groups

Applications

- Photointerrupters
- Industrial electronics
- For control and drive circuits

Typ (*vorher) Type (*formerly)	Bestellnummer Ordering Code
SFH 309 P	Q62702-P245
SFH 309 PFA (*SFH 309 PF)	Q62702-P246

Grenzwerte
Maximum Ratings

Bezeichnung Description	Symbol Symbol	Wert Value	Einheit Unit
Betriebs- und Lagertemperatur Operating and storage temperature range	$T_{op}; T_{stg}$	- 55 ... + 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}	35	V
Kollektorstrom Collector current	I_C	15	mA
Kollektorspitzenstrom, $\tau < 10 \mu s$ Collector surge current	I_{CS}	75	mA
Verlustleistung, $T_A = 25 \text{ °C}$ Total power dissipation	P_{tot}	165	mW
Wärmewiderstand Thermal resistance	R_{thJA}	450	K/W

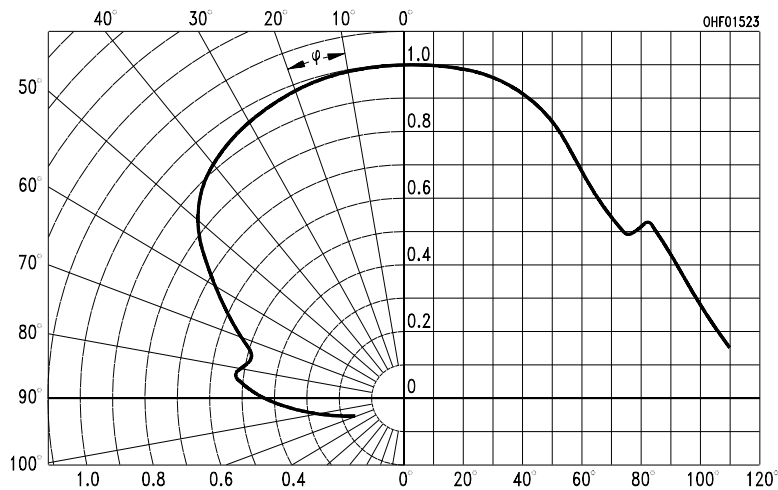
Kennwerte ($T_A = 25\text{ °C}$, $\lambda = 950\text{ nm}$)

Characteristics

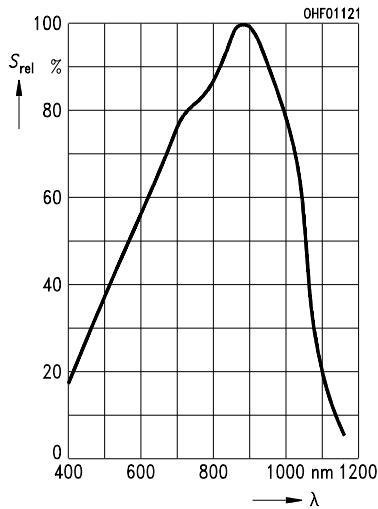
Bezeichnung Description	Symbol Symbol	Wert Value		Einheit Unit
		SFH 309 P	SFH 309 PFA	
Wellenlänge der max. Fotoempfindlichkeit Wavelength of max. sensitivity	$\lambda_{S\text{ max}}$	860	900	nm
Spektraler Bereich der Fotoempfindlichkeit $S = 10\%$ von S_{max} Spectral range of sensitivity $S = 10\%$ of S_{max}	λ	380 ... 1180	730 ... 1120	nm
Bestrahlungsempfindliche Fläche ($\varnothing 240\text{ }\mu\text{m}$) Radiant sensitive area	A	0.045	0.045	mm^2
Abmessung der Chipfläche Dimensions of chip area	$L \times B$ $L \times W$	0.45×0.45	0.45×0.45	$\text{mm} \times \text{mm}$
Abstand Chipoberfläche zu Gehäuseoberfläche Distance chip front to case surface	H	0.4 ... 0.8	0.4 ... 0.8	mm
Halbwinkel Half angle	φ	± 75	± 75	Grad deg.
Kapazität, $V_{\text{CE}} = 0\text{ V}$, $f = 1\text{ MHz}$, $E = 0$ Capacitance	C_{CE}	5.0	5.0	pF
Dunkelstrom Dark current $V_{\text{CE}} = 25\text{ V}$, $E = 0$	I_{CEO}	1 (≤ 200)	1 (≤ 200)	nA

Bezeichnung Description	Symbol Symbol	Wert Value	Einheit Unit
Fotostrom, $\lambda = 950 \text{ nm}$ Photocurrent $E_e = 0.5 \text{ mW/cm}^2$, $V_{CE} = 5 \text{ V}$ SFH 309 P: $E_v = 1000 \text{ lx}$, Normlicht/standard light A, $V_{CE} = 5 \text{ V}$	I_{PCE} I_{PCE}	≥ 63 420	μA μA
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	≥ 6	μs
Kollektor-Emitter-Sättigungsspannung Collector-emitter saturation voltage $I_C = 20 \mu\text{A}$, $E_e = 0.5 \text{ mW/cm}^2$	V_{CEsat}	150	mV

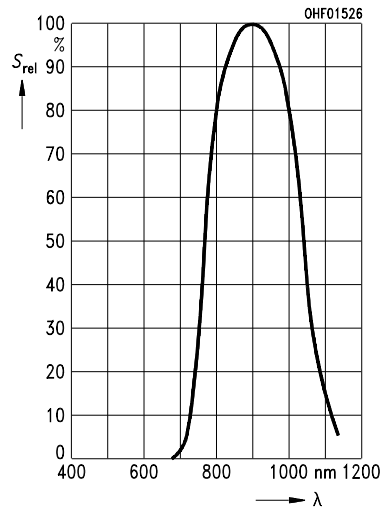
Directional characteristics $S_{rel} = f(\varphi)$



Relative spectral sensitivity,
SFH 309 P $S_{rel} = f(\lambda)$

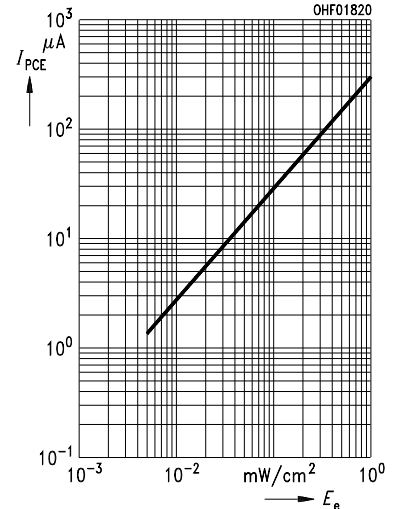


Relative spectral sensitivity,
SFH 309 PFA $S_{rel} = f(\lambda)$



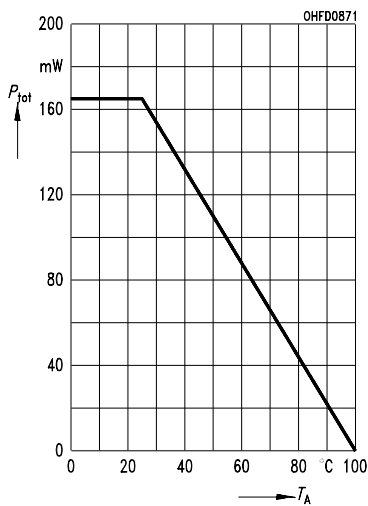
Photocurrent

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



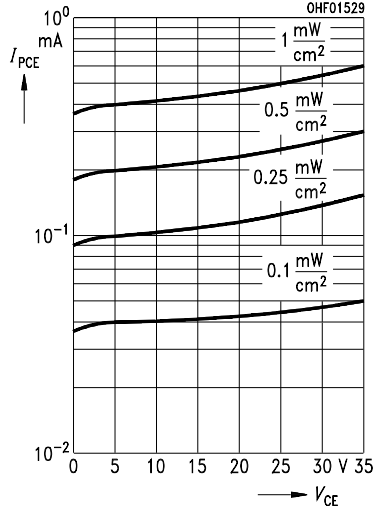
Total power dissipation

$P_{tot} = f(T_A)$



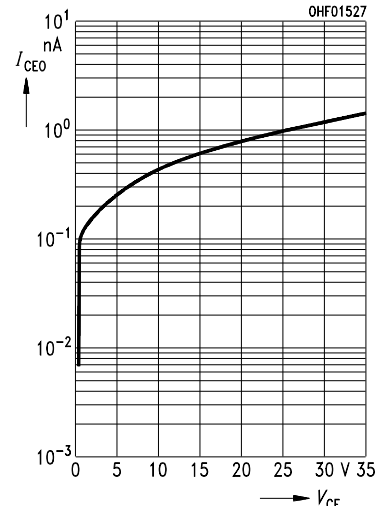
Photocurrent

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



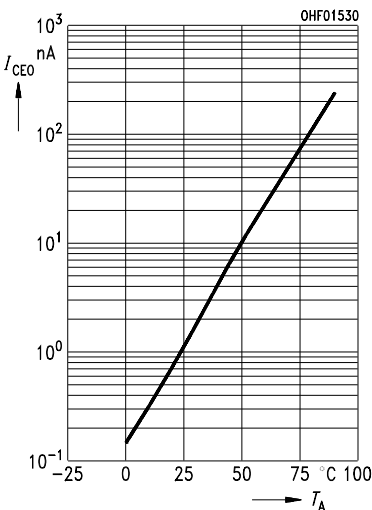
Dark current

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



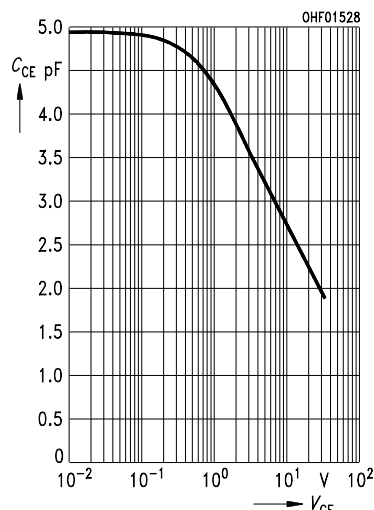
Dark current

$I_{CEO} = f(T_A), V_{CE} = 25 V, E = 0$



Capacitance

$C_{CE} = f(V_{CE}), f = 1 \text{ MHz}, E = 0$



Photocurrent

$I_{PCE}/I_{PCE25^\circ} = f(T_A), V_{CE} = 5 V$

