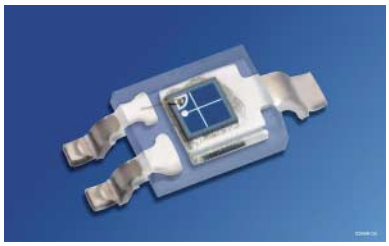
NPN-Silizium-Fototransistor
Silicon NPN Phototransistor

SFH 3401



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

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

Anwendungen

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

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, Kollektorkennzeichung: breiter Anschluß Transparent epoxy resin, collector marking: broad lead
SFH 3401-2/3	Q62702-P5200	

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}	450	K/W

Kennwerte (T_A = 25 °C, λ = 950 nm)
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
Abmessungen 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
Kapazität, V_{CB} = 0 V, f = 1 MHz, E = 0 Capacitance	C_{CB}	45	pF
Kapazität, V_{EB} = 0 V, f = 1 MHz, E = 0 Capacitance	C_{EB}	19	pF
Dunkelstrom Dark current V_{CE} = 10 V, E = 0	I_{CEO}	3 (≤ 200)	nA
Fotostrom der Kollektor-Basis Fotodiode Photocurrent of collektor-base photodiode E_e = 0.1 mW/cm², V_{CB} = 5 V E_v = 1000 lx, Normlicht/standard light A, V_{CB} = 5 V	 I_{PCB} I_{PCB}	 0.28 4.8	 µA µA

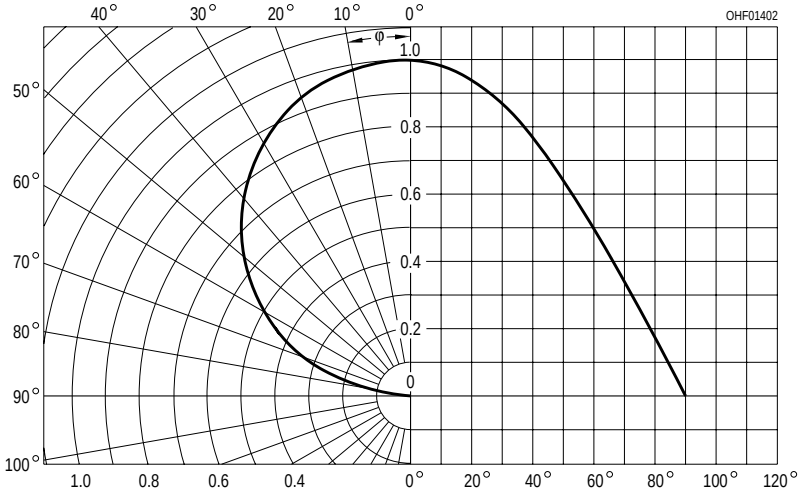
Die Fototransistoren werden nach ihrer Fotoempfindlichkeit gruppiert und mit arabischen Ziffern gekennzeichnet.
The phototransistors are grouped according to their spectral sensitivity and distinguished by arabian figures.

Bezeichnung **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 E_v = 1000 lx, Normlicht A/ standard light A, V_{CE} = 5 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 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	170	170	mV
Stromverstärkung Current gain E_e = 0.1 mW/cm², V_{CE} = 5 V	I_{PCE}/I_{PCB}	340	530	860	–

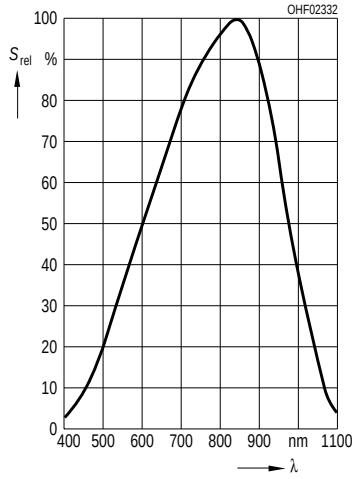
[1] I_{PCEmin} ist der minimale Fotostrom der jeweiligen Gruppe.

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

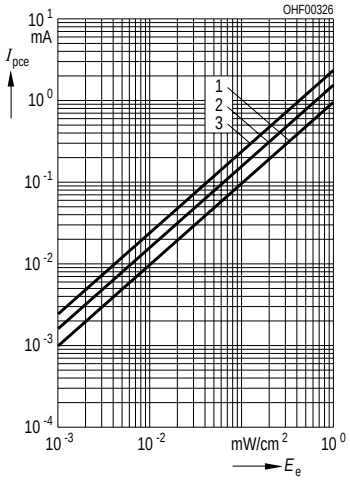
Directional Characteristics $S_{rel} = f(\varphi)$



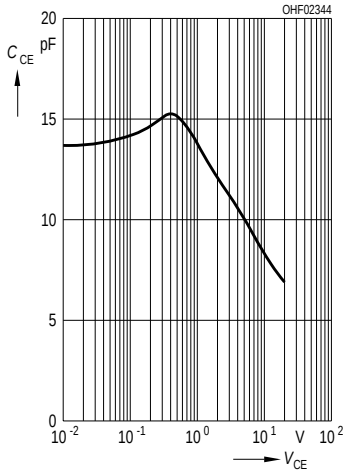
Rel. Spectral Sensitivity,
$S_{rel} = f(\lambda)$



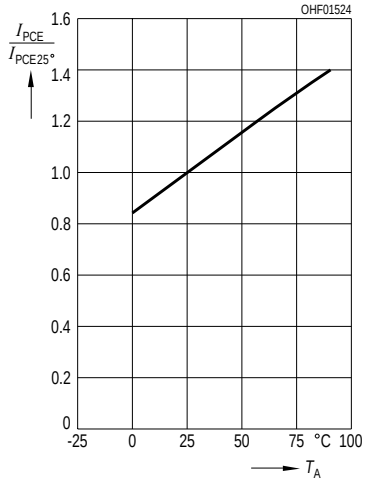
Photocurrent
$I_{PCE} = f(E_e)$, V_{CE} = 5 V



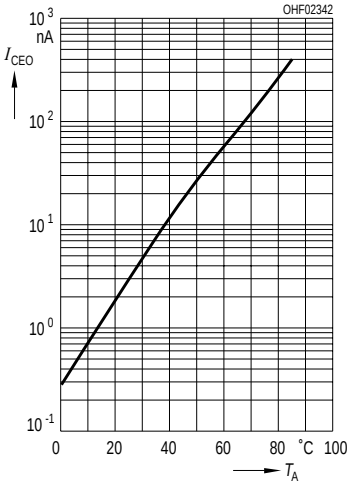
Collector-Emitter Capacitance
$C_{CE} = f(V_{CE})$, f = 1 MHz, E = 0



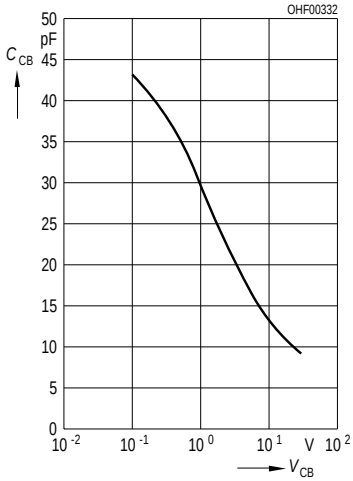
Photocurrent $I_{PCE} = f(T_A)$,
V_{CE} = 5 V, normalized to 25 °C



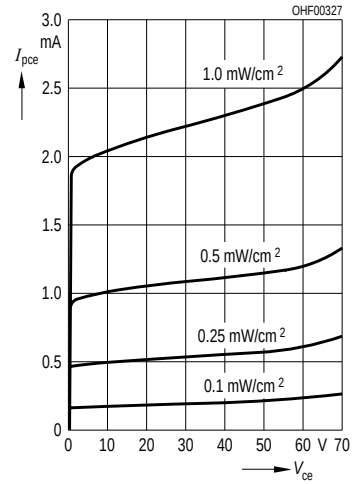
Dark Current
$I_{CEO} = f(T_A)$, V_{CE} = 10 V, E = 0



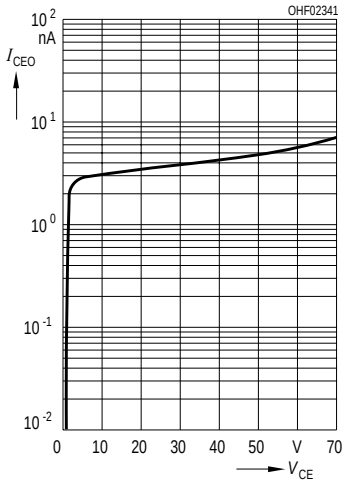
Collector-Base Capacitance
$C_{CB} = f(V_{CB})$, f = 1 MHz, E = 0



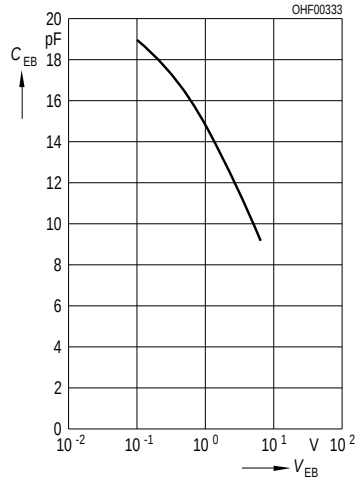
Photocurrent
$I_{PCE} = f(V_{CE})$ **SFH 3401-3**



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

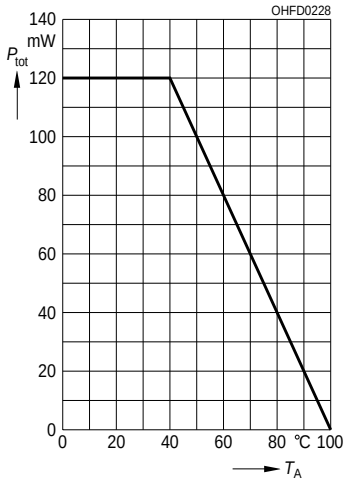


Emitter-Base Capacitance
$C_{EB} = f(V_{EB})$, f = 1 MHz, E = 0



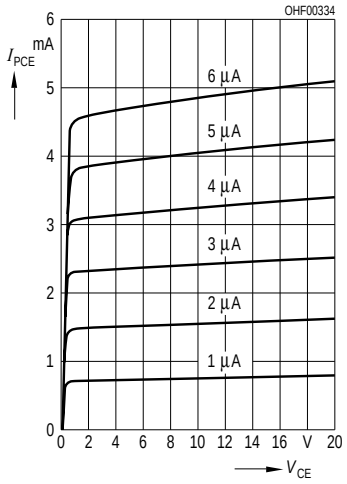
Total Power Dissipation

$P_{tot} = f(T_A)$

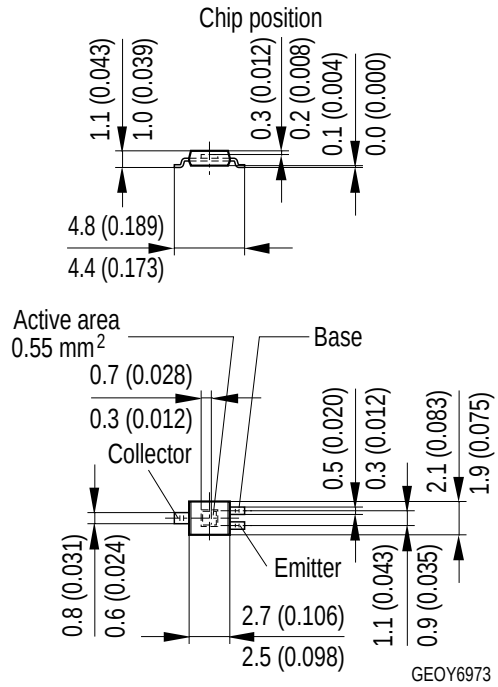


Photocurrent

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



Maßzeichnung
Package Outlines



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

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

Attention please!
The information describes the type of component and shall not be considered as assured characteristics.
Terms of delivery and rights to change design reserved. Due to technical requirements components may contain dangerous substances. For information on the types in question please contact our Sales Organization.
Packing
Please use the recycling operators known to you. We can also help you – get in touch with your nearest sales office. By agreement we will take packing material back, if it is sorted. You must bear the costs of transport. For packing material that is returned to us unsorted or which we are not obliged to accept, we shall have to invoice you for any costs incurred.
Components used in life-support devices or systems must be expressly authorized for such purpose! Critical components [1] , may only be used in life-support devices or systems [2] with the express written approval of OSRAM OS.
[1] A critical component is a component usedin a life-support device or system whose failure can reasonably be expected to cause the failure of that life-support device or system, or to affect its safety or effectiveness of that device or system.
[2] Life support devices or systems are intended (a) to be implanted in the human body, or (b) to support and/or maintain and sustain human life. If they fail, it is reasonable to assume that the health of the user may be endangered.