

Silizium-PIN-Fotodiode
Silicon PIN Photodiode
Lead (Pb) Free Product - RoHS Compliant

SFH 203 P
SFH 203 PFA



SFH 203 P



SFH 203 PFA

Wesentliche Merkmale

- Wellenlängenbereich ($S_{10\%}$) 400nm bis 1100nm (SFH 203 P) und 750nm bis 1100nm (SFH 203 PFA)
- Kurze Schaltzeit (typ. 5 ns)
- 5 mm-Plastikbauform im LED-Gehäuse

Features

- Wavelength range ($S_{10\%}$) 400 nm to 1100 nm (SFH 203 P) and 750nm to 1100nm (SFH 203 PFA)
- Short switching time (typ. 5 ns)
- 5 mm LED plastic package

Anwendungen

- Industrieelektronik
- „Messen/Steuern/Regeln“
- Schnelle Lichtschranken

Applications

- Industrial electronics
- For control and drive circuits
- High speed photointerrupters

Typ Type	Bestellnummer Ordering Code	Fotostrom, $E_v=1000$ lx, standard light A, $V_R = 5$ V (SFH 203 P) Photocurrent, $E_e=1$ mW/cm ² , $\lambda = 870$ nm, $V_R = 5$ V (SFH 203 PFA) I_p (μA)
SFH 203 P	Q62702P0942	9.5 (≥ 5.0)
SFH 203 PFA	Q62702P0947	6.2 (≥ 3.6)

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 $V_R (t < 2 \text{ min})$	20 50	V V
Verlustleistung Total power dissipation	P_{tot}	150	mW

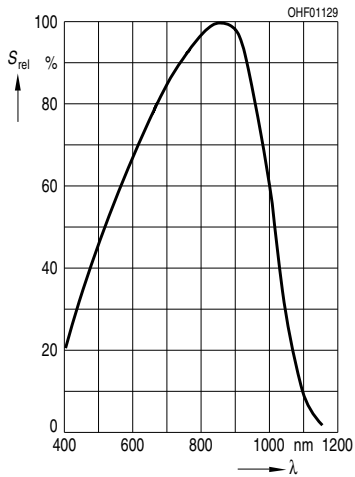
Kennwerte ($T_A = 25 \text{ °C}$)
Characteristics

Bezeichnung Parameter	Symbol Symbol	Wert Value		Einheit Unit
		SFH 203 P	SFH 203 PFA	
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	9.5 (≥ 5.0) –	– 6.2 (≥ 3.6)	μA μA
Wellenlänge der max. Fotoempfindlichkeit Wavelength of max. sensitivity	$\lambda_{S \text{ max}}$	850	900	nm
Spektraler Bereich der Fotoempfindlichkeit $S = 10 \text{ \%}$ von S_{max} Spectral range of sensitivity $S = 10 \text{ \%}$ 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	± 75	± 75	Grad deg.
Dunkelstrom, $V_R = 20 \text{ V}$ Dark current	I_R	$1 (\leq 10)$	$1 (\leq 10)$	nA
Spektrale Fotoempfindlichkeit, $\lambda = 850 \text{ nm}$ Spectral sensitivity	S_λ	0.62	0.59	A/W
Quantenausbeute, $\lambda = 850 \text{ nm}$ Quantum yield	η	0.89	0.86	Electrons Photon

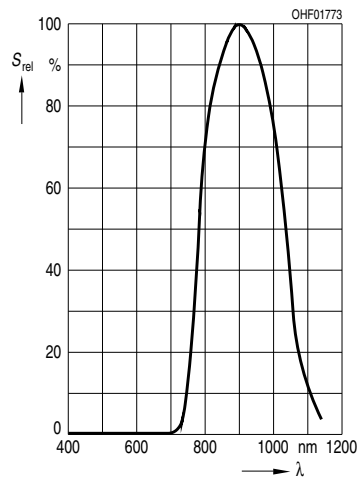
Kennwerte ($T_A = 25\text{ °C}$)**Characteristics** (cont'd)

Bezeichnung Parameter	Symbol Symbol	Wert Value		Einheit Unit
		SFH 203 P	SFH 203 PFA	
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	350 (≥ 300) –	– 300 (≥ 250)	mV mV
Kurzschlußstrom Short-circuit current $E_v = 1000\text{ lx}$, Normlicht/standard light A, $T = 2856\text{ K}$ $E_e = 0.5\text{ mW/cm}^2$, $\lambda = 870\text{ nm}$	I_{SC} I_{SC}	9.3 –	– 3.0	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	11	11	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 –	– 0.1	%/K
Rauschäquivalente Strahlungsleistung Noise equivalent power $V_R = 20\text{ V}$, $\lambda = 850\text{ nm}$	NEP	2.9×10^{-14}	2.9×10^{-14}	$\frac{\text{W}}{\sqrt{\text{Hz}}}$
Nachweisgrenze, $V_R = 20\text{ V}$, $\lambda = 850\text{ nm}$ Detection limit	D^*	3.5×10^{12}	3.5×10^{12}	$\frac{\text{cm} \times \sqrt{\text{Hz}}}{\text{W}}$

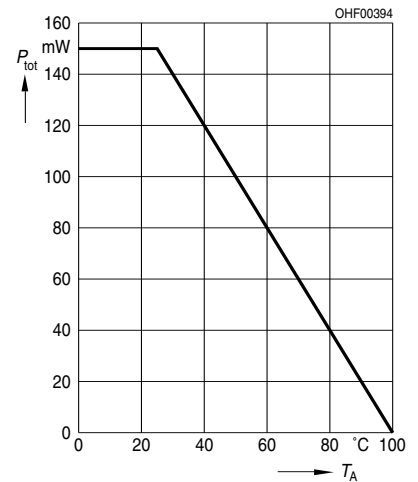
Relative Spectral Sensitivity
SFH 203 P, $S_{rel} = f(\lambda)$



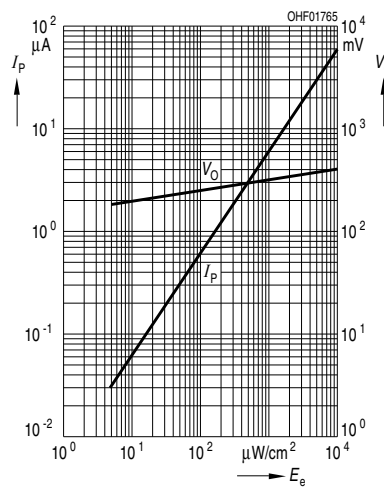
Relative Spectr. Sensitivity
SFH 203 PFA, $S_{rel} = f(\lambda)$



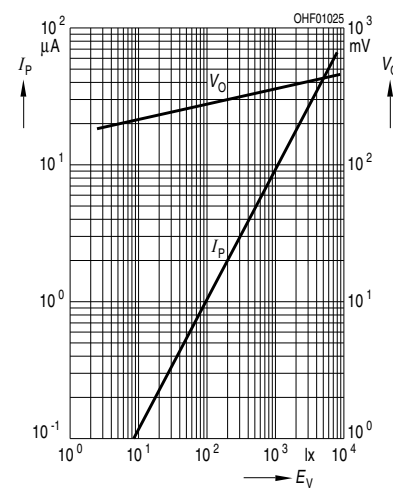
Total Power Dissipation
 $P_{tot} = f(T_A)$



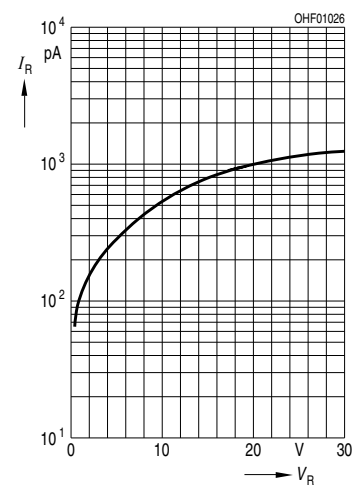
Photocurrent $I_P = f(E_e)$, $V_R = 5\text{ V}$
Open-Circuit Voltage $V_O = f(E_e)$
SFH 203 PFA



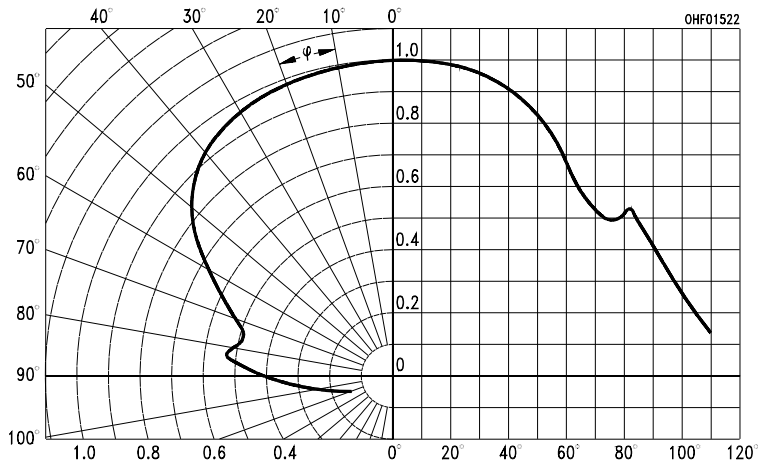
Photocurrent $I_P = f(E_v)$, $V_R = 5\text{ V}$
Open-Circuit Voltage $V_O = f(E_v)$
SFH 203 P



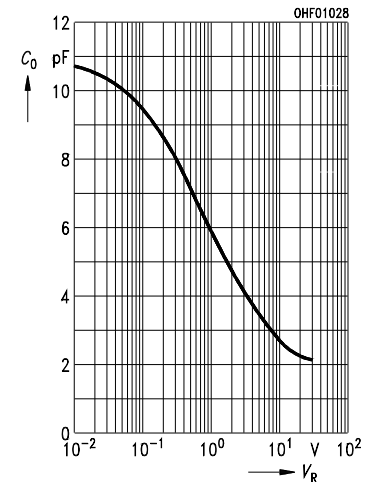
Dark Current
 $I_R = f(V_R), E = 0$



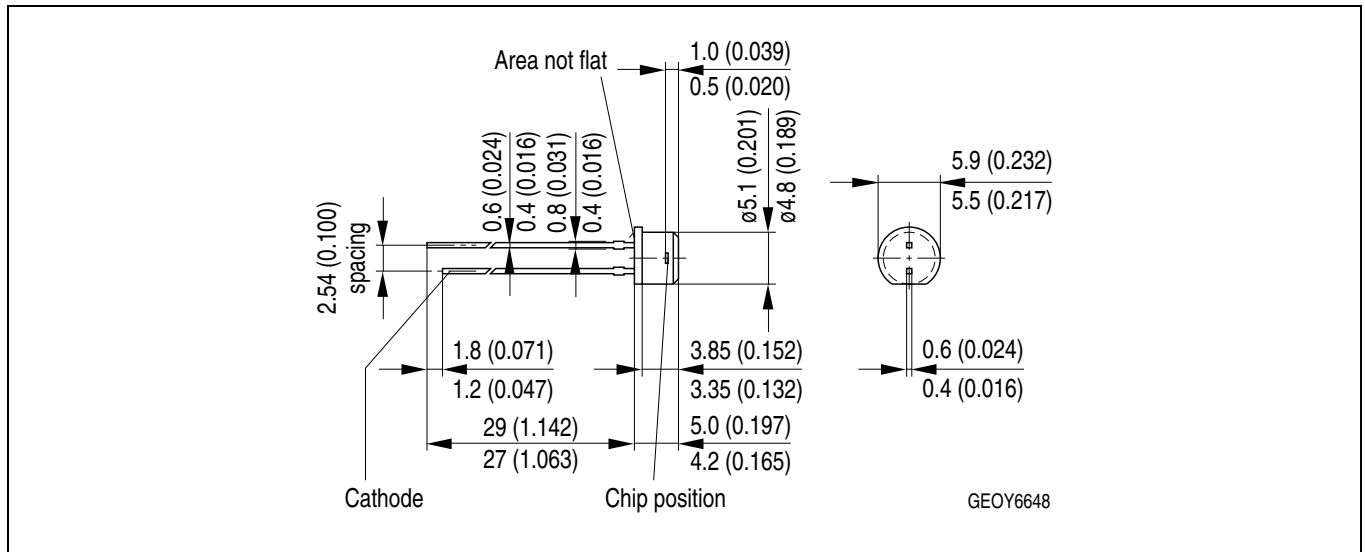
Directional Characteristics
 $S_{rel} = f(\varphi)$



Capacitance
 $C = f(V_R), f = 1\text{ MHz}, E = 0$



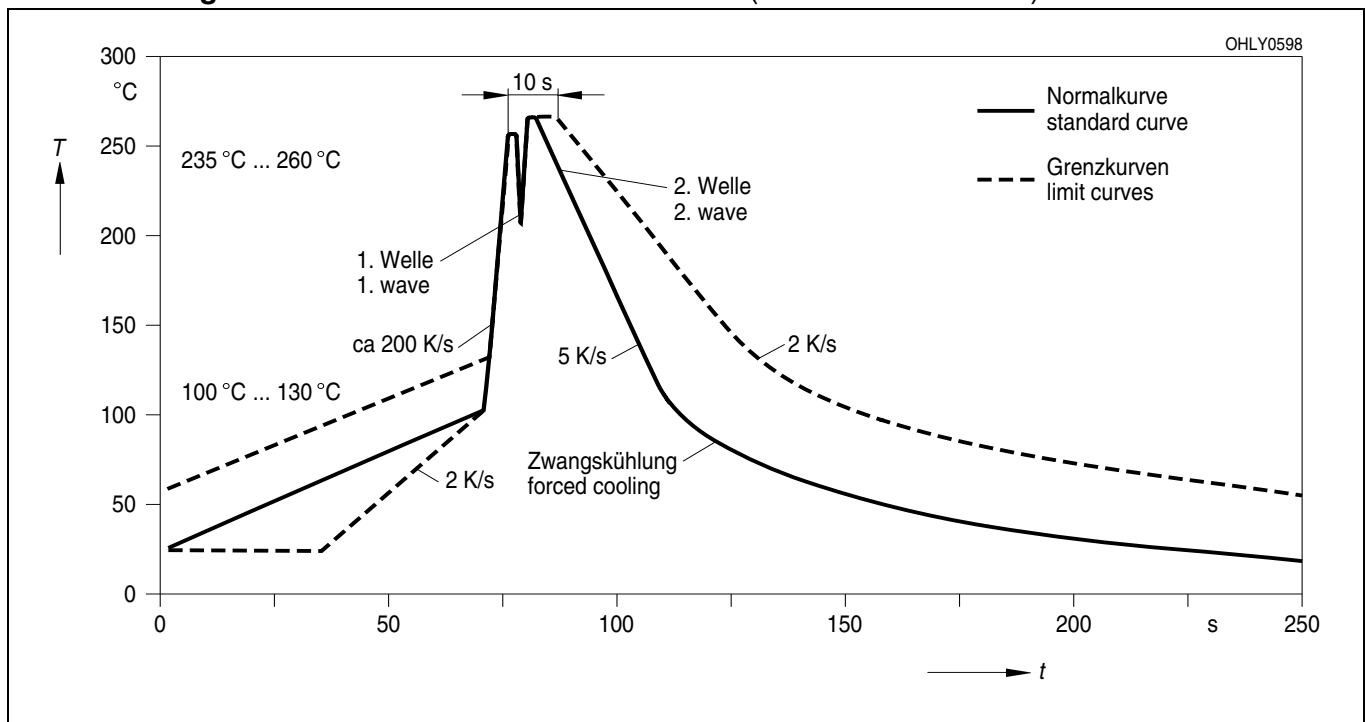
Maßzeichnung Package Outlines



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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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.

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