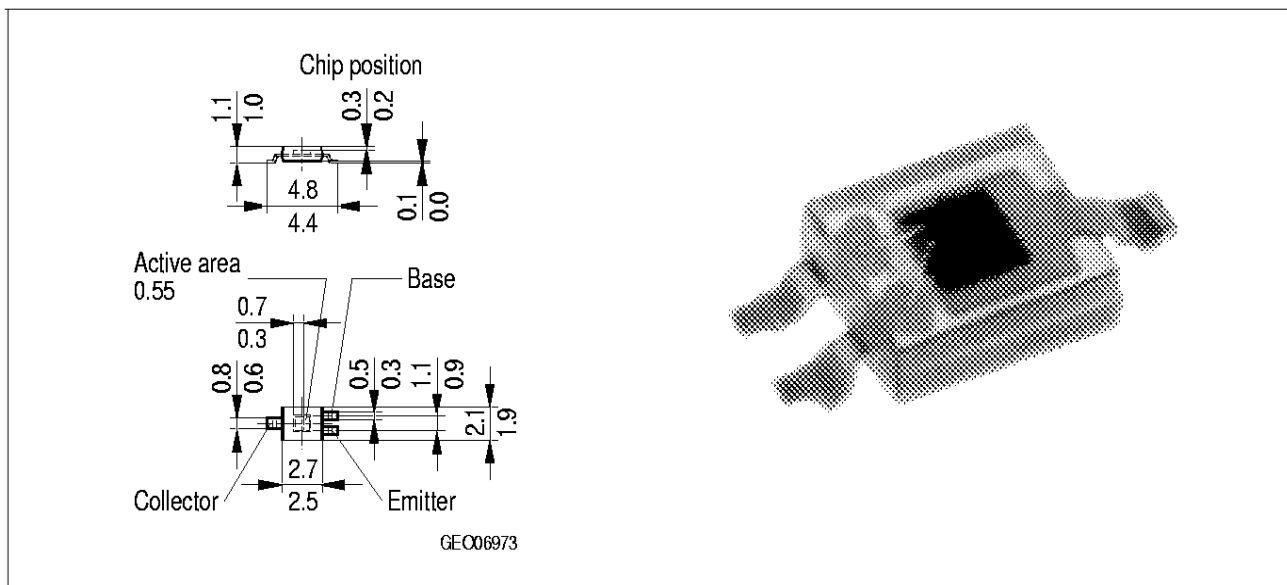


NPN-Silizium-Fototransistor Silicon NPN Phototransistor

SFH 3401



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

Wesentliche Merkmale

- Speziell geeignet für Anwendungen im Bereich von 460 nm bis 1080 nm
- Hohe Linearität
- SMT-Bauform mit Basisanschluß, geeignet für Vapor Phase-Löten und IR-Reflow-Löten (JEDEC level 4)
- Nur gegurtet lieferbar

Anwendungen

- Umgebungslicht-Detektor
- Lichtschranken für Gleich- und Wechsellichtbetrieb
- Industrieelektronik
- „Messen/Steuern/Regeln“

Features

- Especially suitable for applications from 460 nm to 1080 nm
- High linearity
- SMT package with base connection, suitable for vapor phase and IR reflow soldering (JEDEC level 4)
- Available only on tape and reel

Applications

- Ambient light detector
- Photointerrupters
- Industrial electronics
- For control and drive circuits

Typ Type	Bestellnummer Ordering Code	Gehäuse Package
SFH 3401	Q62702-P5014	Klares Epoxy-Gießharz, Kollektorkennzeichnung: breiter Anschluß Transparent epoxy resin, collector marking: broad lead

Grenzwerte Maximum Ratings

Bezeichnung Description	Symbol Symbol	Wert Value	Einheit Unit
Betriebs- und Lagertemperatur Operating and storage temperature range	$T_{op}; T_{stg}$	– 40 ... + 85	°C
Kollektor-Emitterspannung Collector-emitter voltage	V_{CE}	20	V
Kollektor-Emitterspannung, $t < 120$ s 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}	120	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
Wellenlänge der max. Fotoempfindlichkeit Wavelength of max. sensitivity	$\lambda_{S\text{ max}}$	850	nm
Spektraler Bereich der Fotoempfindlichkeit $S = 10\%$ von S_{max} Spectral range of sensitivity $S = 10\%$ of S_{max}	λ	460 ... 1080	nm
Bestrahlungsempfindliche Fläche Radiant sensitive area	A	0.55	mm ²
Abmessung der Chipfläche Dimensions of chip area	$L \times B$ $L \times W$	1 x 1	mm x mm
Abstand Chipoberfläche zu Gehäuseoberfläche Distance chip front to case surface	H	0.2 ... 0.3	mm
Halbwinkel Half angle	φ	± 60	Grad deg.
Kapazität, $V_{CE} = 0\text{ V}$, $f = 1\text{ MHz}$, $E = 0$ Capacitance	C_{CE}	15	pF
Kapazität, $V_{CB} = 0\text{ V}$, $f = 1\text{ MHz}$, $E = 0$ Capacitance	C_{CB}	45	pF
Kapazität, $V_{EB} = 0\text{ V}$, $f = 1\text{ MHz}$, $E = 0$ Capacitance	C_{EB}	19	pF
Dunkelstrom Dark current $V_{CE} = 10\text{ V}$, $E = 0$	I_{CEO}	10 (≤ 200)	nA
Fotostrom der Kollektor-Basis Fotodiode Photocurrent of collector-base photodiode $E_e = 0.1\text{ mW/cm}^2$, $V_{CB} = 5\text{ V}$ $E_v = 1000\text{ lx}$, Normlicht/standard light A, $V_{CB} = 5\text{ V}$	I_{PCB} I_{PCB}	0.28 4.8	μA μA

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

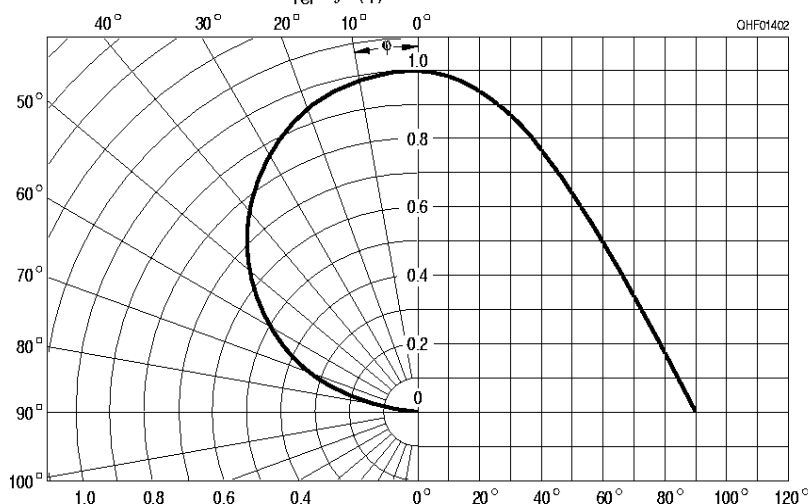
The phototransistors are grouped according to their spectral sensitivity and distinguished by arabian figures.

Bezeichnung Description	Symbol Symbol	Wert Value			Einheit Unit
		-1	-2	-3	
Fotostrom, $\lambda = 950 \text{ nm}$ Photocurrent $E_e = 0.1 \text{ mW/cm}^2$, $V_{CE} = 5 \text{ V}$ $E_v = 1000 \text{ lx}$, Normlicht/standard light A, $V_{CE} = 5 \text{ V}$	I_{PCE} I_{PCE}	63 ... 125 1.65	100 ... 200 2.6	160 ... 320 4.2	μA 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	10	12	14	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}	170	170	170	mV
Stromverstärkung Current gain $E_e = 0.1 \text{ mW/cm}^2$, $V_{CE} = 5 \text{ V}$	$\frac{I_{PCE}}{I_{PCB}}$	340	530	860	

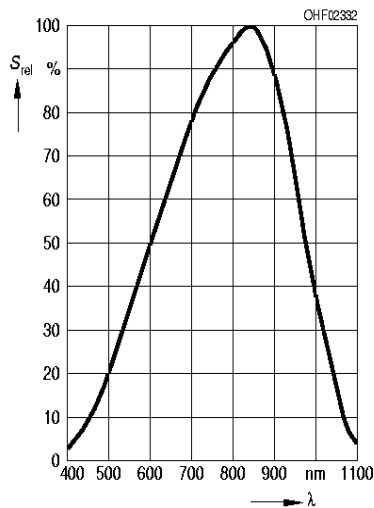
1) I_{PCEmin} ist der minimale Fotostrom der jeweiligen Gruppe

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

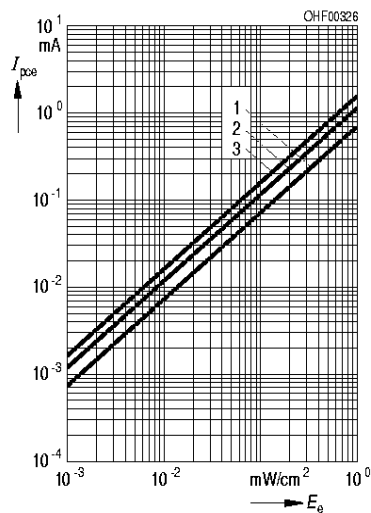
Directional characteristics $S_{rel} = f(\varphi)$



$T_A = 25^\circ\text{C}$, $\lambda = 950\text{ nm}$
Rel.spectral sensitivity $S_{\text{rel}} = f(\lambda)$

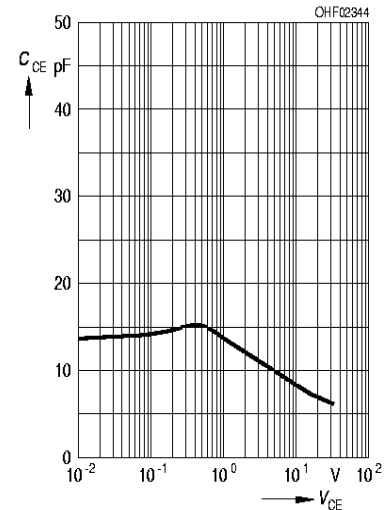


Photocurrent $I_{\text{PCE}} = f(E_g)$, $V_{\text{CE}} = 5\text{ V}$

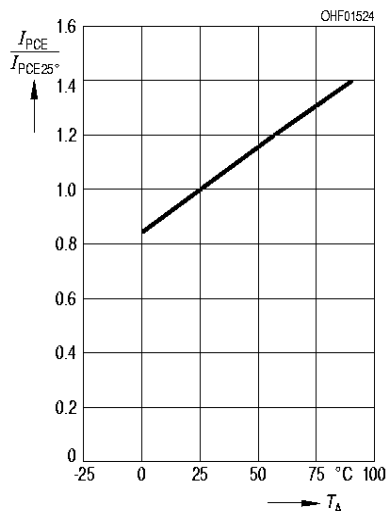


Collector-emitter capacitance

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

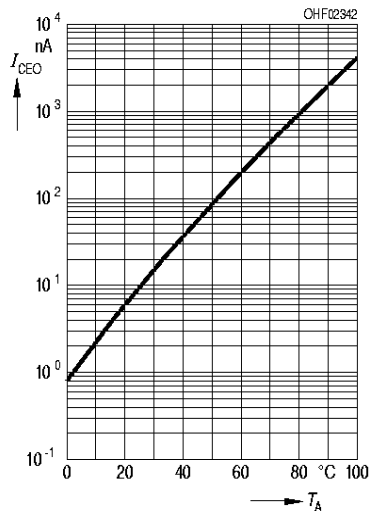


Photocurrent $I_{\text{PCE}} = f(T_A)$,
 $V_{\text{CE}} = 5\text{ V}$, normalized to 25°C



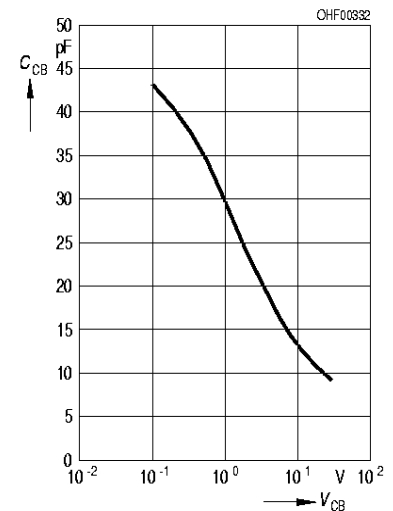
Dark current

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

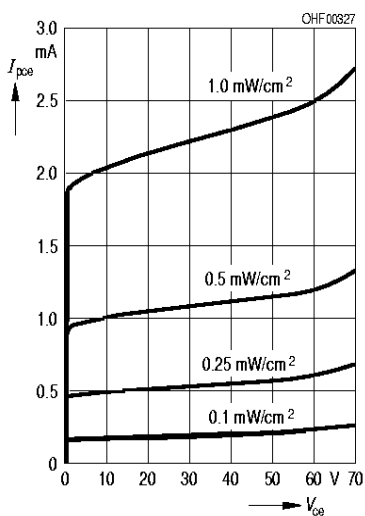


Collector-base capacitance

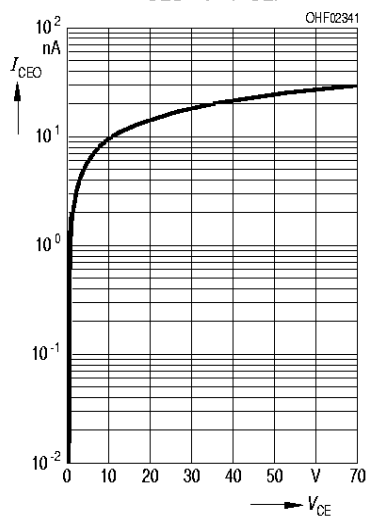
$$C_{\text{CB}} = f(V_{\text{CB}}), f = 1\text{ MHz}, E = 0$$



Photocurrent $I_{\text{PCE}} = f(V_{\text{CE}})$
SFH 3401-3

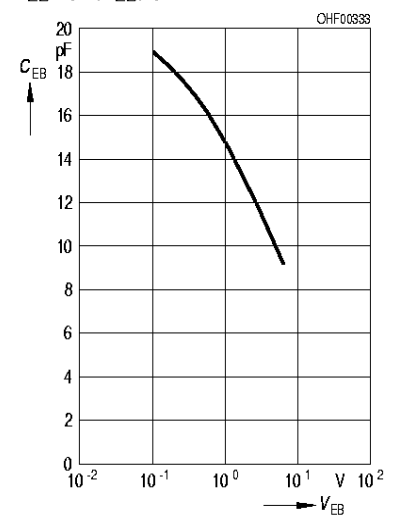


Dark current $I_{\text{CEO}} = f(V_{\text{CE}}), E = 0$



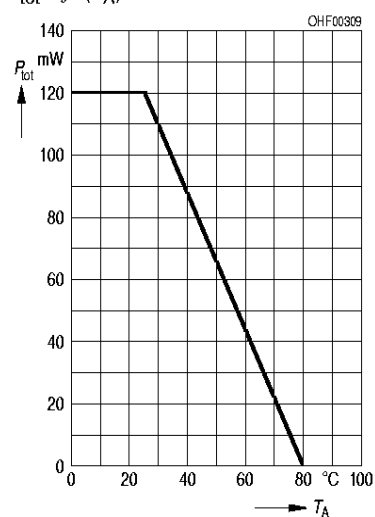
Emitter-base capacitance

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



Total power dissipation

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



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

