

# Silizium-PIN-Fotodiode mit Tageslichtsperrfilter

## Silicon PIN Photodiode with Daylight Filter

### Lead (Pb) Free Product - RoHS Compliant

SFH 235 FA



#### Wesentliche Merkmale

- Speziell geeignet für Anwendungen bei 880 nm
- Kurze Schaltzeit (typ. 20 ns)
- 5 mm-Plastikbauform im LED-Gehäuse
- Auch gegurtet lieferbar

#### Anwendungen

- IR-Fernsteuerung von Fernseh- und Rundfunkgeräten, Videorecordern, Lichtdimmern und Gerätefernsteuerungen
- Lichtschranken für Gleich- und Wechsellichtbetrieb

#### Features

- Especially suitable for applications of 880 nm
- Short switching time (typ. 20 ns)
- 5 mm LED plastic package
- Also available on tape and reel

#### Applications

- IR-remote control of hi-fi and TV sets, video tape recorders, dimmers, remote control of various equipment
- Photointerrupters

Typ Type	Bestellnummer Ordering Code
SFH 235 FA	Q62702P0273

**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
Sperrspannung Reverse voltage	$V_R$	32	V
Verlustleistung, $T_A = 25\text{ °C}$ Total power dissipation	$P_{tot}$	150	mW

**Kennwerte ( $T_A = 25\text{ °C}$ ,  $\lambda = 870\text{ nm}$ )**  
**Characteristics**

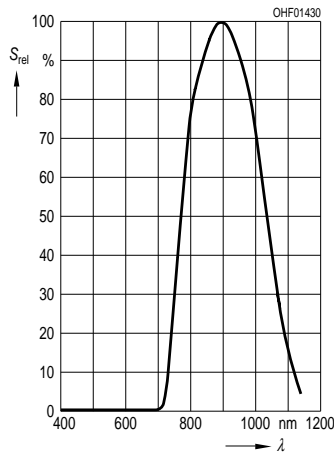
Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Fotostrom Photocurrent $V_R = 5\text{ V}$ , $E_e = 1\text{ mW/cm}^2$	$I_P$	50 ( $\geq 40$ )	$\mu\text{A}$
Wellenlänge der max. Fotoempfindlichkeit Wavelength of max. sensitivity	$\lambda_{S\text{ max}}$	900	nm
Spektraler Bereich der Fotoempfindlichkeit $S = 10\%$ von $S_{\text{max}}$ Spectral range of sensitivity $S = 10\%$ of $S_{\text{max}}$	$\lambda$	740 ... 1120	nm
Bestrahlungsempfindliche Fläche Radiant sensitive area	$A$	7	$\text{mm}^2$
Abmessung der bestrahlungsempfindlichen Fläche Dimensions of radiant sensitive area	$L \times B$ $L \times W$	$2.65 \times 2.65$	$\text{mm} \times \text{mm}$
Halbwinkel Half angle	$\varphi$	$\pm 65$	Grad deg.
Dunkelstrom, $V_R = 10\text{ V}$ Dark current	$I_R$	2 ( $\leq 30$ )	nA
Spektrale Fotoempfindlichkeit Spectral sensitivity	$S_\lambda$	0.63	A/W
Quantenausbeute Quantum yield	$\eta$	0.9	Electrons Photon
Leerlaufspannung, $E_e = 0.5\text{ mW/cm}^2$ Open-circuit voltage	$V_O$	320 ( $\geq 250$ )	mV

**Kennwerte** ( $T_A = 25\text{ °C}$ ,  $\lambda = 870\text{ nm}$ )  
**Characteristics** (cont'd)

Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Kurzschlußstrom, $E_e = 0.5\text{ mW/cm}^2$ Short-circuit current	$I_{SC}$	22	$\mu\text{A}$
Anstiegs- und Abfallzeit des Fotostromes Rise and fall time of the photocurrent $R_L = 50\ \Omega$ ; $V_R = 5\text{ V}$ ; $\lambda = 850\text{ nm}$ ; $I_p = 800\ \mu\text{A}$	$t_r, t_f$	20	ns
Durchlaßspannung, $I_F = 100\text{ mA}$ , $E = 0$ Forward voltage	$V_F$	1.3	V
Kapazität, $V_R = 0\text{ V}$ , $f = 1\text{ MHz}$ , $E = 0$ Capacitance	$C_0$	72	pF
Temperaturkoeffizient von $V_O$ Temperature coefficient of $V_O$	$TC_V$	- 2.6	mV/K
Temperaturkoeffizient von $I_{SC}$ Temperature coefficient of $I_{SC}$	$TC_I$	0.03	%/K
Rauschäquivalente Strahlungsleistung Noise equivalent power $V_R = 10\text{ V}$	$NEP$	$4.0 \times 10^{-14}$	$\frac{\text{W}}{\sqrt{\text{Hz}}}$
Nachweisgrenze, $V_R = 10\text{ V}$ Detection limit	$D^*$	$6.6 \times 10^{12}$	$\frac{\text{cm} \times \sqrt{\text{Hz}}}{\text{W}}$

**Relative Spectral Sensitivity**

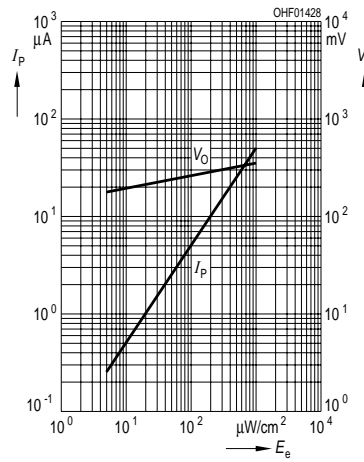
$S_{rel} = f(\lambda)$



**Photocurrent  $I_P = f(E_e), V_R = 5 V$**

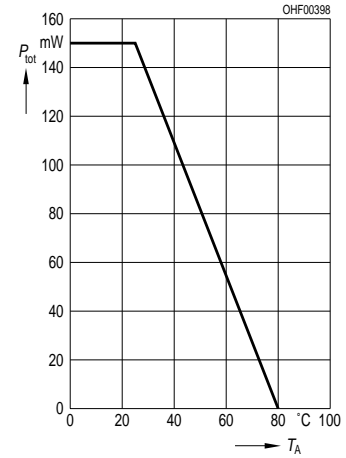
**Open-Circuit Voltage**

$V_O = f(E_e)$



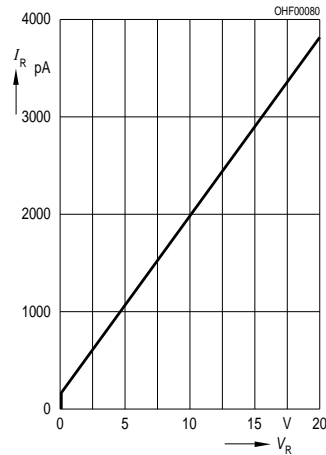
**Total Power Dissipation**

$P_{tot} = f(T_A)$



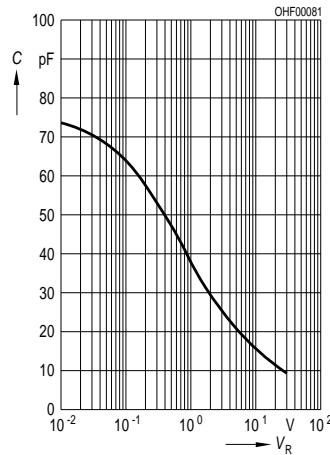
**Dark Current**

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



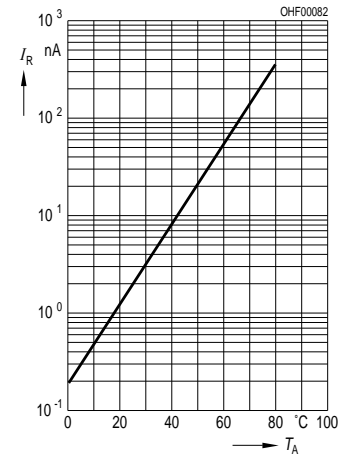
**Capacitance**

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



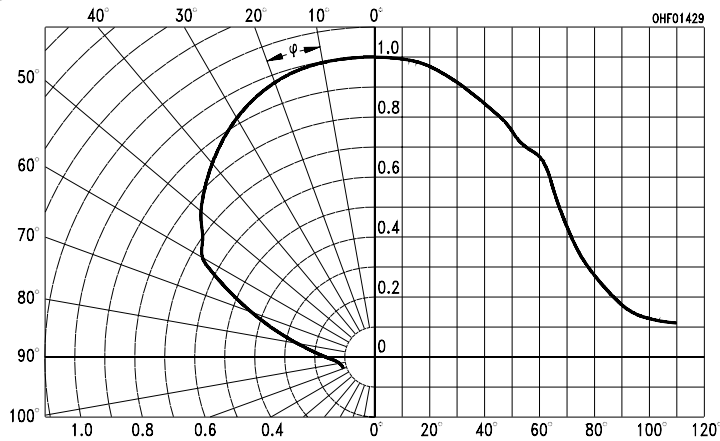
**Dark Current**

$I_R = f(T_A), V_R = 10 V, E = 0$

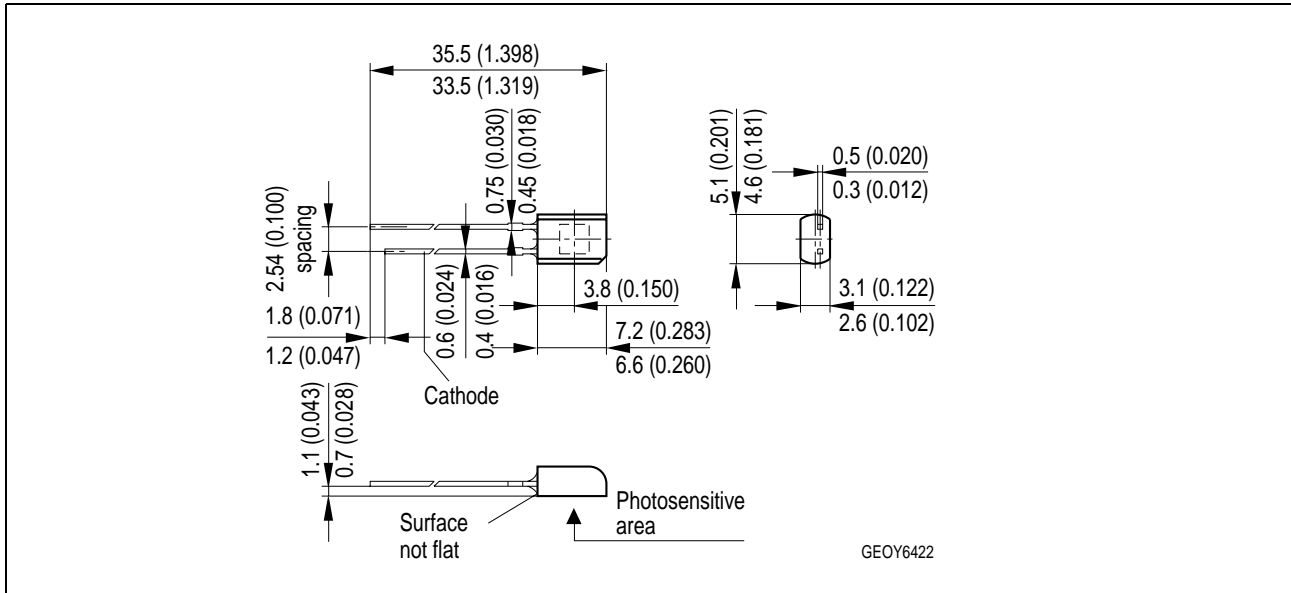


**Directional Characteristics**

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



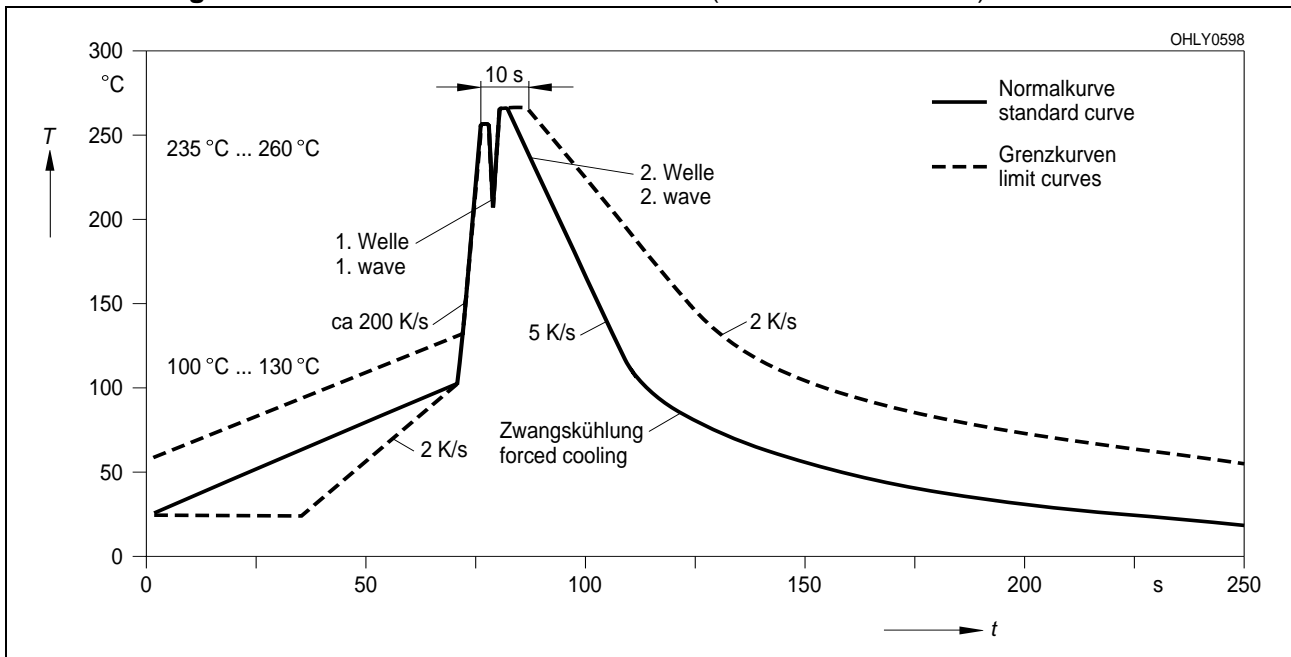
**Maßzeichnung  
Package Outlines**



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

**Lötbedingungen  
Soldering Conditions  
Wellenlöten (TTW)  
TTW Soldering**

(nach CECC 00802)  
(acc. to CECC 00802)



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