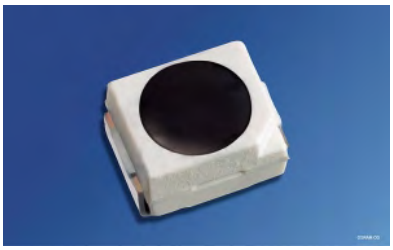
NPN-Silizium-Fototransistor im SMT TOPLED®-Gehäuse
Silicon NPN Phototransistor in SMT TOPLED®-Package

SFH 320
SFH 320 FA

SFH 320



SFH 320 FA

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

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

Anwendungen

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

Applications

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

Typ Type	Bestellnummer Ordering Code	Typ Type	Bestellnummer Ordering Code
SFH 320	Q62702-P0961	SFH 320 FA	Q62702-P0988
SFH 320-3	Q62702-P390	SFH 320 FA-3	Q62702-P393
SFH 320-3/-4	Q62702-P3602	SFH 320 FA-3/-4	Q62702-P3601
SFH 320-4	Q62702-P1606	SFH 320 FA-4	Q62702-P1607

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}	35	V
Kollektorstrom Collector current	I_C	15	mA
Kollektorspitzenstrom, $\tau < 10$ µs Collector surge current	I_{CS}	75	mA
Verlustleistung, T_A = 25 °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 °C, λ = 950 nm)
Characteristics

Bezeichnung **Parameter**	**Symbol** **Symbol**	**Wert** **Value**		**Einheit** **Unit**
		SFH 320	**SFH 320 FA**	
Wellenlänge der max. Fotoempfindlichkeit Wavelength of max. sensitivity	$\lambda_{S\ max}$	860	900	nm
Spektraler Bereich der Fotoempfindlichkeit S = 10% von S_{max} Spectral range of sensitivity S = 10% of S_{max}	λ	380 … 1150	730 … 1120	nm
Bestrahlungsempfindliche Fläche (∅ 240 µm) 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 × 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_{CE} = 0 V, f = 1 MHz, E = 0 Capacitance	C_{CE}	5.0	5.0	pF
Dunkelstrom Dark current V_{CE} = 25 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.

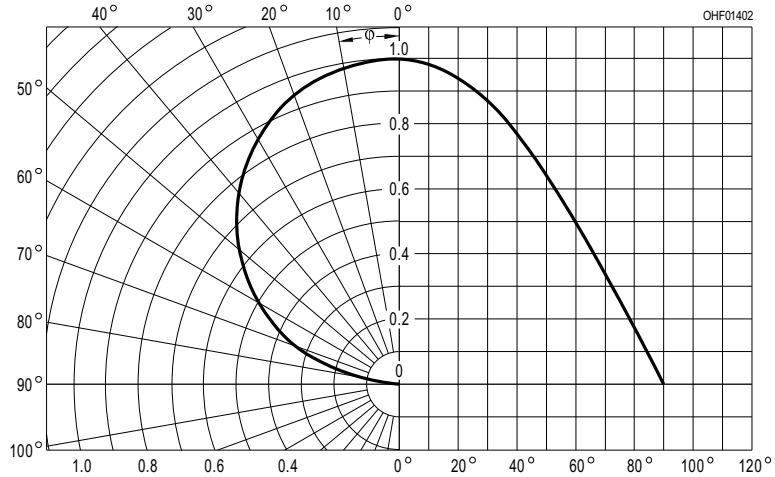
Bezeichnung Parameter	Symbol Symbol	Wert Value				Einheit Unit
		SFH 320/FA	-2	-3	-4	
Fotostrom, $\lambda = 950$ nm Photocurrent E_e = 0.1 mW/cm^2, V_{CE} = 5 V	I_{PCE}	≥ 16	16 ... 32	25 ... 50	40 ... 80	µA
SFH 320: E_v = 1000 lx, Normlicht/standard light A, V_{CE} = 5 V	I_{PCE}	–	420	650	1000	µA
Anstiegszeit/Abfallzeit Rise and fall time I_C = 1 mA, V_{CC} = 5 V, R_L = 1 kΩ	t_r, t_f	7	6	7	8	µs
Kollektor-Emitter-Sättigungsspannung Collector-emitter saturation voltage $I_C = I_{PCEmin}$ [1] × 0.3, E_e = 0.1 mW/cm^2	V_{CEsat}	150	150	150	150	mV

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

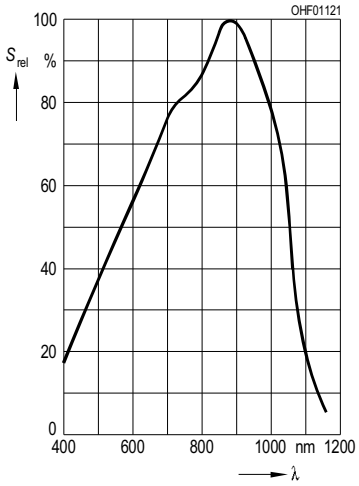
[1] I_{PCEmin} is the min. photocurrent of the specified group.

Directional Characteristics

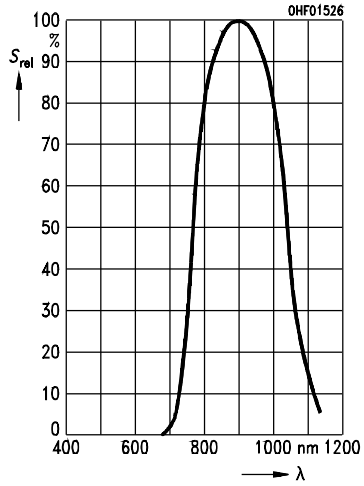
$S_{rel} = f(\varphi)$



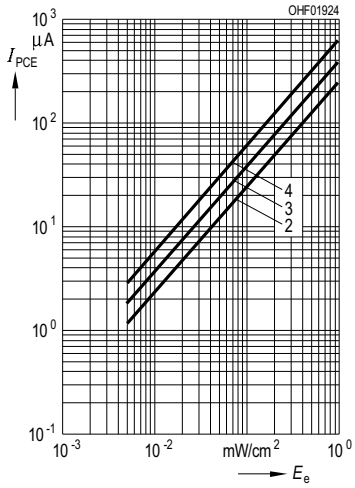
Relative Spectral Sensitivity, SFH 320 $S_{rel} = f(\lambda)$



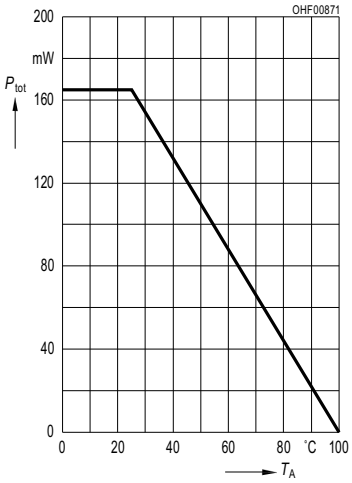
Relative Spectral Sensitivity, SFH 320 FA $S_{rel} = f(\lambda)$



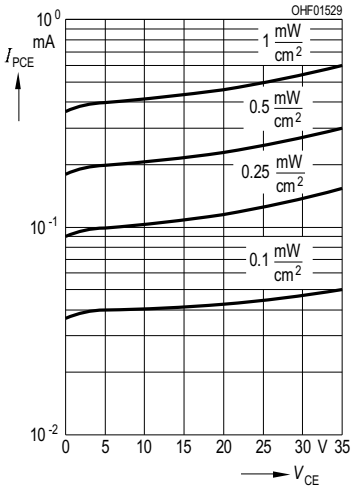
Photocurrent
$I_{PCE} = f(E_e)$, V_{CE} = 5 V



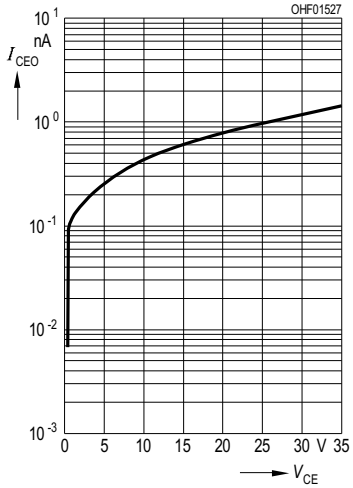
Total Power Dissipation
$P_{tot} = f(T_A)$



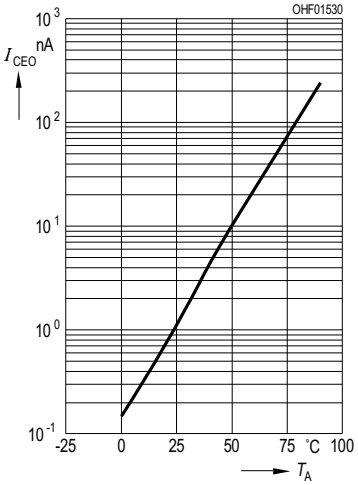
Photocurrent
$I_{PCE} = f(V_{CE})$, E_e = Parameter



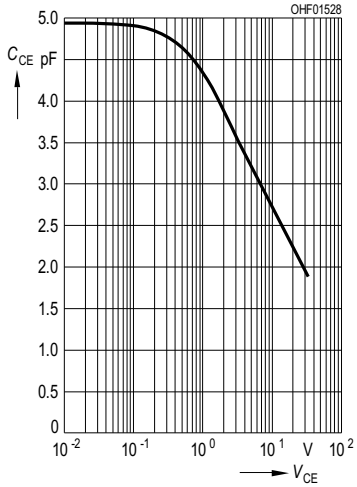
Dark Current
$I_{CEO} = f(V_{CE})$, E = 0



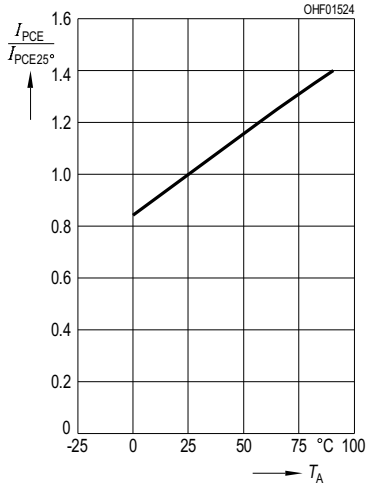
Dark Current
$I_{CEO} = f(T_A)$, V_{CE} = 5 V, E = 0



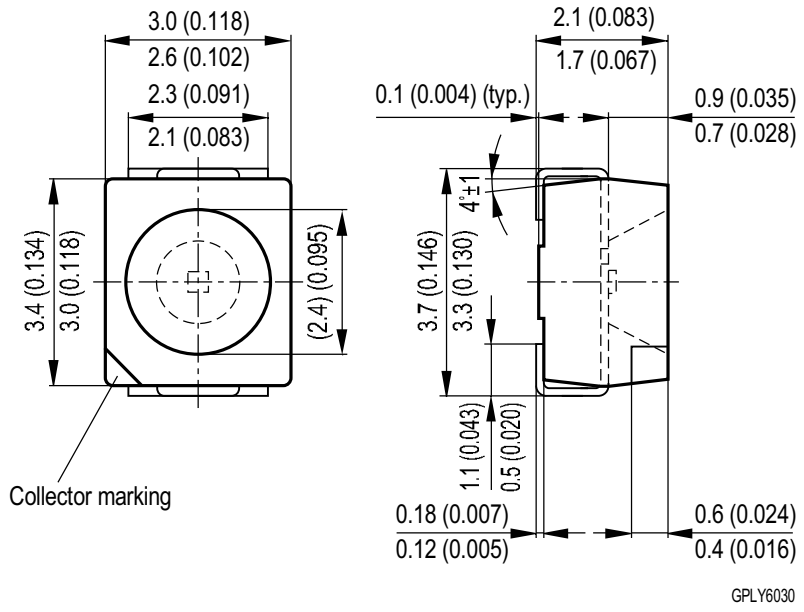
Capacitance
$C_{CE} = f(V_{CE})$, f = 1 MHz, E = 0



Photocurrent
$I_{PCE}/I_{PCE25°} = f(T_A)$, V_{CE} = 5 V



Maßzeichnung
Package Outlines



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

Löthinweise
Soldering Conditions

Bauform Types	Tauch-, Schwall- und Schlepplötung Dip, Wave and Drag Soldering			Reflowlötung Reflow Soldering	
	Lötbad-temperatur Temperature of the Soldering Bath	Maximal zulässige Lötzeit Max. Perm. Soldering Time	Abstand Lötstelle – Gehäuse Distance between Solder Joint and Case	Lötzonen-temperatur Temperature of Soldering Zone	Maximale Durchlaufzeit Max. Transit Time
TOPLED	260 °C	10 s	–	245 °C	10 s

Zusätzliche Informationen über allgemeine Lötbedingungen erhalten Sie auf Anfrage.

For additional information on general soldering conditions please contact us.

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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.

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