

Silizium-PIN-Fotodiode mit sehr kurzer Schaltzeit in SMR[®] Gehäuse Silicon PIN Photodiode with Very Short Switching Time in SMR[®] Package Lead (Pb) Free Product - RoHS Compliant

SFH 2500/FA SFH 2505/FA



SFH 2500



SFH 2500FA



SFH 2505



SFH 2505FA

Wesentliche Merkmale

- Speziell geeignet für Anwendungen im Bereich von 400 nm bis 1100 nm (SFH 2500/2505) und bei 880 nm (SFH 2500 FA/2505 FA)
- SMR[®] (Surface Mount Radial) Gehäuse
- Kurze Schaltzeit (typ. 5 ns)
- Passend zu IRED SFH 451x, SFH 458x, SFH 450x
- Für Oberflächenmontage (SMT) geeignet
- Gegurtet lieferbar

Anwendungen

- Industrieelektronik
- „Messen/Steuern/Regeln“
- Schnelle Lichtschranken für Gleich- und Wechselbetrieb
- Datenübertragung

Features

- Especially suitable for applications from 400 nm to 1100 nm (SFH 2500/2505) and of 880 nm (SFH 2500 FA/2505 FA)
- SMR[®] (Surface Mount Radial) package
- Short switching time (typ. 5 ns)
- Matches IRED SFH 451x, SFH 458x, SFH 450x
- Suitable for surface mounting (SMT)
- Available on tape and reel

Applications

- Industrial electronics
- For control and drive circuits
- Photointerrupters
- Data transmission

Typ Type	Bestellnummer Ordering Code	Gehäuse Package
SFH 2500	Q65110A1201	5-mm-SMR®-Gehäuse (T 1 3/4), klares (SFH 2500/2505) und schwarz eingefärbtes (SFH 2500 FA/2505 FA) Epoxy-Gießharz, Anschlüsse (SFH 2500/2500 FA gebogen, SFH 2505/2505 FA gerade) im 2.54-mm-Raster (1/10"), Kathodenkennzeichnung: siehe Maßzeichnung. 5 mm SMR® package (T 1 3/4), clear (SFH 2500/2505) and black-colored (SFH 2500 FA/2505 FA) epoxy resin, solder tabs (SFH 2500/2500 FA bent, SFH 2505/2505 FA straight) lead spacing 2.54 mm (1/10"), cathode marking: see package outline.
SFH 2505	Q65110A1203	
SFH 2500 FA	Q65110A1202	
SFH 2505 FA	Q65110A1204	

**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	50	V
Verlustleistung Total power dissipation	P_{tot}	100	mW

Kennwerte ($T_A = 25 \text{ }^\circ\text{C}$)

Characteristics

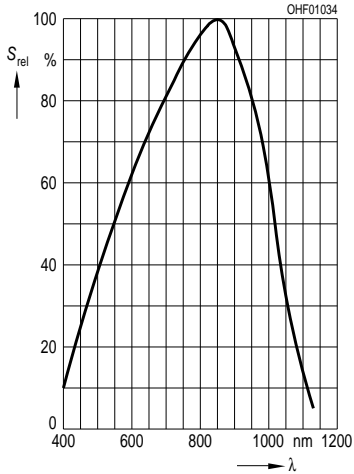
Bezeichnung Parameter	Symbol Symbol	Wert Value		Einheit Unit
		SFH 2500 SFH 2505	SFH 2500 FA SFH 2505 FA	
Fotostrom Photocurrent $V_R = 5 \text{ V}$, Normlicht/standard light A, $T = 2856 \text{ K}$, $E_V = 1000 \text{ lx}$	I_P	100	–	μA
$V_R = 5 \text{ V}$, $\lambda = 870 \text{ nm}$, $E_e = 1 \text{ mW/cm}^2$	I_P	70 (> 50)	70 (> 50)	μA
Wellenlänge der max. Fotoempfindlichkeit Wavelength of max. sensitivity	$\lambda_{S \text{ max}}$	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 Radiant sensitive area	A	1	1	mm^2
Abmessung der bestrahlungsempfindlichen Fläche Dimensions of radiant sensitive area	$L \times B$ $L \times W$	1×1	1×1	$\text{mm} \times \text{mm}$
Halbwinkel Half angle	φ	± 15	± 15	Grad deg.
Dunkelstrom, $V_R = 20 \text{ V}$ Dark current	I_R	0.1 (≤ 5)	0.1 (≤ 5)	nA
Leerlaufspannung Open-circuit voltage $E_V = 1000 \text{ lx}$, Normlicht/standard light A, $T = 2856 \text{ K}$	V_O	430	–	mV
$E_e = 0.5 \text{ mW/cm}^2$, $\lambda = 870 \text{ nm}$	V_O	390 (> 320)	390 (> 320)	mV
Kurzschlussstrom Short-circuit current $E_V = 1000 \text{ lx}$, Normlicht/standard light A, $T = 2856 \text{ K}$	I_{SC}	100	–	μA
$E_e = 1.0 \text{ mW/cm}^2$, $\lambda = 870 \text{ nm}$	I_{SC}	70	70	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
Kapazität, $V_R = 0 \text{ V}$, $f = 1 \text{ MHz}$, $E = 0$ Capacitance	C_0	11	11	pF

Kennwerte ($T_A = 25 \text{ }^\circ\text{C}$)

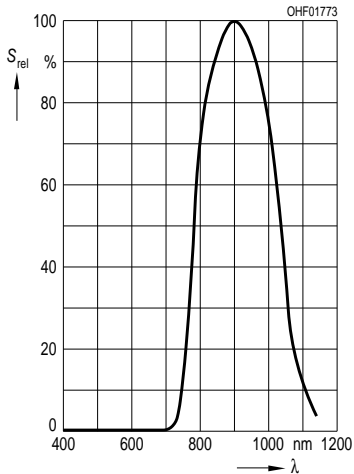
Characteristics (cont'd)

Bezeichnung Parameter	Symbol Symbol	Wert Value		Einheit Unit
		SFH 2500 SFH 2505	SFH 2500 FA SFH 2505 FA	
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 0.1	- 0.1	%/K
Rauschäquivalente Strahlungsleistung Noise equivalent power $V_R = 20 \text{ V}$, $\lambda = 850 \text{ nm}$	NEP	2.9×10^{-14}	2.9×10^{-14}	$\frac{W}{\sqrt{Hz}}$
Nachweisgrenze, $V_R = 20 \text{ V}$, $\lambda = 850 \text{ nm}$ Detection limit	D^*	3.5×10^{12}	3.5×10^{12}	$\frac{cm \times \sqrt{Hz}}{W}$

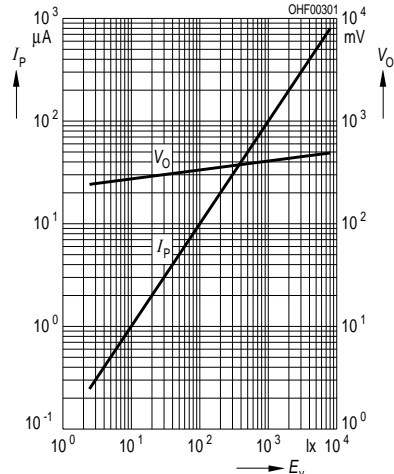
Relative Spectral Sensitivity
 $S_{rel} = f(\lambda)$
SFH 2500/2505



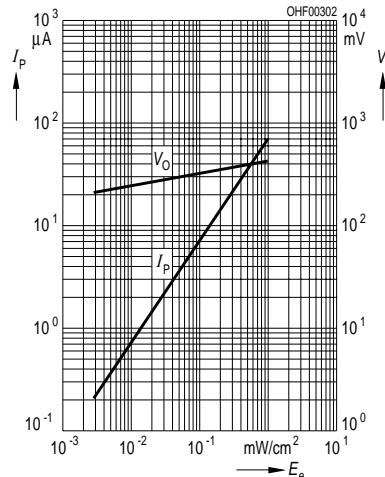
Relative Spectral Sensitivity
 $S_{rel} = f(\lambda)$
SFH 2500 FA/2505 FA



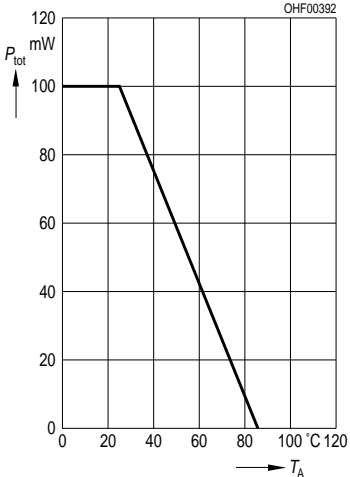
Photocurrent $I_P = f(E_v)$, $V_R = 5 V$
Open-Circuit Voltage $V_O = f(E_v)$
SFH 2500/2505



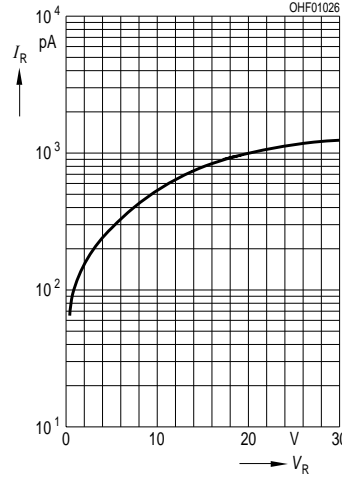
Photocurrent $I_P = f(E_e)$, $V_R = 5 V$
Open-Circuit-Voltage $V_O = f(E_e)$
SFH 2500 FA/2505 FA



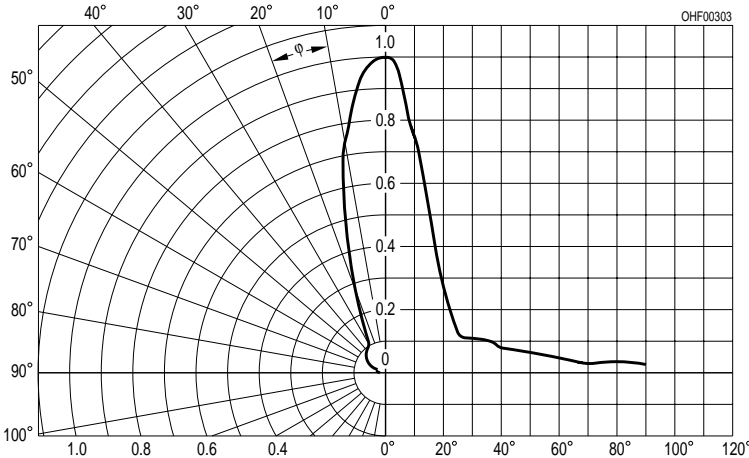
Total Power Dissipation
 $P_{tot} = f(T_A)$



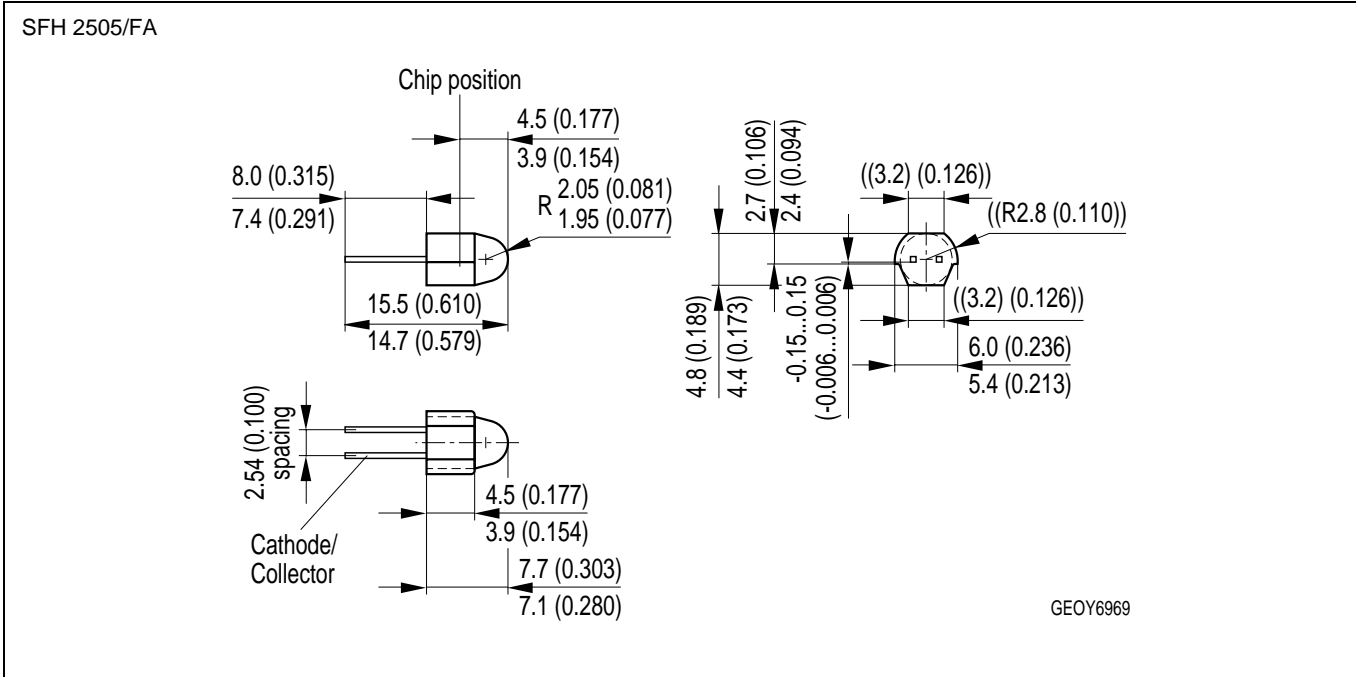
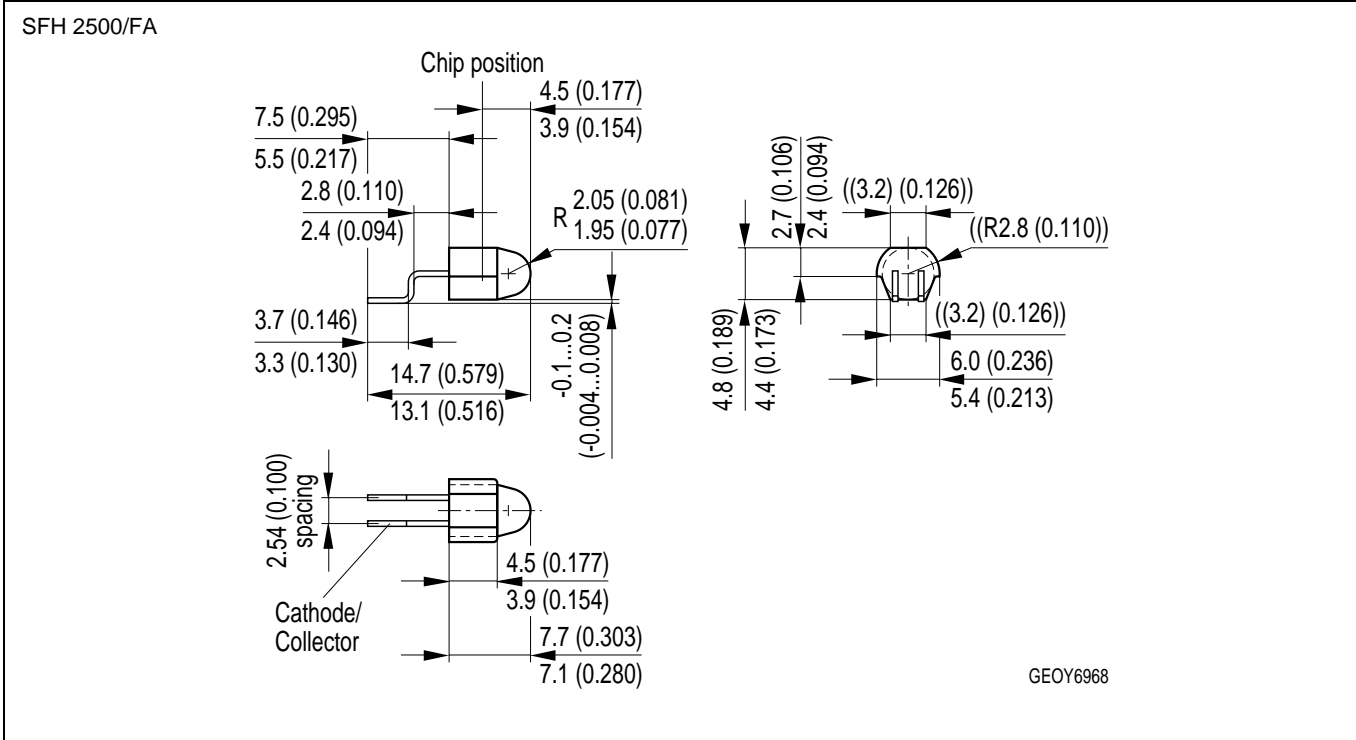
Dark Current
 $I_R = f(V_R), E = 0$



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



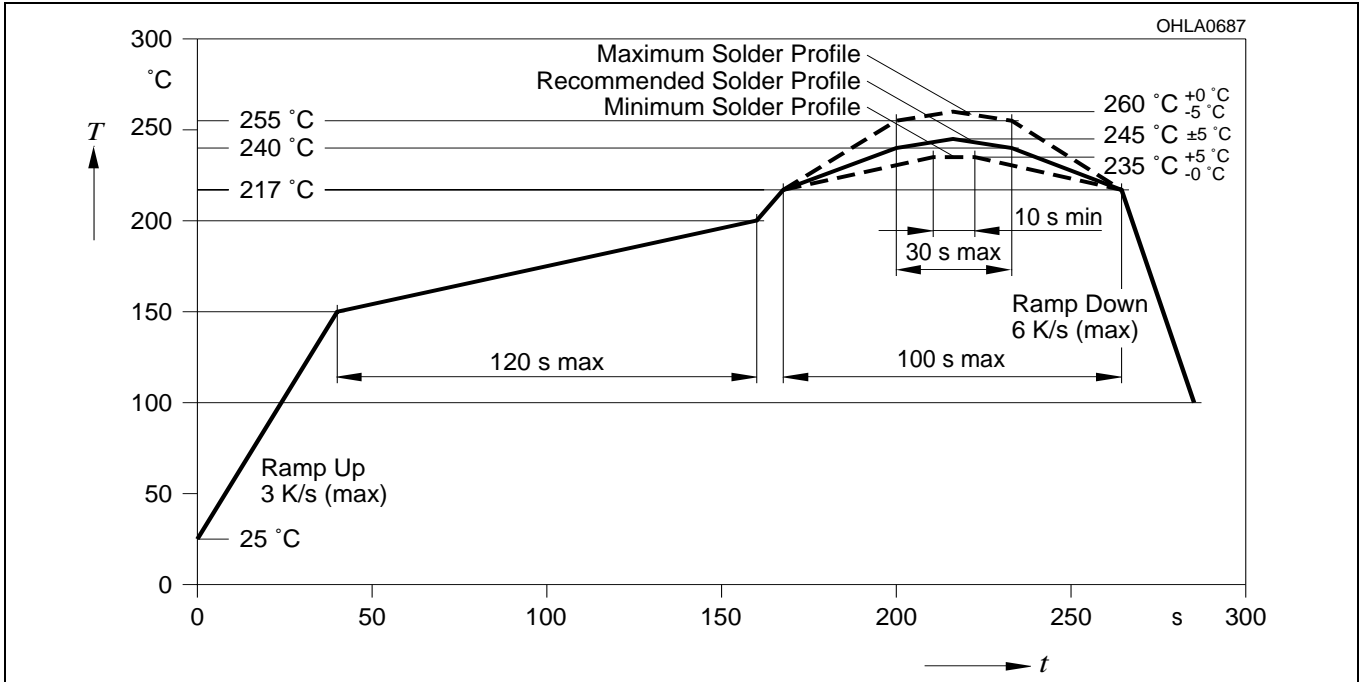
Maßzeichnung
Package Outlines



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

Lötbedingungen
Soldering Conditions
IR-Reflow Lötprofil für bleifreies Löten
IR Reflow Soldering Profile for lead free soldering

Vorbehandlung nach JEDEC Level 3
 Preconditioning acc. to JEDEC Level 3
 (nach J-STD-020B)
 (acc. to J-STD-020B)



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Attention please!

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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 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.