NPN-Silizium-Fototransistor im SMT-Gehäuse
Silicon NPN Phototransistor in SMT Package

SFH 3201

Vorläufige Daten / Preliminary Data

Wesentliche Merkmale

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

Features

- Especially suitable for applications from 460 nm to 1080 nm
- High linearity
- SMT package without base connection, suitable for vapor phase, IR reflow soldering (JEDEC level 4) and wave soldering (JEDEC level 4)
- Available only on tape and reel

Anwendungen

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

Applications

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

Typ Type	Bestellnummer Ordering Code	Gehäuse Package
SFH 3201	Q62702-P5043	P-DSO-6
SFH 3201-2/3	Q62702-P5209	P-DSO-6

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}	20	V
Kollektor-Emitterspannung, t < 120 s Collector-emitter voltage	V_{CE}	70	V
Kollektorstrom Collector current	I_C	50	mA
Kollektorspitzenstrom, τ < 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}	500	K/W

Kennwerte (T_A = 25 °C)
Characteristics

Bezeichnung **Parameter**	**Symbol** **Symbol**	**Wert** **Value**	**Einheit** **Unit**
Wellenlänge der max. Fotoempfindlichkeit Wavelength of max. sensitivity	$\lambda_{S\ max}$	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 × 1	mm × mm
Halbwinkel Half angle	φ	± 60	Grad deg.
Kapazität, V_{CE} = 0 V, f = 1 MHz, E = 0 Capacitance	C_{CE}	15	pF
Dunkelstrom Dark current V_{CE} = 20 V, E = 0	I_{CEO}	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.

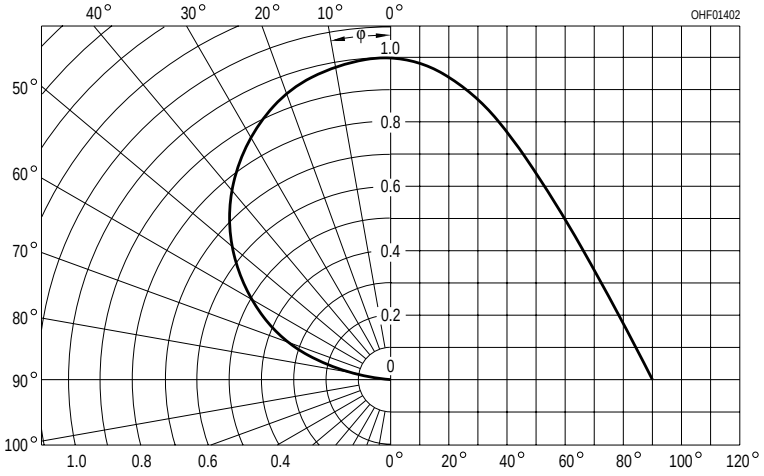
Bezeichnung Parameter	Symbol Symbol	Wert Value			Einheit Unit
		-1	-2	-3	
Fotostrom, $\lambda = 950$ nm Photocurrent E_e = 0.1 mW/cm², V_{CE} = 5 V	I_{PCE}	63 … 125	100 … 200	160 … 320	µA
E_v = 1000 lx, Normlicht/ standard light A, V_{CE} = 5 V	I_{PCE}	1.65	2.6	4.2	mA
Anstiegszeit/Abfallzeit Rise and fall time I_C = 1 mA, V_{CC} = 5 V, R_L = 1 kΩ	t_r, t_f	16	24	34	µs
Kollektor-Emitter- Sättigungsspannung Collector-emitter saturation voltage $I_C = I_{PCEmin}$ [1] × 0.3, E_e = 0.1 mW/cm²	V_{CEsat}	170 (≤ 250)	170 (≤ 250)	170 (≤ 250)	mV

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

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

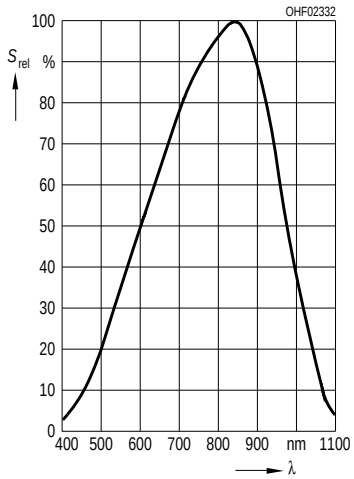
Directional Characteristics

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

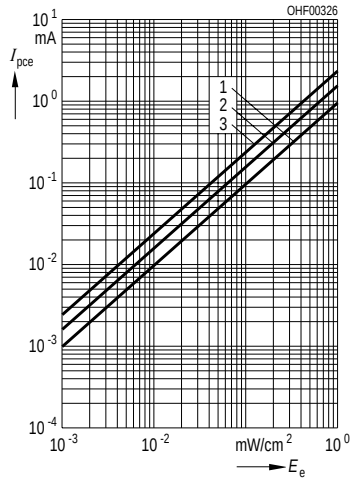


T_A = 25 °C, λ = 950 nm

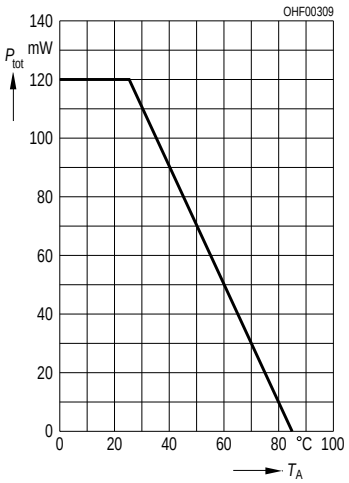
Rel. Spectral Sensitivity, $S_{rel} = f(\lambda)$



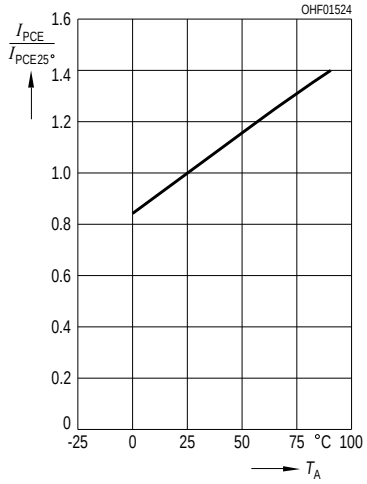
Photocurrent $I_{PCE} = f(E_e)$, V_{CE} = 5 V



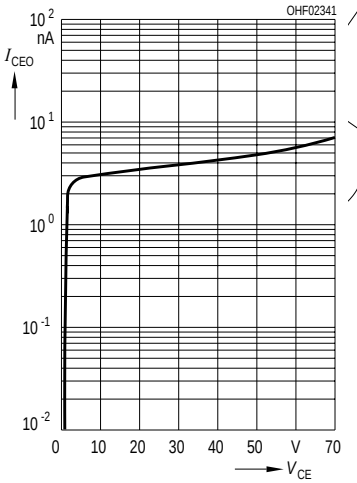
Total Power Dissipation $P_{tot} = f(T_A)$



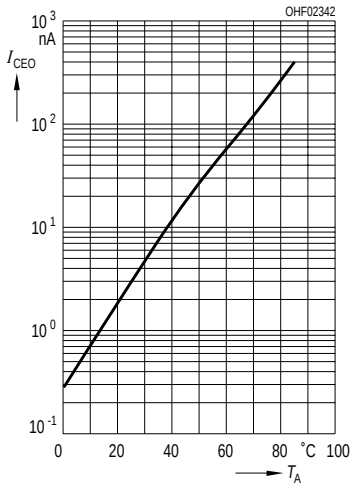
Photocurrent $I_{PCE} = f(T_A)$, V_{CE} = 5 V, normalized to 25 °C



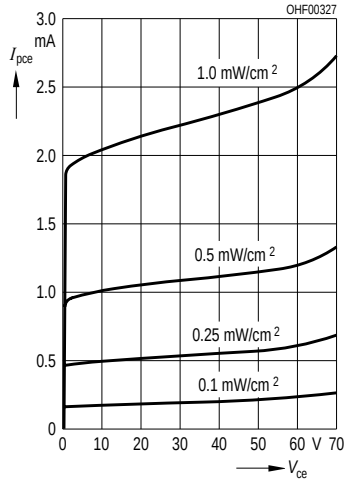
Dark Current $I_{CEO} = f(V_{CE})$, E = 0



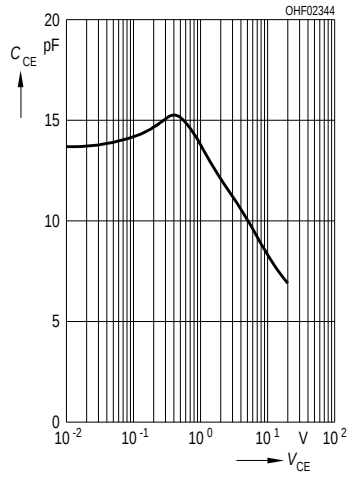
Dark Current $I_{CE\varnothing} = f(T_A)$, V_{CE} = 10 V, E = 0



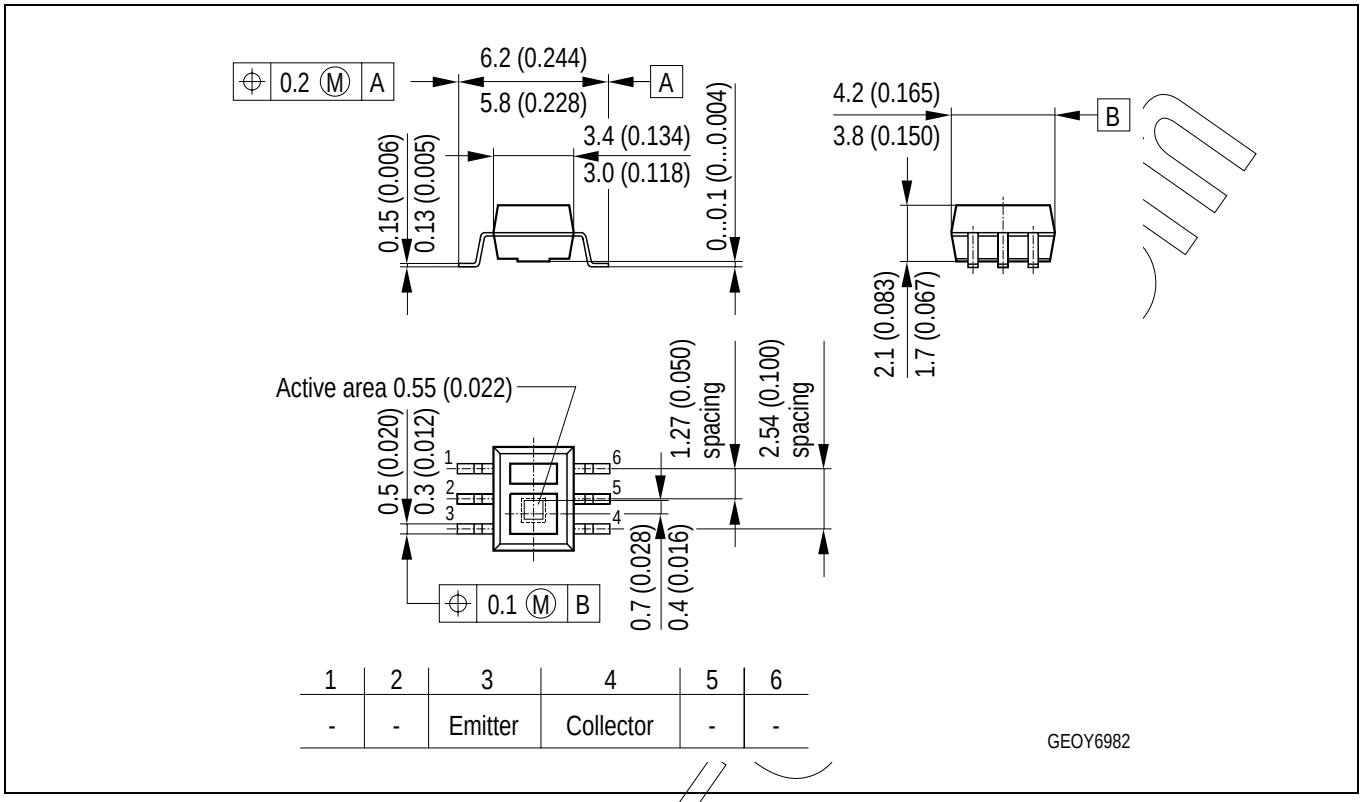
Photocurrent $I_{PCE} = f(V_{CE})$



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



Maßzeichnung
Package Outlines



Maße werden wie folgt angegeben: mm (inch) / Dimensions are specified as follows: mm (inch).

Löthinweise
Soldering Conditions

Bauform Type	Drypack Level acc. to IPS-stand. 020	Tauch-, Schwalllötung Dip, Wave Soldering		Reflowlötung Reflow Soldering		Kolbenlötung Iron Soldering
		Peak Temp. (solderbath)	Max. Time in Peak Zone	Peak Temp. (package temp.)	Max. Time in Peak Zone	(Iron temp.)
SFH 3201	4	260	10 s	245 °C	10 s	n.a.

Bitte Verarbeitungshinweise für SMT-Bauelemente beachten!

Please observe the handling guidelines for SMT devices!

Published by OSRAM Opto Semiconductors GmbH & Co. OHG
Wernerwerkstrasse 2, D-93049 Regensburg

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