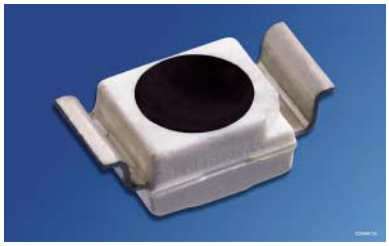
NPN-Silizium-Fototransistor in SMT TOPLED® RG-Gehäuse
Silicon NPN Phototransistor in SMT TOPLED® RG-Package

SFH 3211
SFH 3211 FA

SFH 3211



SFH 3211 FA

Wesentliche Merkmale

- Speziell geeignet für Anwendungen im Bereich von 380 nm bis 1150 nm (SFH 3211) und bei 880 nm (SFH 3211 FA)
- Hohe Linearität
- Gruppiert lieferbar

Features

- Especially suitable for applications from 380 nm to 1150 nm (SFH 3211) and of 880 nm (SFH 3211 FA)
- High linearity
- Available in groups

Anwendungen

- Miniaturlichtschranken
- Industrieelektronik
- „Messen/Steuern/Regeln“

Applications

- Miniature photointerrupters
- Industrial electronics
- For control and drive circuits

Typ Type	Bestellnummer Ordering Code
SFH 3211	Q62702-P5127
SFH 3211-3/-4	Q62702-P5481
SFH 3211 FA	Q62702-P5443
SFH 3211 FA-3/-4	Q62702-P5482

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 3211	**SFH 3211 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.

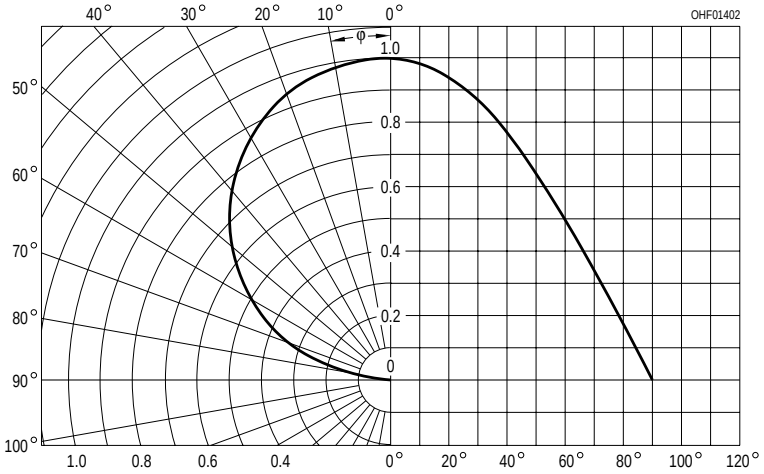
Bezeichnung Parameter	Symbol Symbol	Wert Value				Einheit Unit
		SFH 3211/FA	-2	-3	-4	
Fotostrom, $\lambda = 950$ nm Photocurrent E_e = 0.1 mW/cm², V_{CE} = 5 V **SFH 3211:** E_v = 1000 lx, Normlicht/ standard light A, V_{CE} = 5 V	I_{PCE} I_{PCE}	≥ 16	16 … 32 420	25 … 50 650	40 … 80 1000	µA µA
Anstiegszeit/Abfallzeit 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/cm²	V_{CEsat}	150	150	150	150	mV

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

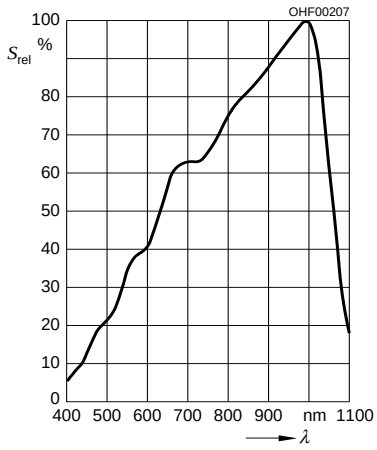
[1] I_{PCEmin} is the min. photocurrent of the specified group.

Directional Characteristics

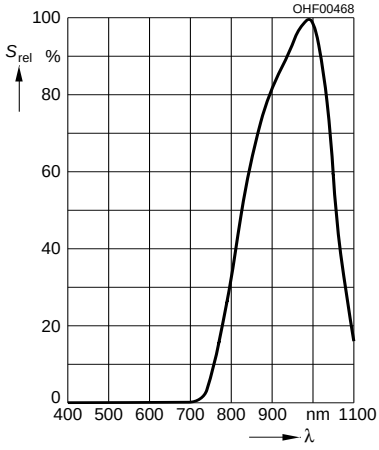
$S_{rel} = f(\varphi)$



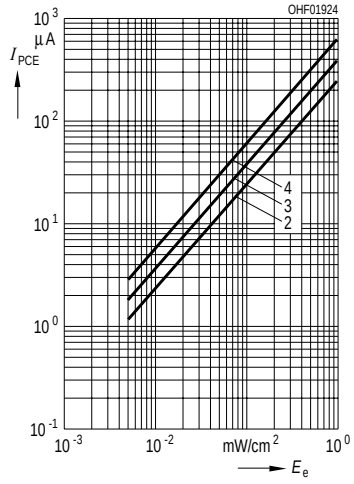
Relative Spectral Sensitivity, SFH 3211 $S_{rel} = f(\lambda)$



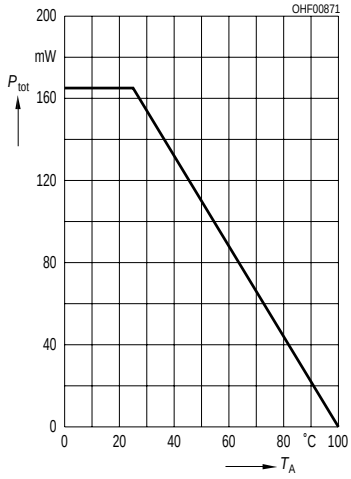
Relative Spectral Sensitivity, SFH 3211 FA $S_{rel} = f(\lambda)$



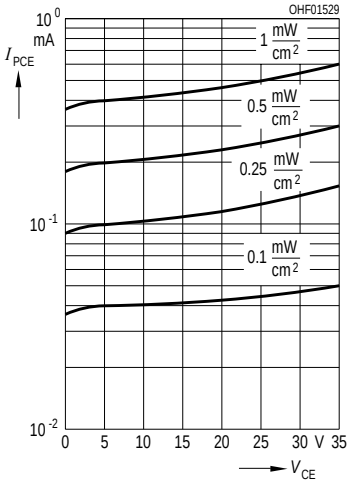
Photocurrent
$I_{PCE} = f(E_e)$, V_{CE} = 5 V



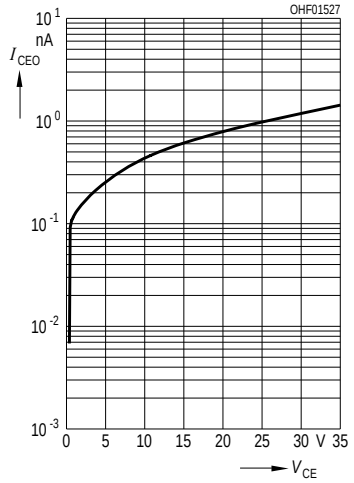
Total Power Dissipation
$P_{tot} = f(T_A)$



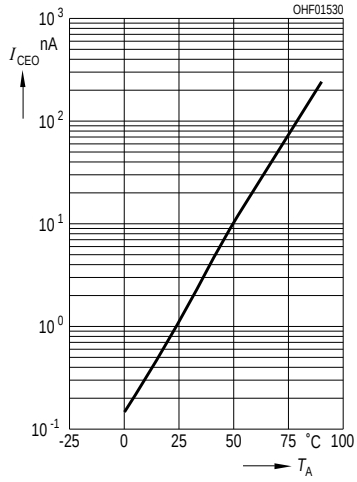
Photocurrent
$I_{PCE} = f(V_{CE})$, E_e = Parameter



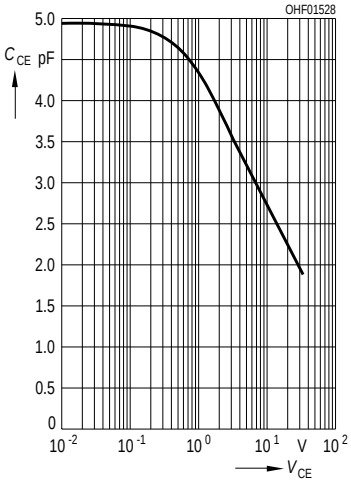
Dark Current
$I_{CEO} = f(V_{CE})$, E = 0



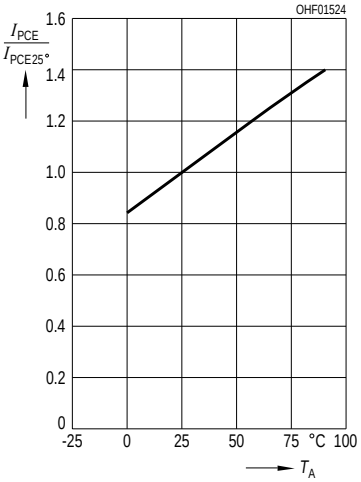
Dark Current
$I_{CEO} = f(T_A)$, V_{CE} = 5 V, E = 0



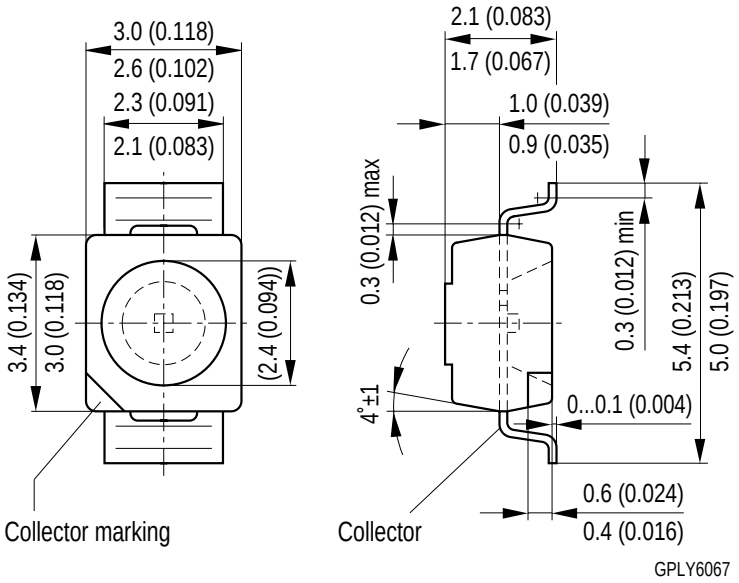
Capacitance
$C_{CE} = f(V_{CE})$, f = 1 MHz, E = 0



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 RG	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.

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

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