NPN-Silizium-Fototransistor
Silicon NPN Phototransistor

SFH 314
SFH 314 FA

SFH 314

SFH 314 FA

Wesentliche Merkmale

- Speziell geeignet für Anwendungen im Bereich von 460 nm bis 1080 nm (SFH 314) und bei 880 nm (SFH 314 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 314) and of 880 nm (SFH 314 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 314	Q62702-P1668
SFH 314-2	Q62702-P1755
SFH 314-2/3	Q62702-P3600
SFH 314-3	Q62702-P1756
SFH 314 FA	Q62702-P1675
SFH 314 FA-2	Q62702-P1757
SFH 314 FA-2/3	Q62702-P3599
SFH 314 FA-3	Q62702-P1758

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
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 $t \leq 3$ s	T_S	300	°C
Kollektor-Emitterspannung Collector-emitter voltage	V_{CE}	70	V
Kollektorstrom Collector current	I_C	50	mA
Kollektorspitzenstrom, $\tau < 10$ µs Collector surge current	I_{CS}	100	mA
Emitter-Kollektorspannung Emitter-collector voltage	V_{EC}	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 314	**SFH 314 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
Abstand Chipoberfläche zu Gehäuseoberfläche Distance chip front to case surface	H	3.4 … 4.0	3.4… 4.0	mm
Halbwinkel Half angle	φ	± 40	± 40	Grad deg.
Kapazität, V_{CE} = 5 V, f = 1 MHz, E = 0 Capacitance	C_{CE}	10	10	pF
Dunkelstrom Dark current V_{CE} = 10 V, E = 0	I_{CEO}	3 (≤ 200)	3 (≤ 200)	nA
Fotostrom Photocurrent E_e = 0.5 mW/cm², V_{CE} = 5 V E_v = 1000 lx, Normlicht/standard light A, V_{CE} = 5 V	 I_{PCE} I_{PCE}	 ≥ 0.63 7	 ≥ 0.63 –	 mA mA

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.

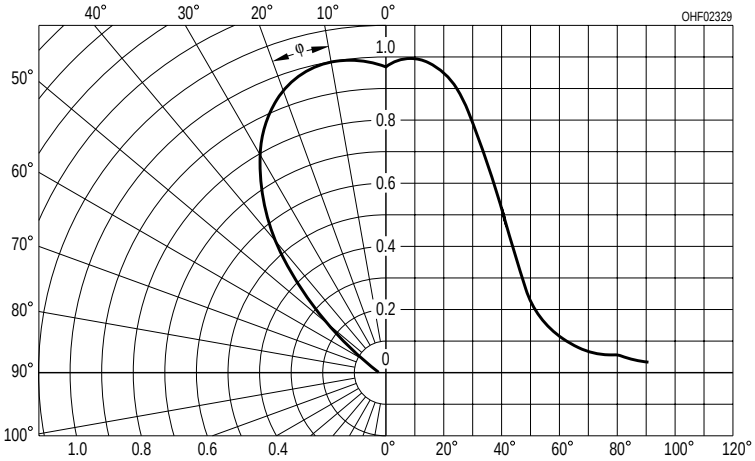
Bezeichnung Parameter	Symbol Symbol	Wert Value				Einheit Unit
		-1	-2	-3	-4	
Fotostrom, $\lambda = 950$ nm Photocurrent E_e = 0.5 mW/cm², V_{CE} = 5 V	I_{PCE}	0.63 … 1.25	1 … 2	1.6 … 3.2	≥ 2.5	mA
SFH 314: E_v = 1000 lx, Normlicht/ standard light A, V_{CE} = 5 V	I_{PCE}	3.4	5.4	8.6	13.5	mA
Anstiegszeit/Abfallzeit Rise and fall time I_C = 1 mA, V_{CC} = 5 V, R_L = 1 kΩ	t_r, t_f	8	10	12	14	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	150	mV

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

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

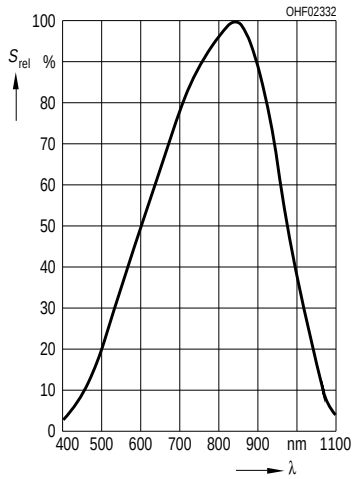
Directional Characteristics

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

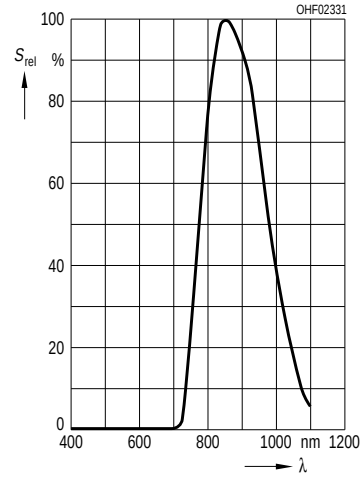


T_A = 25 °C, λ = 950 nm

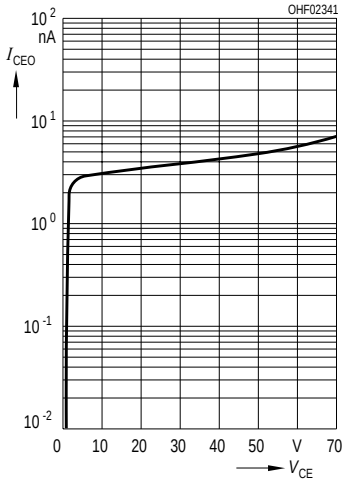
Relative Spectral Sensitivity, SFH 314 $S_{rel} = f(\lambda)$



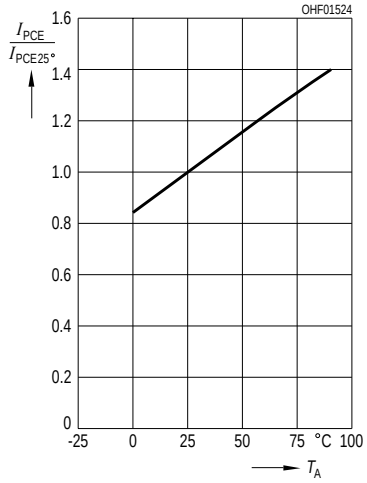
Relative Spectral Sensitivity, SFH 314 FA $S_{rel} = f(\lambda)$



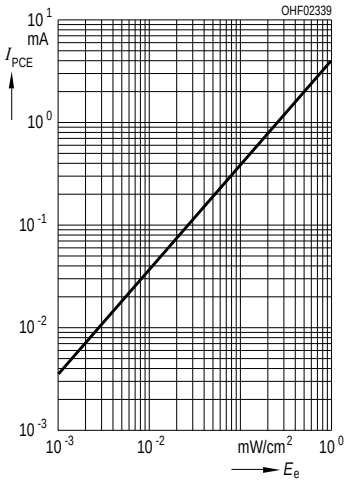
Dark Current
$I_{CEO} = f(V_{CE})$, E = 0



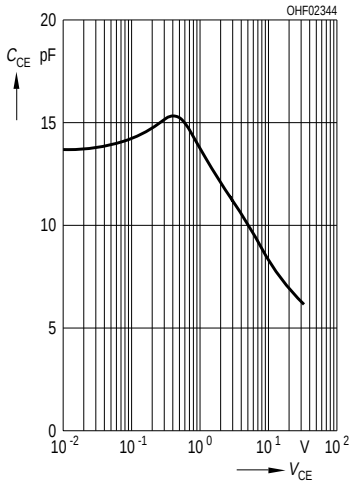
Photocurrent $I_{PCE} = f(T_A)$, V_{CE} = 5 V, normalized to 25 °C



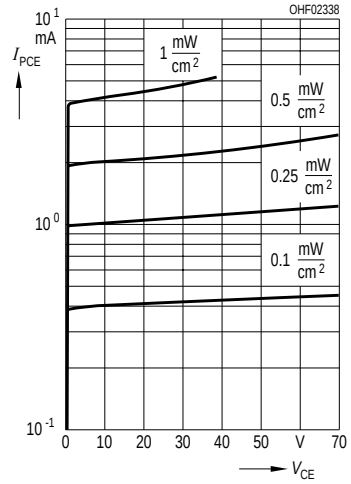
Photocurrent
$I_{PCE} = f(E_e)$, V_{CE} = 5 V



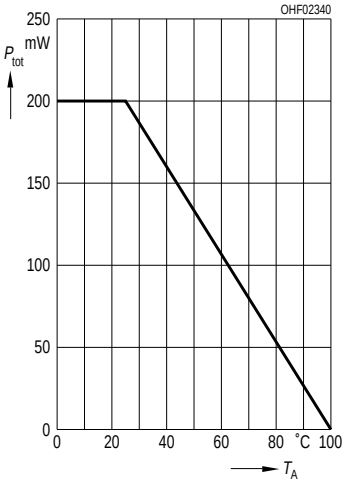
Collector-Emitter Capacitance
$C_{CE} = f(V_{CE})$, f = 1 MHz



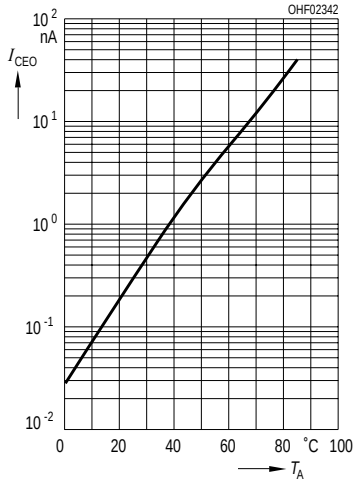
Photocurrent
$I_{PCE} = f(V_{CE})$, E_e = parameter



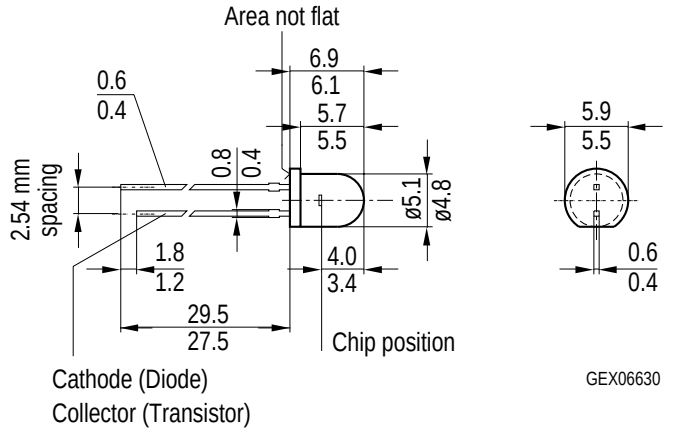
Total Power Dissipation
$P_{tot} = f(T_A)$



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



Maßzeichnung
Package Outlines



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