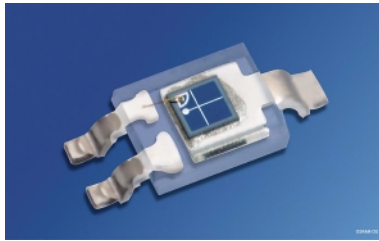


Silizium-PIN-Fotodiode mit sehr kurzer Schaltzeit

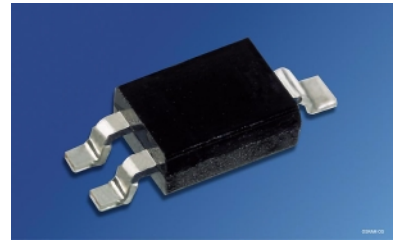
Silicon PIN Photodiode with Very Short Switching Time

SFH 2400

SFH 2400 FA



SFH 2400



SFH 2400 FA

Wesentliche Merkmale

- Speziell geeignet für Anwendungen im Bereich von 400 nm bis 1100 nm (SFH 2400) und bei 880 nm (SFH 2400 FA)
- Kurze Schaltzeit (typ. 5 ns)
- SMT-Bauform, geeignet für Vapor Phase-Löten und IR-Reflow-Löten (JEDEC level 4)
- Nur gegurtet lieferbar

Anwendungen

- Industrieelektronik
- „Messen/Steuern/Regeln“
- Schnelle Lichtschranken für Gleich- und Wechsellichtbetrieb
- LWL

Features

- Especially suitable for applications from 400 nm to 1100 nm (SFH 2400) and of 880 nm (SFH 2400 FA)
- Short switching time (typ. 5 ns)
- SMT package, suitable for vapor phase and IR reflow soldering (JEDEC level 4)
- Available only on tape and reel

Applications

- Industrial electronics
- For control and drive circuits
- Photointerrupters
- Fiber optic transmission systems

Typ Type	Bestellnummer Ordering Code	Gehäuse Package
SFH 2400	Q62702-P1794	Klares Epoxy-Gießharz, Kathodenkennzeichnung: breiter Anschluß Transparent epoxy resin, cathode marking: broad lead
SFH 2400 FA	Q62702-P5035	Schwarzes Epoxy-Gießharz, Kathodenkennzeichnung: breiter Anschluß Black epoxy resin, cathode marking: broad lead

Grenzwerte
Maximum Ratings

Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Betriebs- und Lagertemperatur Operating and storage temperature range	$T_{op}; T_{stg}$	- 40 ... + 85	°C
Sperrspannung Reverse voltage	V_R	20	V
Sperrspannung $t < 2$ min Reverse voltage $t < 2$ min	V_R	50	V
Verlustleistung 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)
Characteristics

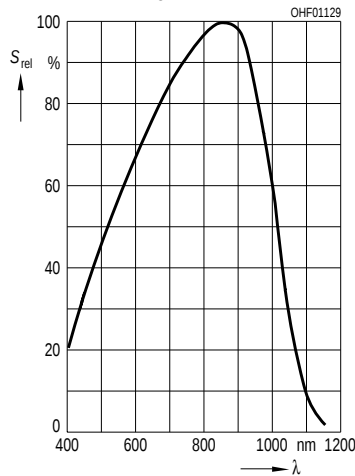
Bezeichnung Parameter	Symbol Symbol	Wert Value		Einheit Unit
		SFH 2400	SFH 2400 FA	
Fotostrom Photocurrent $V_R = 5$ V, Normlicht/standard light A, $T = 2856$ K, $E_v = 1000$ lx $V_R = 5$ V, $\lambda = 870$ nm, $E_e = 1$ mW/cm ²	I_P I_P	10 (> 6) 6.5	– 6.2 (≥ 3.6)	μ A μ A
Wellenlänge der max. Fotoempfindlichkeit Wavelength of max. sensitivity	$\lambda_{S\ max}$	850	900	nm
Spektraler Bereich der Fotoempfindlichkeit $S = 10\%$ von S_{max} Spectral range of sensitivity $S = 10\%$ of S_{max}	λ	400 ... 1100	750 ... 1100	nm
Bestrahlungsempfindliche Fläche Dimensions of radiant sensitive area	$L \times B$ $L \times W$	1 × 1	1 × 1	mm × mm
Chipgröße Chip size	$L \times B$ $L \times W$	1.4 × 1.4	1.4 × 1.4	mm × mm
Halbwinkel Half angle	φ	± 60	± 60	Grad deg.

Kennwerte ($T_A = 25\text{ °C}$)

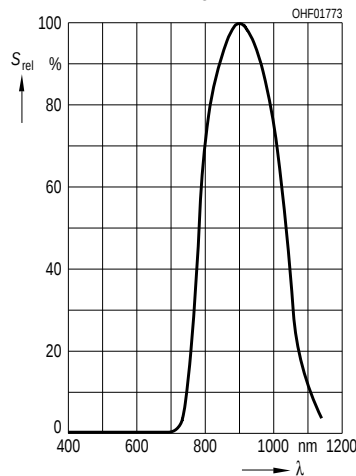
Characteristics (cont'd)

Bezeichnung Parameter	Symbol Symbol	Wert Value		Einheit Unit
		SFH 2400	SFH 2400 FA	
Dunkelstrom, $V_R = 20\text{ V}$ Dark current	I_R	1 (< 5)	1 (< 5)	nA
Leerlaufspannung Open-circuit voltage $E_V = 1000\text{ lx}$, Normlicht/standard light A, $T = 2856\text{ K}$ $E_e = 1\text{ mW/cm}^2$, $\lambda = 870\text{ nm}$	V_O V_O	320 –	– 320	mV mV
Kurzschlußstrom Short-circuit current $E_V = 1000\text{ lx}$, Normlicht/standard light A, $T = 2856\text{ K}$ $E_e = 1\text{ mW/cm}^2$, $\lambda = 870\text{ nm}$	I_{SC} I_{SC}	10 –	– 6.0	μA μA
Anstiegs- und Abfallzeit des Fotostromes Rise and fall time of the photocurrent $R_L = 50\text{ }\Omega$; $V_R = 20\text{ V}$; $\lambda = 850\text{ nm}$; $I_p = 800\text{ }\mu\text{A}$	t_r, t_f	5	5	ns
Durchlaßspannung, $I_F = 80\text{ mA}$, $E = 0$ Forward voltage	V_F	1.3	1.3	V
Kapazität, $V_R = 0\text{ V}$, $f = 1\text{ MHz}$, $E = 0$ Capacitance	C_0	36	36	pF
Temperaturkoeffizient von V_O Temperature coefficient of V_O	TC_V	– 2.6	– 2.6	mV/K
Temperaturkoeffizient von I_{SC} Temperature coefficient of I_{SC} Normlicht/standard light A $\lambda = 870\text{ nm}$	TC_I	0.18 –	– 0.2	%/K
Rauschäquivalente Strahlungsleistung Noise equivalent power $V_R = 20\text{ V}$, $\lambda = 870\text{ nm}$	NEP	2.9×10^{-14}	2.9×10^{-14}	$\frac{\text{W}}{\sqrt{\text{Hz}}}$
Nachweisgrenze, $V_R = 20\text{ V}$, $\lambda = 870\text{ nm}$ Detection limit	D^*	3.5×10^{12}	3.5×10^{12}	$\frac{\text{cm} \times \sqrt{\text{Hz}}}{\text{W}}$

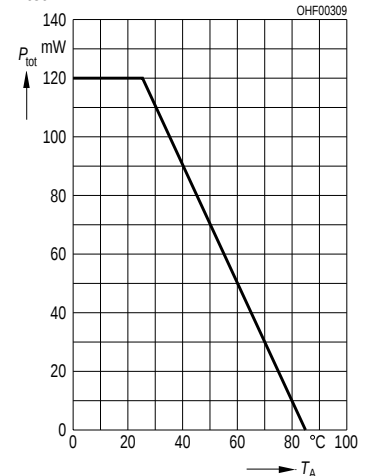
Relative Spectral Sensitivity
SFH 2400, $S_{rel} = f(\lambda)$



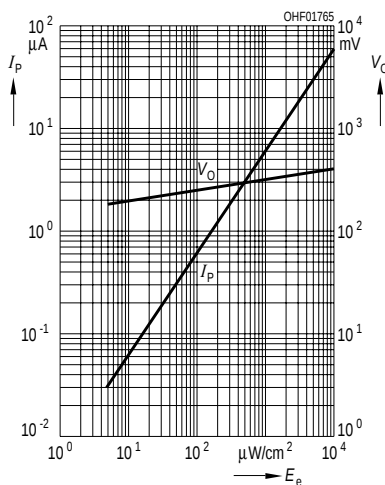
Relative Spectr. Sensitivity
SFH 2400 FA, $S_{rel} = f(\lambda)$



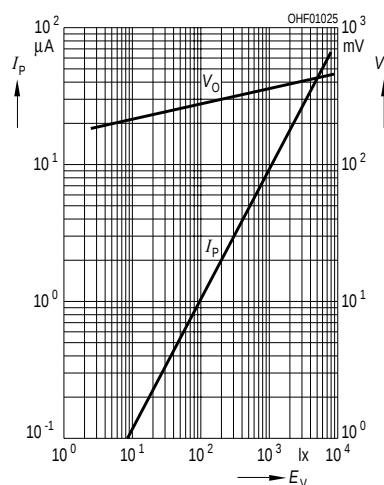
Total Power Dissipation
 $P_{tot} = f(T_A)$



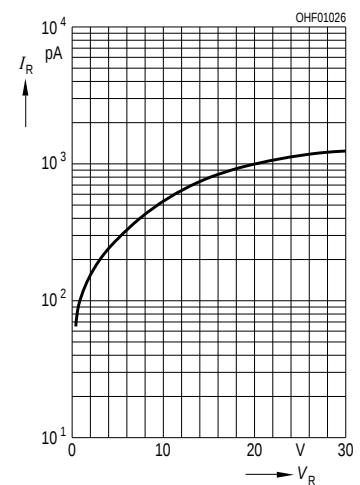
Photocurrent $I_P = f(E_e)$, $V_R = 5 V$
Open-Circuit Voltage $V_O = f(E_e)$
SFH 2400 FA



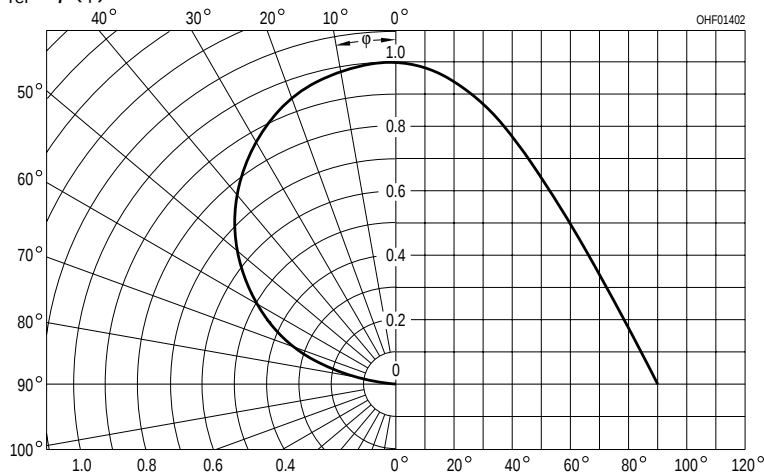
Photocurrent $I_P = f(E_v)$, $V_R = 5 V$
Open-Circuit Voltage $V_O = f(E_v)$
SFH 2400



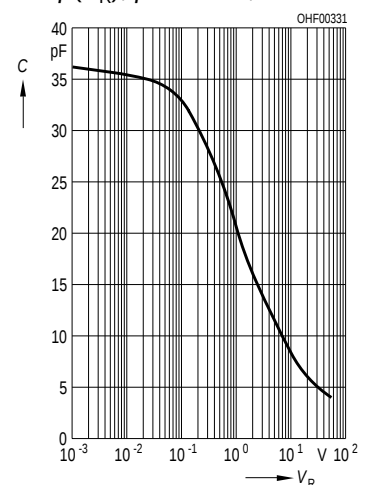
Dark Current
 $I_R = f(V_R), E = 0$



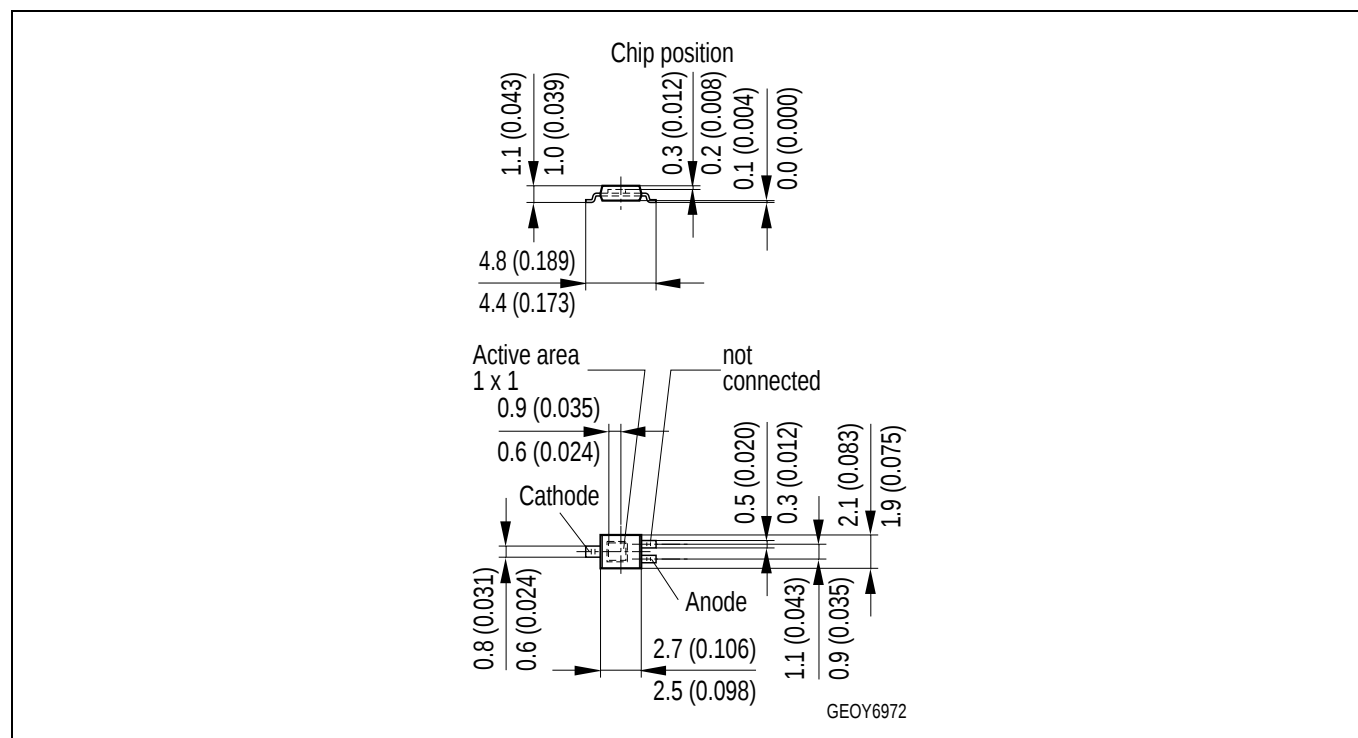
Directional Characteristics
 $S_{rel} = f(\varphi)$



Capacitance
 $C = f(V_R), f = 1 MHz, E = 0$



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

© All Rights Reserved.

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 components¹, may only be used in life-support devices or systems² with the express written approval of OSRAM OS.

¹ A critical component is a component used in 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.