Silizium-PIN-Fotodiode mit sehr kurzer Schaltzeit in SMR® Gehäuse
Silicon PIN Photodiode with Very Short Switching Time in SMR® Package

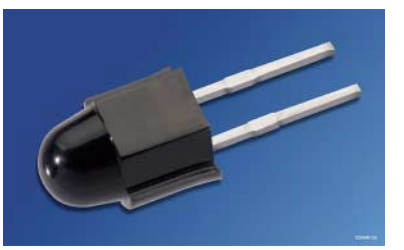
Lead (Pb) Free Product - RoHS Compliant

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

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

Anwendungen

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

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

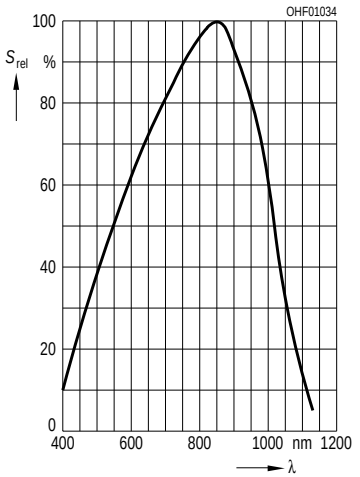
Kennwerte (T_A = 25 °C)
Characteristics

Bezeichnung Parameter	Symbol Symbol	Wert Value		Einheit Unit
		SFH 2500 SFH 2505	SFH 2500 FA SFH 2505 FA	
Fotostrom Photocurrent V_R = 5 V, Normlicht/standard light A, T = 2856 K, E_V = 1000 lx V_R = 5 V, λ = 870 nm, E_e = 1 mW/cm²	I_P I_P	100 70 (> 50)	– 70 (> 50)	µA µA
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 Radiant sensitive area	A	1	1	mm²
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 V Dark current	I_R	0.1 (≤ 5)	0.1 (≤ 5)	nA
Leerlaufspannung Open-circuit voltage E_v = 1000 lx, Normlicht/standard light A, T = 2856 K E_e = 0.5 mW/cm², λ = 870 nm	V_O V_O	430 390 (> 320)	– 390 (> 320)	mV mV
Kurzschlussstrom Short-circuit current E_v = 1000 lx, Normlicht/standard light A, T = 2856 K E_e = 1.0 mW/cm², λ = 870 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 Ω; V_R = 20 V; λ = 850 nm; I_p = 800 µA	t_r, t_f	5	5	ns
Kapazität, V_R = 0 V, f = 1 MHz, E = 0 Capacitance	C_0	11	11	pF

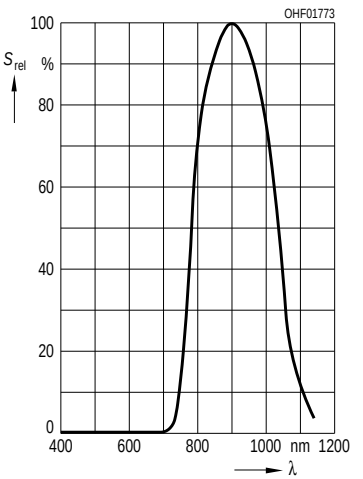
Kennwerte (T_A = 25 °C)
Characteristics (cont'd)

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 λ = 870 nm	TC_I	0.18 0.1	– 0.1	%/K
Rauschäquivalente Strahlungsleistung Noise equivalent power V_R = 20 V, λ = 850 nm	NEP	2.9×10^{-14}	2.9×10^{-14}	$\frac{W}{\sqrt{Hz}}$
Nachweisgrenze, V_R = 20 V, λ = 850 nm Detection limit	D*	3.5×10^{12}	3.5×10^{12}	$\frac{cm \times \sqrt{Hz}}{W}$

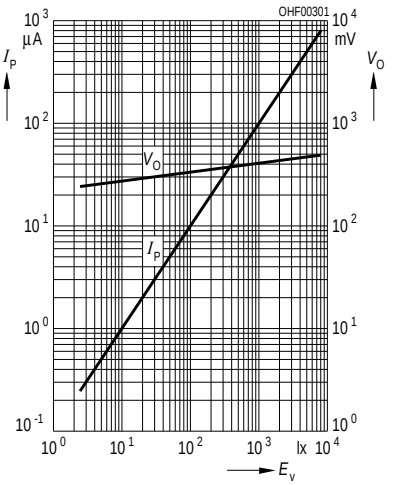
Relative Spectral Sensitivity
$S_{rel} = f(\lambda)$
SFH 2500/2505



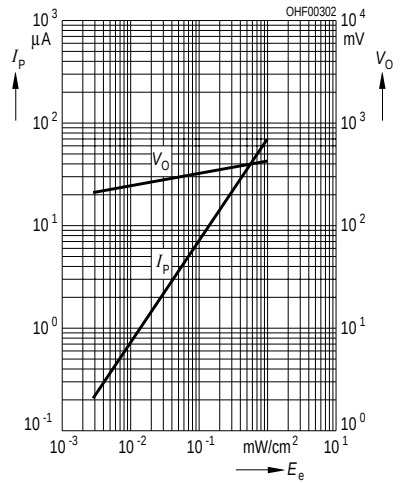
Relative Spectral Sensitivity
$S_{rel} = f(\lambda)$
SFH 2500 FA/2505 FA



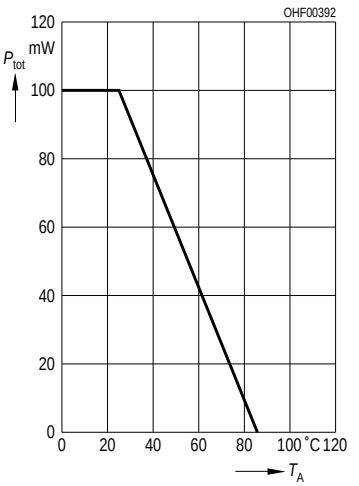
Photocurrent $I_P = f(E_v)$, V_R = 5 V
Open-Circuit Voltage $V_O = f(E_v)$
SFH 2500/2505



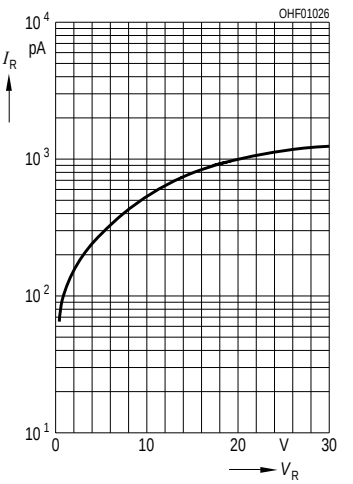
Photocurrent $I_P = f(E_e)$, V_R = 5 V
Open-Circuit-Voltage $V_O = f(E_e)$
SFH 2500 FA/2505 FA



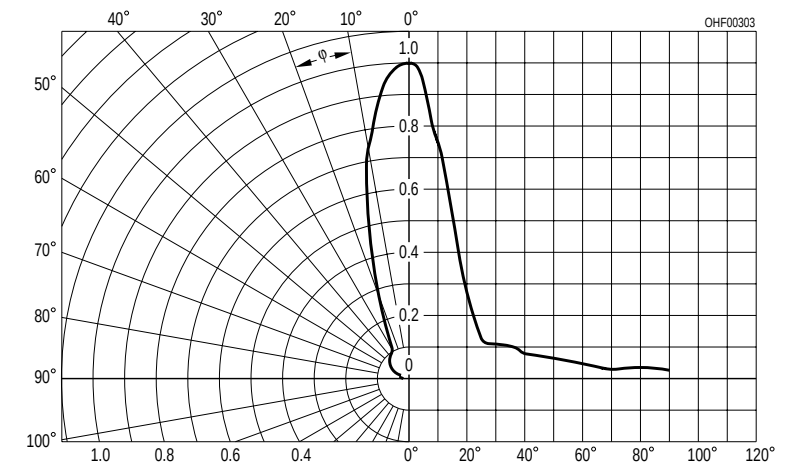
Total Power Dissipation
$P_{tot} = f(T_A)$



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

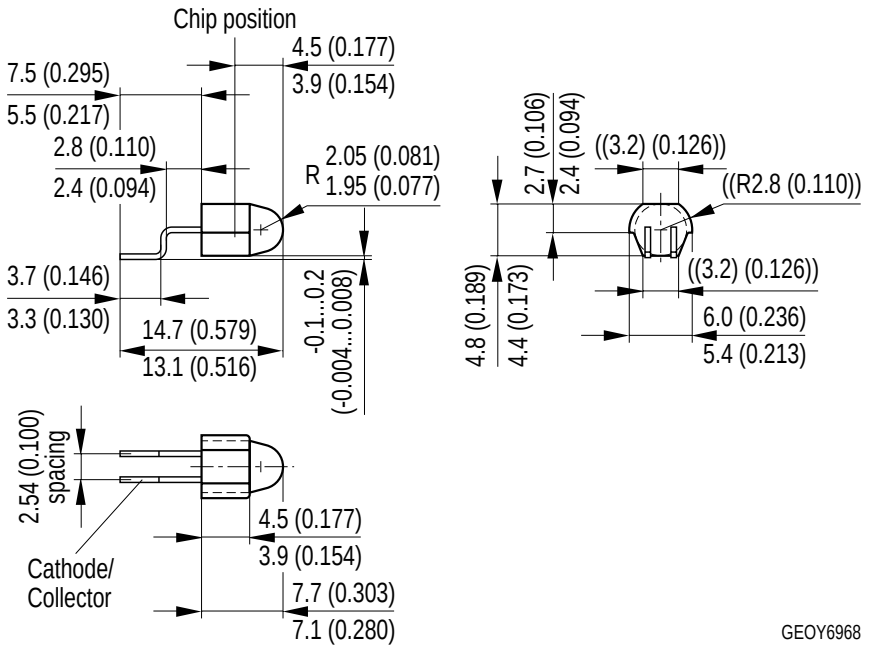


Directional Characteristics
$S_{rel} = f(\varphi)$

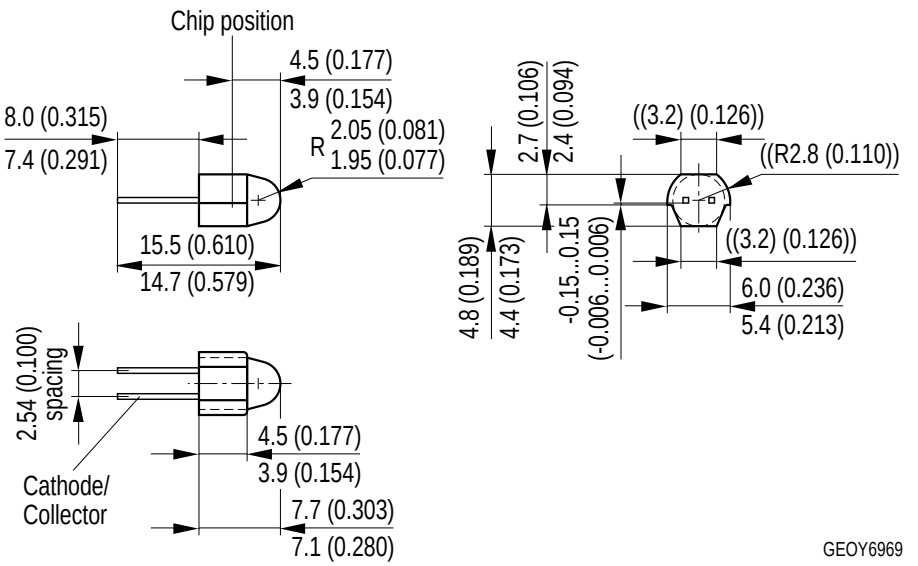


Maßzeichnung
Package Outlines

SFH 2500/FA



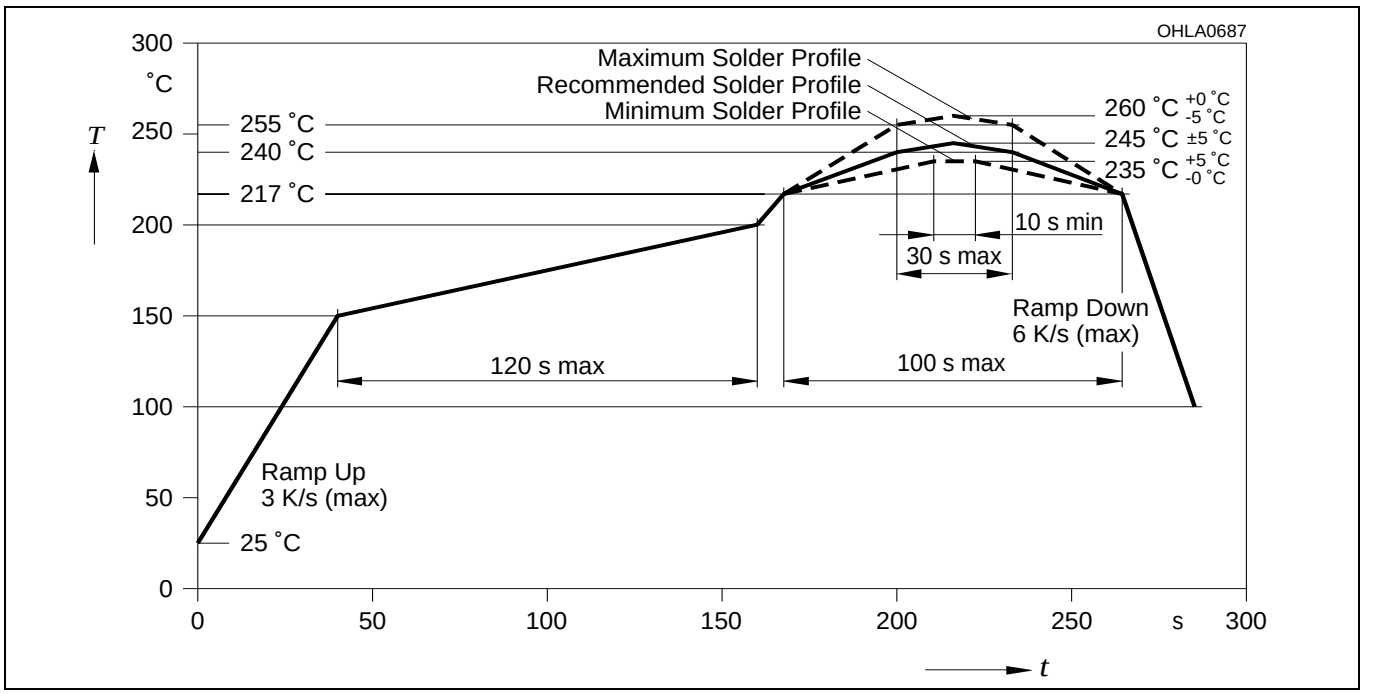
SFH 2505/FA



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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