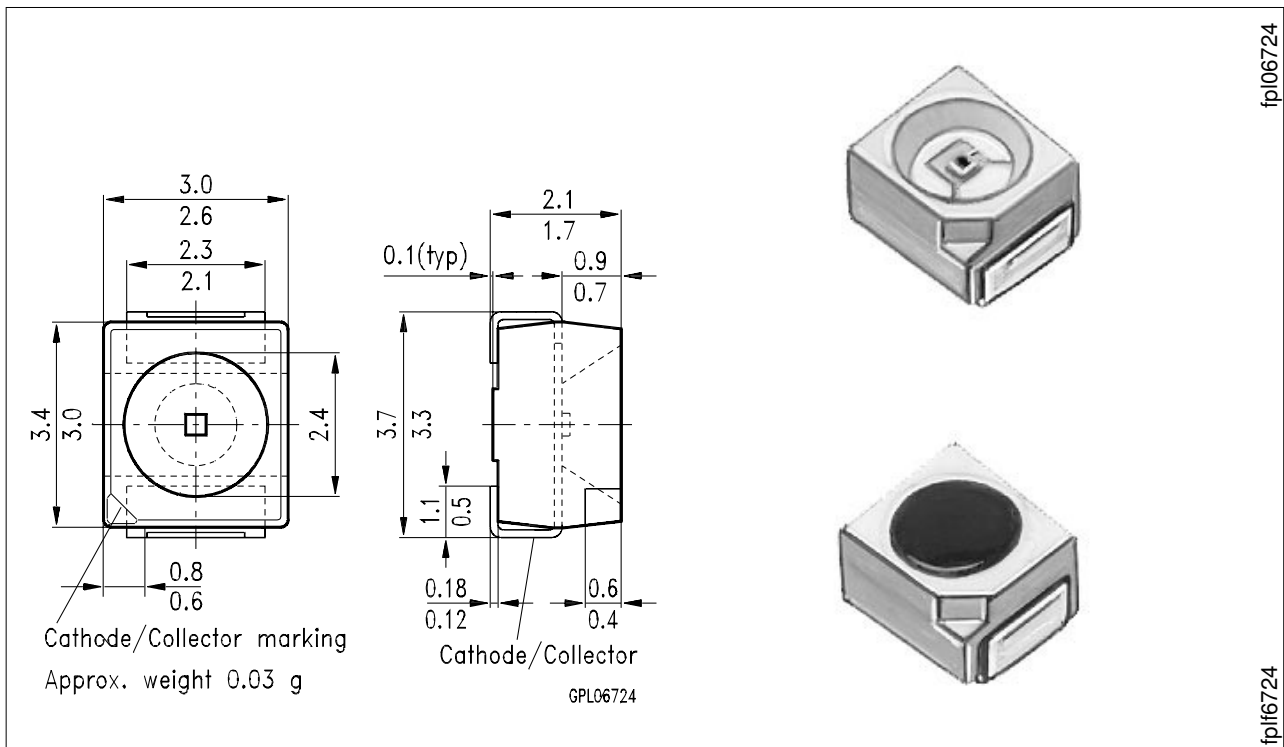


NPN-Silizium-Fototransistor im SMT TOPLED®-Gehäuse

Silicon NPN Phototransistor in SMT TOPLED®-Package

SFH 320
SFH 320 FA



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 1150 nm (SFH 320) und bei 880 nm (SFH 320 FA)
- Hohe Linearität
- P-LCC-2 Gehäuse
- Gruppiert lieferbar
- für alle Lötverfahren geeignet

Anwendungen

- Miniaturlichtschranken für Gleich- und Wechsellichtbetrieb
- Lochstreifenleser
- Industrieelektronik
- "Messen/Steuern/Regeln"

Features

- Especially suitable for applications from 380 nm to 1150 nm (SFH 320) and of 880 nm (SFH 320 FA)
- High linearity
- P-LCC-2 package
- Available in groups
- Suitable for all soldering methods

Applications

- Miniature photointerrupters
- punched tape readers
- Industrial electronics
- For control and drive circuits

Typ Type	Bestellnummer Ordering Code	Typ (*vorher) Type (*formerly)	Bestellnummer Ordering Code
SFH 320	Q62702-P0961	SFH 320 FA (*SFH 320 F)	Q62702-P0988
SFH 320-3	Q62702-P390	SFH 320 FA-3 (*SFH 320 F-3)	Q62702-P393
SFH 320-4	Q62702-P1606	SFH 320 FA-4 (*SFH 320 F-4)	Q62702-P1607

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
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 für Montage auf PC-Board Thermal resistance for mounting on pcb	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 320	SFH 320 FA	
Wellenlänge der max. Fotoempfindlichkeit Wavelength of max. sensitivity	$\lambda_{S\text{ max}}$	860	900	nm
Spektraler Bereich der Fotoempfindlichkeit $S = 10\text{ \%}$ von S_{max} Spectral range of sensitivity $S = 10\text{ \%}$ of S_{max}	λ	380 ... 1150	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	mm $\times$ mm
Abstand Chipoberfläche zu Gehäuseoberfläche Distance chip front to case surface	H	0.5 ... 0.7	0.5 ... 0.7	mm
Halbwinkel Half angle	φ	± 60	± 60	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

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

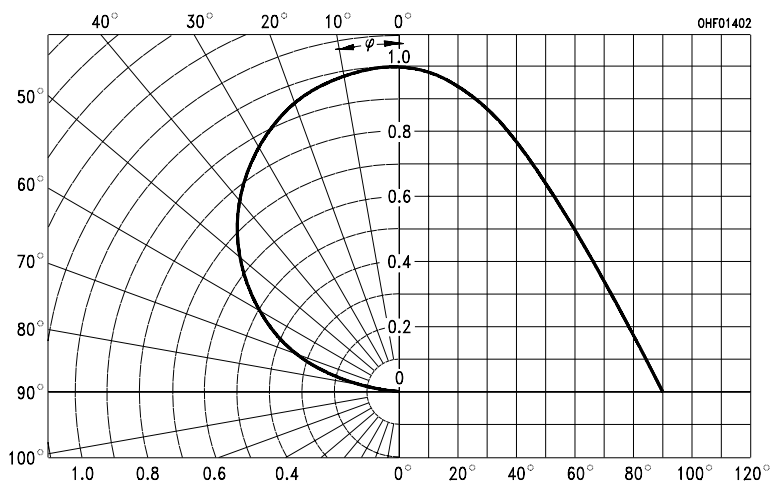
The phototransistors are grouped according to their spectral sensitivity and distinguished by arabian figures.

Bezeichnung Description	Symbol Symbol	Wert Value				Einheit Unit
		SFH 320/FA	-2	-3	-4	
Fotostrom, $\lambda = 950 \text{ nm}$ Photocurrent $E_e = 0.1 \text{ mW/cm}^2$, $V_{CE} = 5 \text{ V}$ SFH 320: $E_v = 1000 \text{ lx}$, Normlicht/standard light A, $V_{CE} = 5 \text{ V}$	I_{PCE} I_{PCE}	≥ 16	16 ... 32 420	25 ... 50 650	≥ 40 1000	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	7	6	7	8	μs
Kollektor-Emitter- Sättigungsspannung Collector-emitter saturation voltage $I_C = I_{PCEmin}^{1)} \times 0.3$, $E_e = 0.1 \text{ mW/cm}^2$	V_{CEsat}	150	150	150	150	mV

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

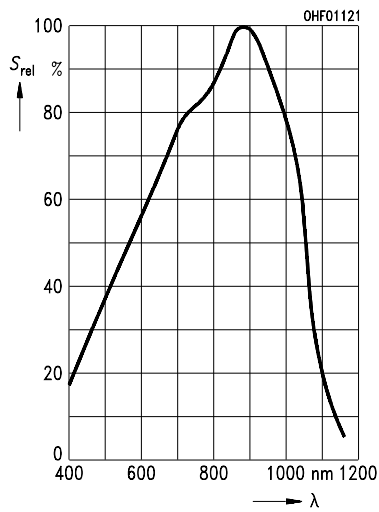
1) I_{PCEmin} is the min. photocurrent of the specified group

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



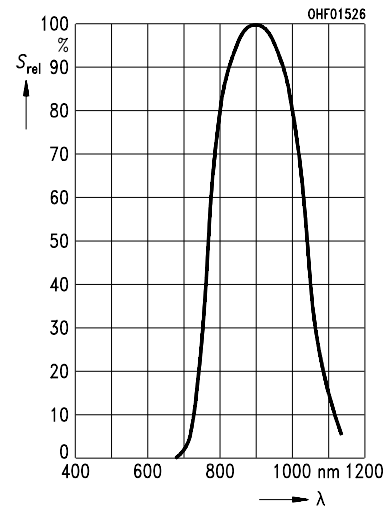
Relative spectral sensitivity, SFH 320

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



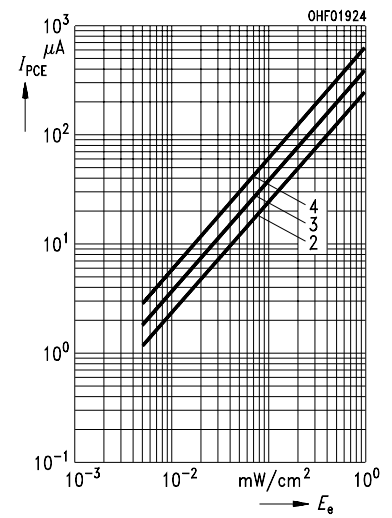
Relative spectral sensitivity, SFH 320 FA

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



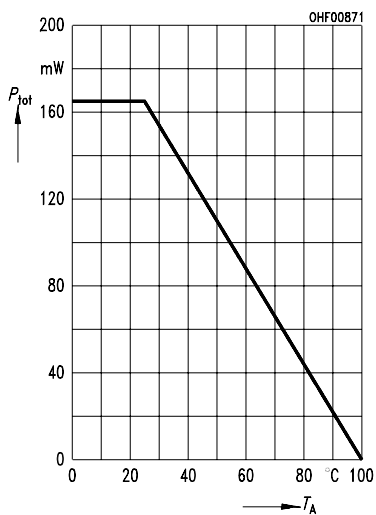
Photocurrent

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



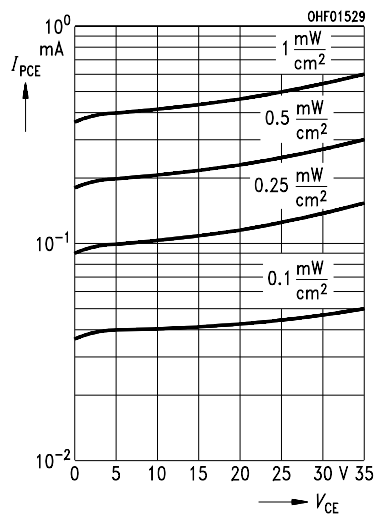
Total power dissipation

$$P_{tot} = f(T_A)$$



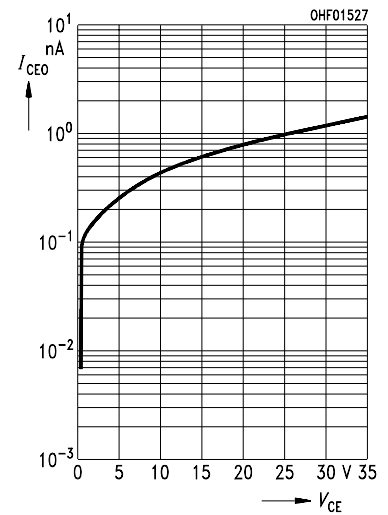
Photocurrent

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



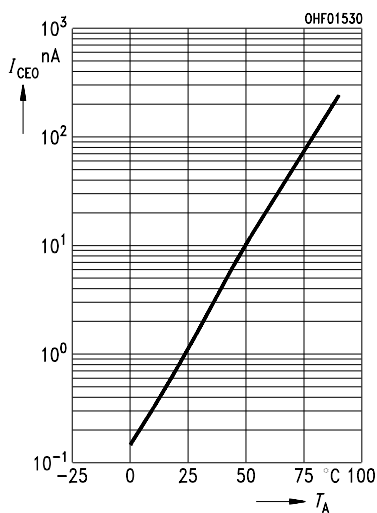
Dark current

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



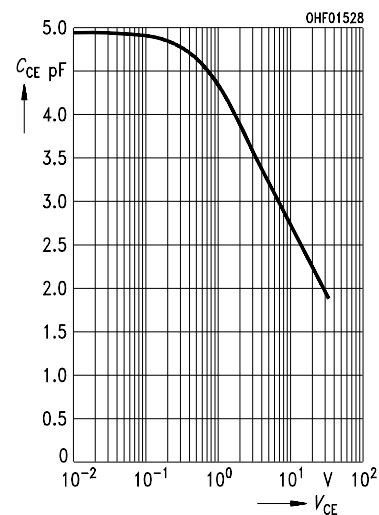
Dark current

$$I_{CEO} = f(T_A), V_{CE} = 5 \text{ V}, E = 0$$



Capacitance

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



Photocurrent

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

