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

SFH 221

Wesentliche Merkmale

- Speziell geeignet für Anwendungen im Bereich von 400 nm bis 1100 nm
- Hohe Fotoempfindlichkeit
- Hermetisch dichte Metallbauform (ähnlich TO-5), geeignet bis 125 °C[1)]
- Doppeldiode von extrem hoher Gleichmäβigkeit

Features

- Especially suitable for applications from 400 nm to 1100 nm
- High photosensitivity
- Hermetically sealed metal package (similar to TO-5), suitable up to 125 °C[1)]
- Double diode with extremely high homogeneousness

Anwendungen

- Nachlaufsteuerungen
- Kantenführung
- Industrieelektronik
- „Messen/Steuern/Regeln“

Applications

- Follow-up controls
- Edge drives
- Industrial electronics
- For control and drive circuits

Typ Type	Bestellnummer Ordering Code
SFH 221	Q62702P0270

1) Eine Abstimmung der Einsatzbedingungen mit dem Hersteller wird empfohlen bei T_A > 85 °C

1) For operating conditions of T_A > 85 °C please contact us.

Grenzwerte
Maximum Ratings

Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Betriebs- und Lagertemperatur Operating and storage temperature range	T_{op}; T_{stg}	– 40 … + 125	°C
Sperrspannung Reverse voltage	V_R	10	V
Isolationsspannung gegen Gehäuse Insulation voltage vs. package	V_{IS}	100	V
Verlustleistung, T_A = 25 °C Total power dissipation	P_{tot}	50	mW

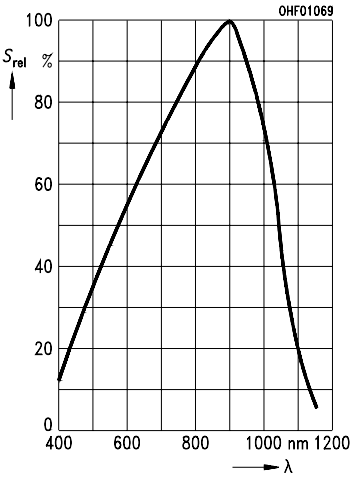
Kennwerte (T_A = 25 °C, Normlicht A, T = 2856 K) für jede Einzeldiode
Characteristics (T_A = 25 °C, standard light A, T = 2856 K) per single diode

Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Fotoempfindlichkeit, V_R = 5 V Spectral sensitivity	S	24 (≥ 15)	nA/lx
Wellenlänge der max. Fotoempfindlichkeit Wavelength of max. sensitivity	$\lambda_{S\ max}$	900	nm
Spektraler Bereich der Fotoempfindlichkeit S = 10% von S_{max} Spectral range of sensitivity S = 10% of S_{max}	λ	400 … 1100	nm
Bestrahlungsempfindliche Fläche Radiant sensitive area	A	1.54	mm^2
Abmessung der bestrahlungsempfindlichen Fläche Dimensions of radiant sensitive area	$L \times B$ $L \times W$	0.7 × 2.2	mm²
Halbwinkel Half angle	φ	± 55	Grad deg.
Dunkelstrom, V_R = 10 V Dark current	I_R	10 (≤ 100)	nA
Spektrale Fotoempfindlichkeit, λ = 850 nm Spectral sensitivity	S_λ	0.55	A/W

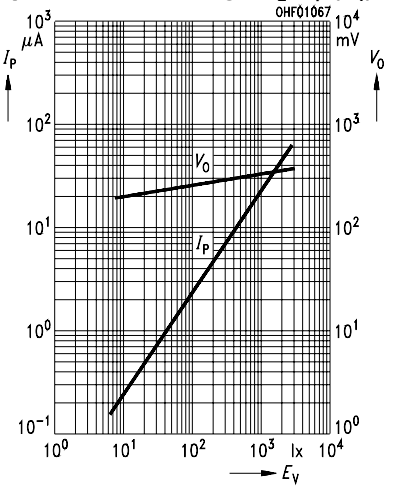
Kennwerte (T_A = 25 °C, Normlicht A, T = 2856 K) für jede Einzeldiode
Characteristics (T_A = 25 °C, standard light A, T = 2856 K) per single diode (cont'd)

Bezeichnung **Parameter**	**Symbol** **Symbol**	**Wert** **Value**	**Einheit** **Unit**
Maximale Abweichung der Fotoempfindlichkeit vom Mittelwert Max. deviation of the system spectral sensitivity from the average	ΔS	± 5	%
Quantenausbeute, λ = 850 nm Quantum yield	η	0.80	Electrons Photon
Leerlaufspannung, E_v = 1000 lx Open-circuit voltage	V_O	330 (≥ 280)	mV
Kurzschluβstrom, E_v = 1000 lx Short-circuit current	I_{SC}	24	µA
Isolationsstrom, V_{IS} = 100 V Insulation current	I_{IS}	0.1 (≤ 1)	nA
Anstiegs- und Abfallzeit des Fotostromes Rise and fall time of the photocurrent R_L = 1 kΩ; V_R = 5 V; λ = 850 nm; I_p = 25 µA	t_r, t_f	500	ns
Durchlaβspannung, I_F = 40 mA, E = 0 Forward voltage	V_F	1.0	V
Kapazität, V_R = 0 V, f = 1 MHz, E = 0 Capacitance	C_0	25	pF
Temperaturkoeffizient für V_O Temperature coefficient of V_O	TC_V	– 2.6	mV/K
Temperaturkoeffizient für I_{SC} Temperature coefficient of I_{SC}	TC_I	0.18	%/K
Rauschäquivalente Strahlungsleistung Noise equivalent power V_R = 10 V, λ = 850 nm	NEP	1.0×10^{-13}	$\frac{W}{\sqrt{Hz}}$
Nachweisgrenze, V_R = 10 V, λ = 850 nm Detection limit	D*	1.2×10^{12}	$\frac{cm \times \sqrt{Hz}}{W}$

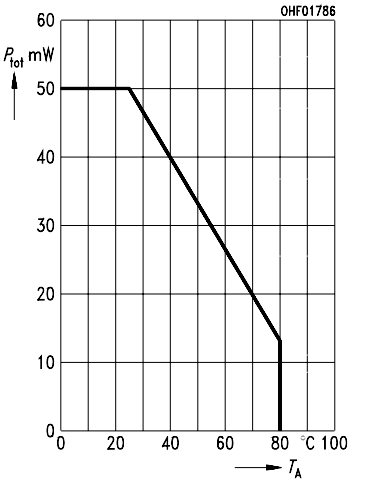
Relative Spectral Sensitivity
$S_{rel} = f(\lambda)$



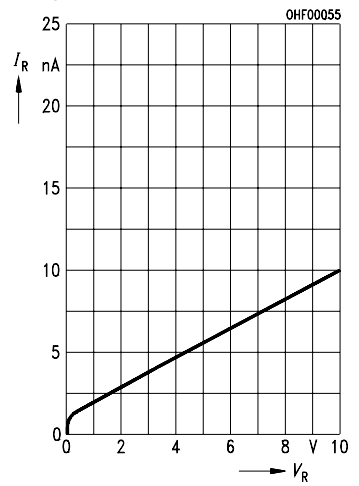
Photocurrent $I_P = f(E_v)$, V_R = 5 V
Open-Circuit-Voltage $V_L = f(E_v)$



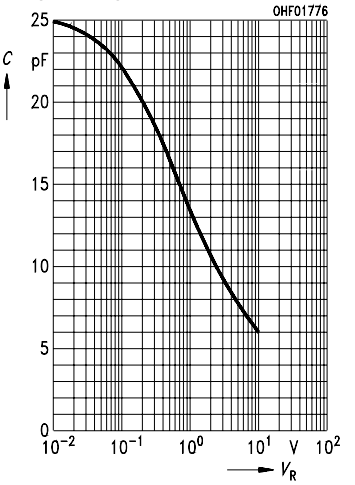
Total Power Dissipation
$P_{tot} = f(T_A)$



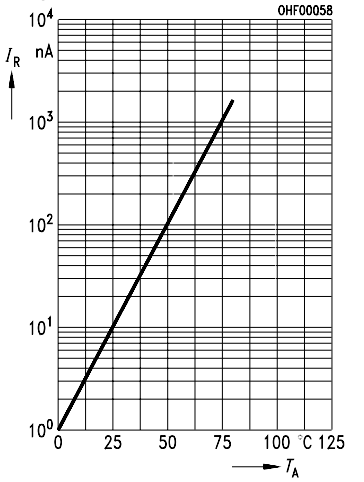
Dark Current
$I_R = f(V_R)$, E = 0



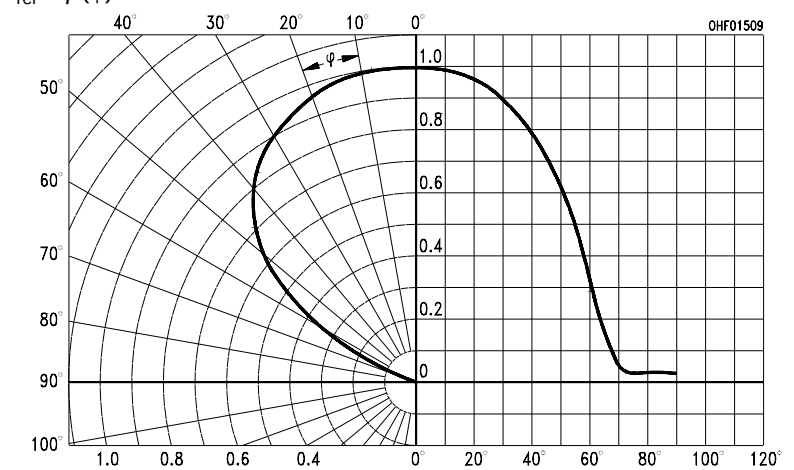
Capacitance
$C = f(V_R)$, f = 1 MHz, E = 0



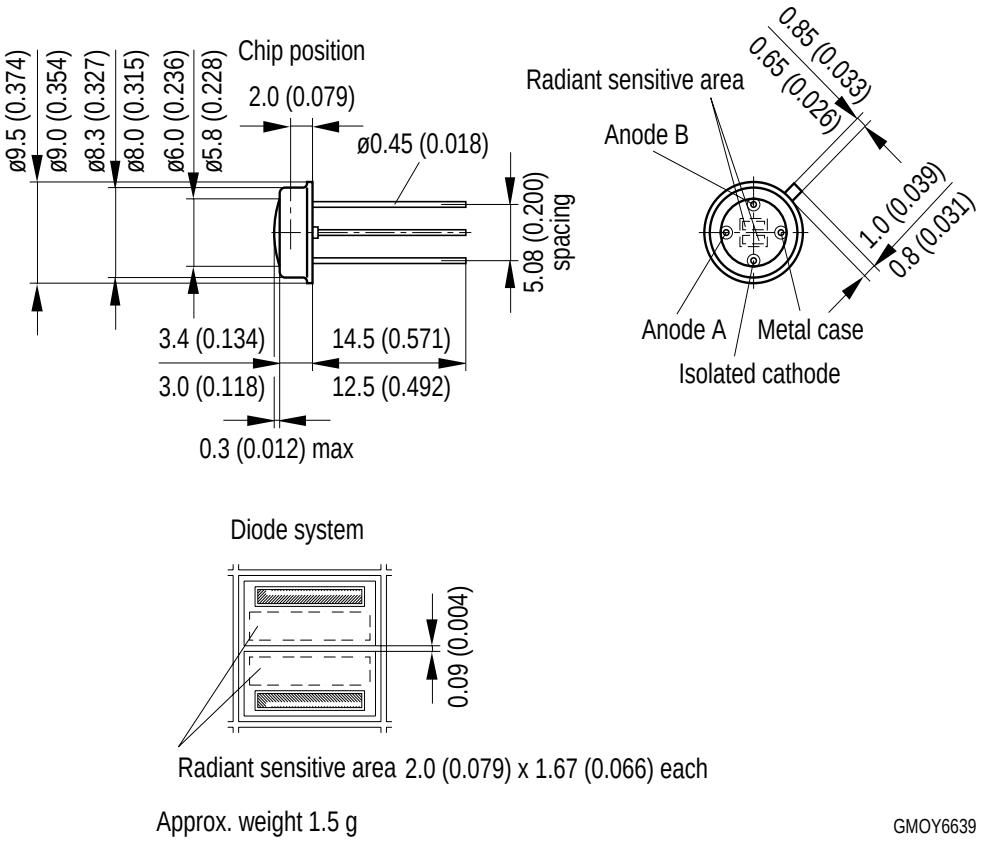
Dark Current
$I_R = f(T_A)$, V_R = 1 V, E = 0



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

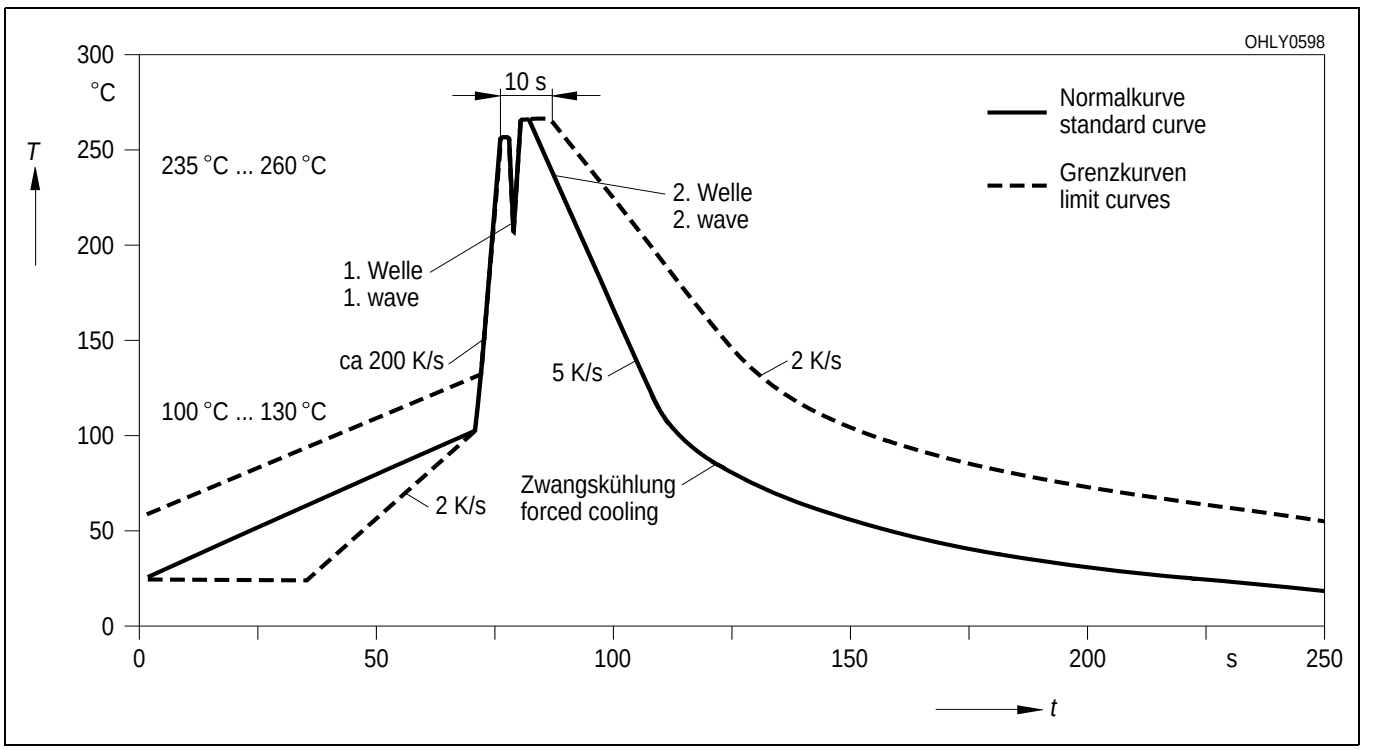


Maßzeichnung
Package Outlines



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

Lötbedingungen
Soldering Conditions
Wellenlöten (TTW) (nach CECC 00802)
TTW Soldering (acc. to CECC 00802)



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[1] A critical component is a component usedin 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.