

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 ($T_A = 25\text{ °C}$)

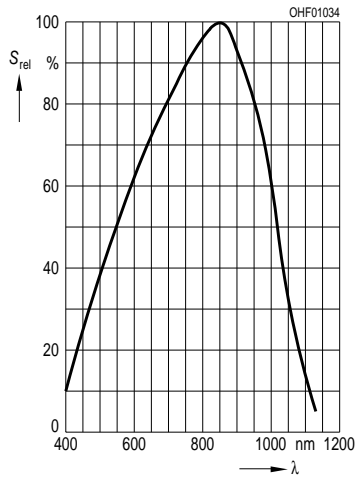
Characteristics

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, $T = 2856\text{ K}$, $E_V = 1000\text{ lx}$ $V_R = 5\text{ V}$, $\lambda = 870\text{ nm}$, $E_e = 1\text{ mW/cm}^2$	I_P I_P	100 70 (> 50)	– 70 (> 50)	μA 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	mm×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, $T = 2856\text{ K}$ $E_e = 0.5\text{ mW/cm}^2$, $\lambda = 870\text{ nm}$	V_O V_O	430 390 (> 320)	– 390 (> 320)	mV mV
Kurzschlussstrom Short-circuit current $E_V = 1000\text{ lx}$, Normlicht/standard light A, $T = 2856\text{ K}$ $E_e = 1.0\text{ mW/cm}^2$, $\lambda = 870\text{ nm}$	I_{SC} I_{SC}	100 70	– 70	μA μA
Anstiegs- und Abfallzeit des Fotostromes Rise and fall time of the photocurrent $R_L = 50\ \Omega$; $V_R = 20\text{ V}$; $\lambda = 850\text{ nm}$; $I_p = 800\ \mu\text{A}$	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

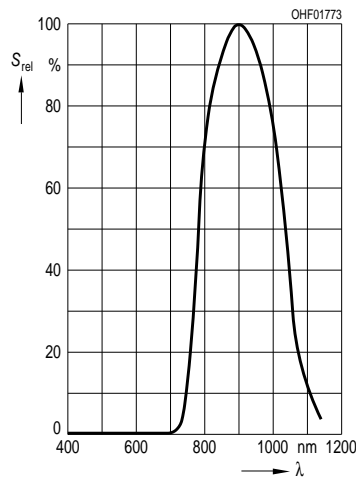
Kennwerte ($T_A = 25\text{ °C}$)
Characteristics (cont'd)

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}	$\frac{cm \times \sqrt{Hz}}{W}$

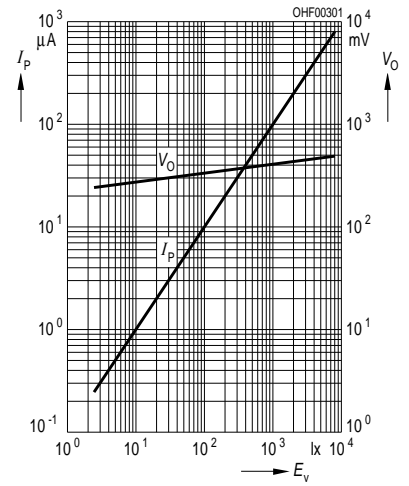
Relative Spectral Sensitivity
 $S_{rel} = f(\lambda)$
SFH 2500/2505



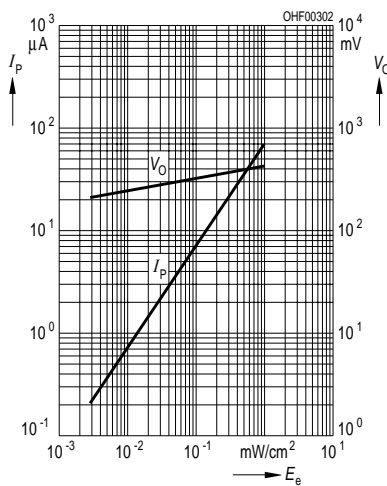
Relative Spectral Sensitivity
 $S_{rel} = f(\lambda)$
SFH 2500 FA/2505 FA



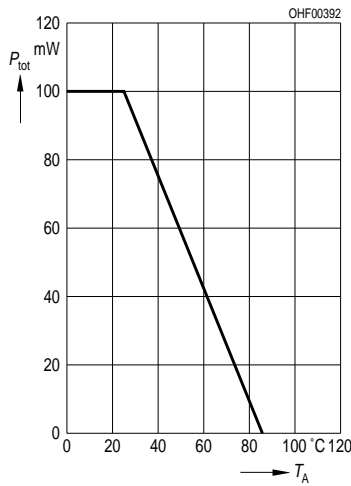
Photocurrent $I_P = f(E_v)$, $V_R = 5 V$
Open-Circuit Voltage $V_O = f(E_v)$
SFH 2500/2505



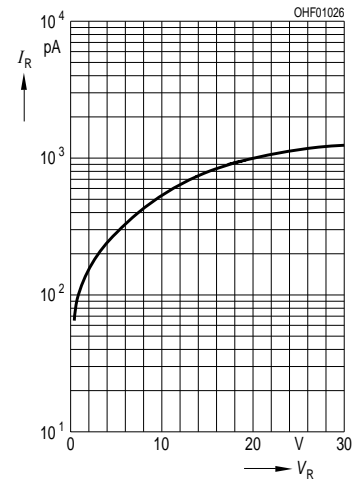
Photocurrent $I_P = f(E_e)$, $V_R = 5 V$
Open-Circuit-Voltage $V_O = f(E_e)$
SFH 2500 FA/2505 FA



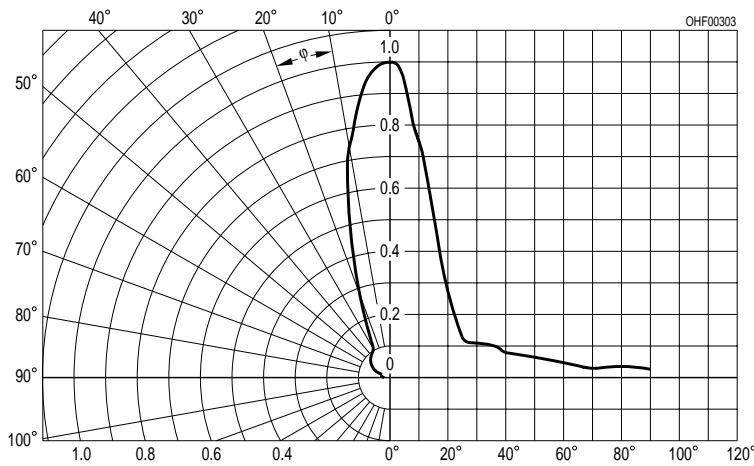
Total Power Dissipation
 $P_{tot} = f(T_A)$



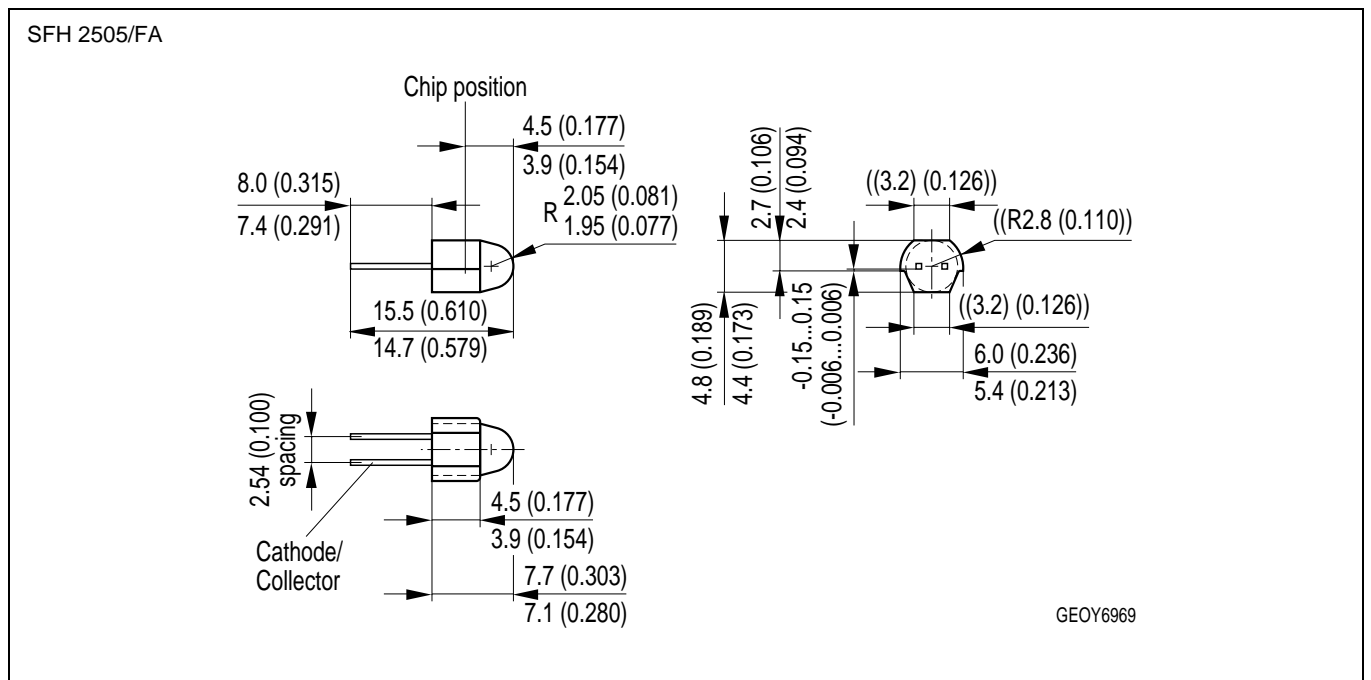
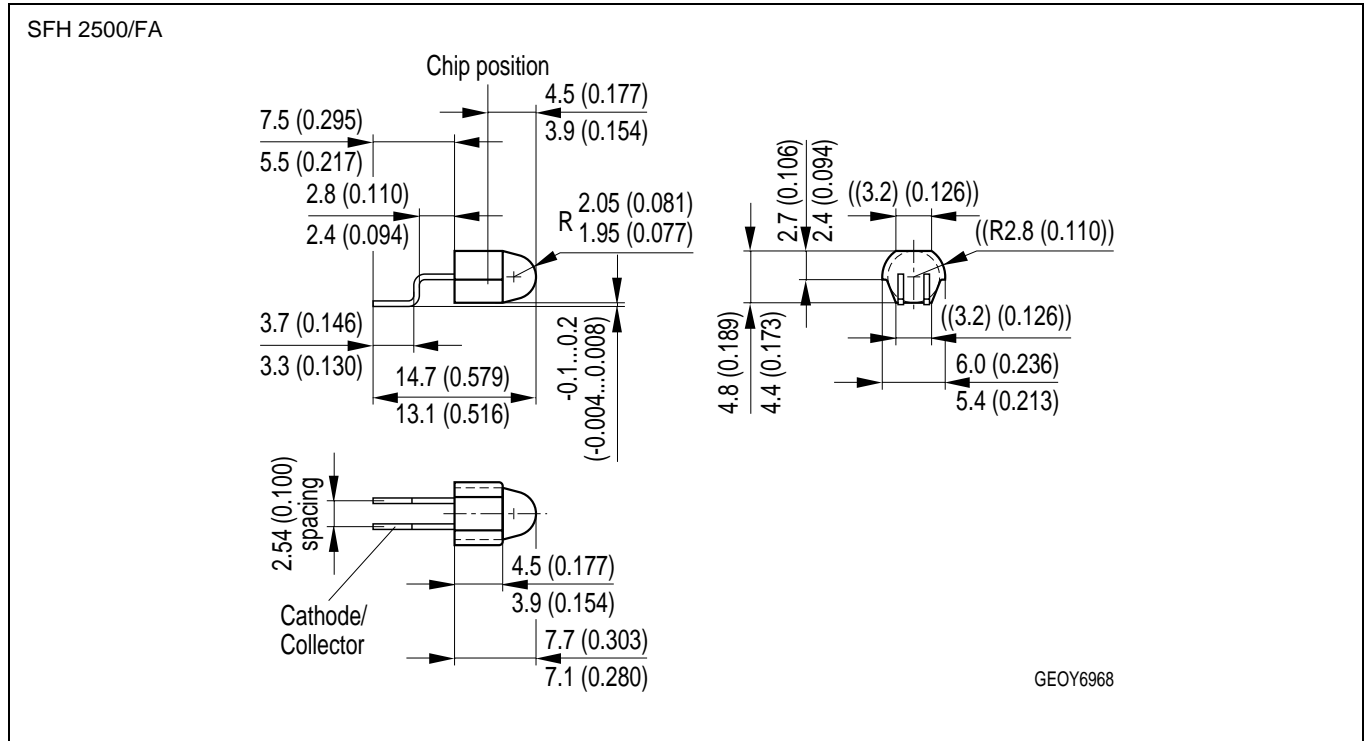
Dark Current
 $I_R = f(V_R), E = 0$



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



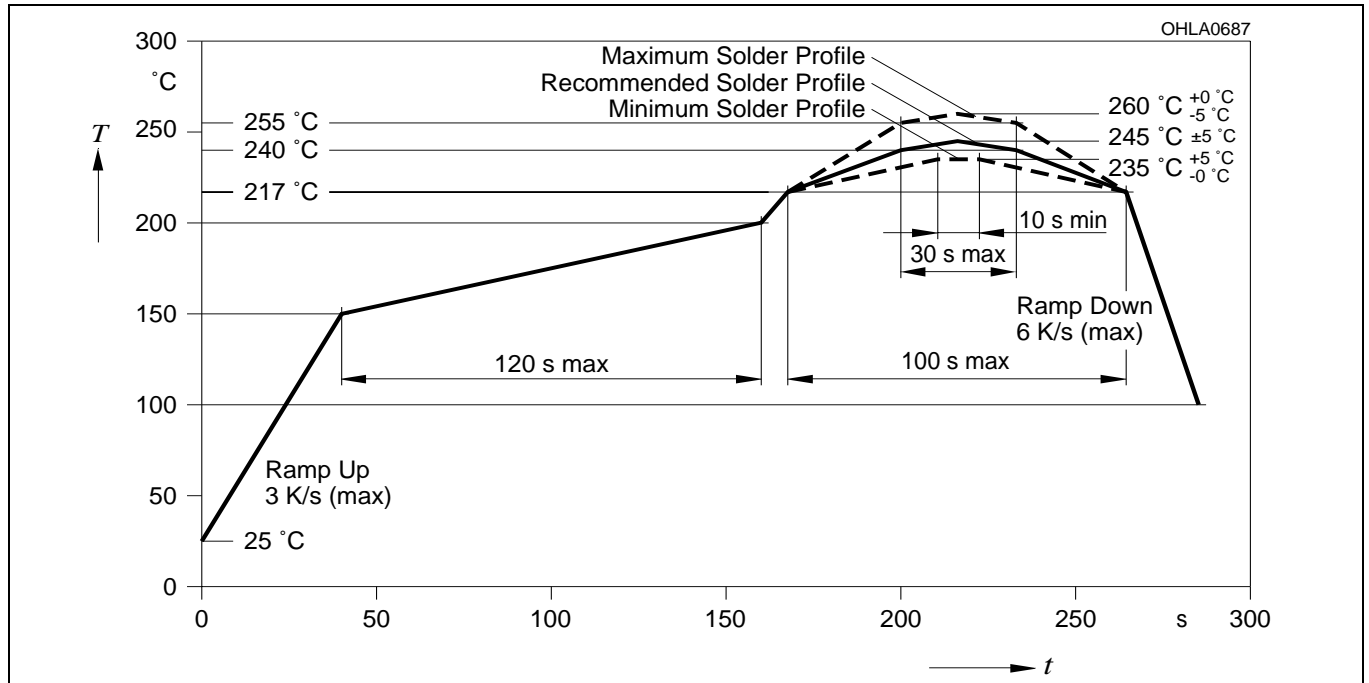
Maßzeichnung
Package Outlines



Maße in mm (inch) / Dimensions in mm (inch).

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

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



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