Silizium-Differential-Fotodiode
Silicon Differential Photodiode

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
- Doppeldiode von extrem hoher Gleichmäßigkeit

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
- 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	Gehäuse Package
SFH 221	Q62702-P270	Lötspieße im 5.08-mm-Raster (^{2}/$_{10}$”) solder tabs 5.08 mm (^{2}/$_{10}$”) lead spacing

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
Löttemperatur (Lötstelle 2 mm vom Gehäuse entfernt bei Lötzeit $t \leq 3$ s) Soldering temperature in 2 mm distance from case bottom ($t \leq 3$ s)	T_S	230	°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

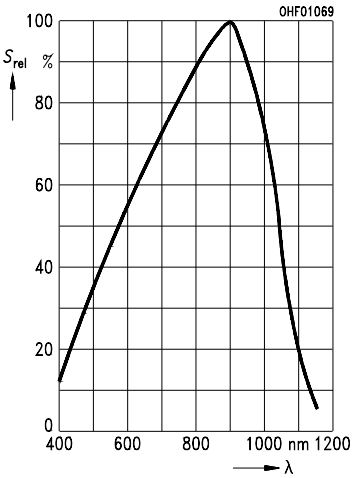
Kennwerte (T_A = 25 °C, Normlicht A, T = 2856 K) für jede Einzeldiode
Characteristics (T_A = 25 °C, standard light A, T = 2856 K) per single diode

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	mm
Abstand Chipoberfläche zu Gehäuseoberfläche Distance chip front to case surface	H	1.1 … 1.6	mm
Halbwinkel Half angle	φ	± 55	Grad deg.

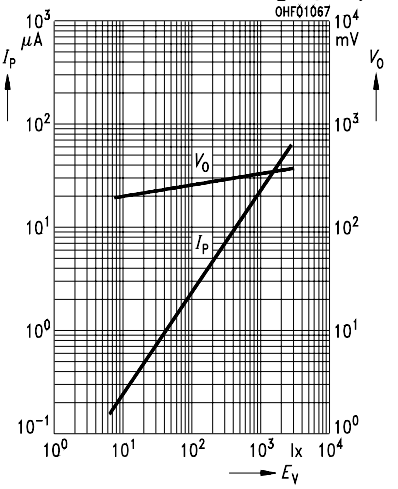
Kennwerte (T_A = 25 °C, Normlicht A, T = 2856 K) für jede Einzeldiode
Characteristics (T_A = 25 °C, standard light A, T = 2856 K) per single diode (cont'd)

Bezeichnung **Parameter**	**Symbol** **Symbol**	**Wert** **Value**	**Einheit** **Unit**
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
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_L	330 (≥ 280)	mV
Kurzschluβstrom, E_v = 1000 lx Short-circuit current	I_K	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_L Temperature coefficient of V_L	TC_V	– 2.6	mV/K
Temperaturkoeffizient für I_K Temperature coefficient of I_K	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}	$\frac{cm \times \sqrt{Hz}}{W}$

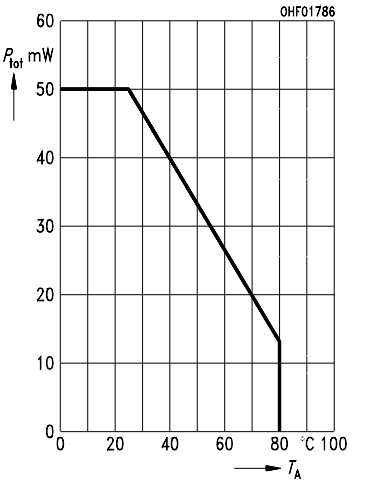
Relative Spectral Sensitivity
$S_{rel} = f(\lambda)$



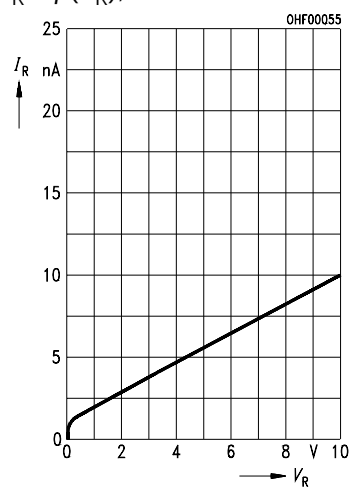
Photocurrent $I_P = f(E_V)$, V_R = 5 V
Open-Circuit-Voltage $V_L = f(E_V)$



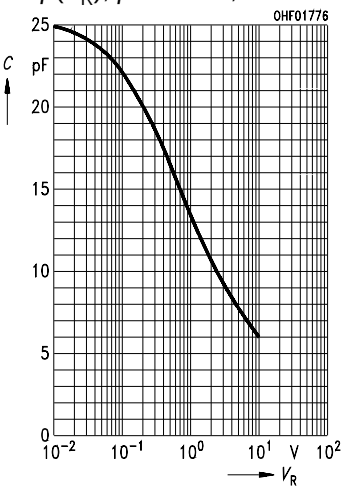
Total Power Dissipation
$P_{tot} = f(T_A)$



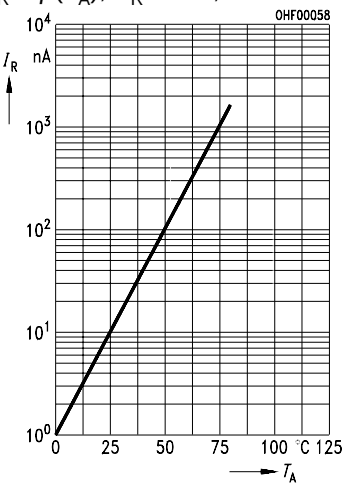
Dark Current
$I_R = f(V_R)$, E = 0



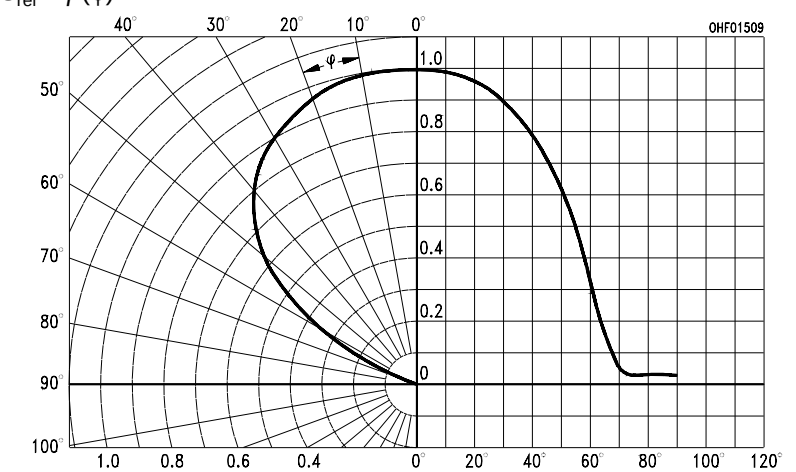
Capacitance
$C = f(V_R)$, f = 1 MHz, E = 0



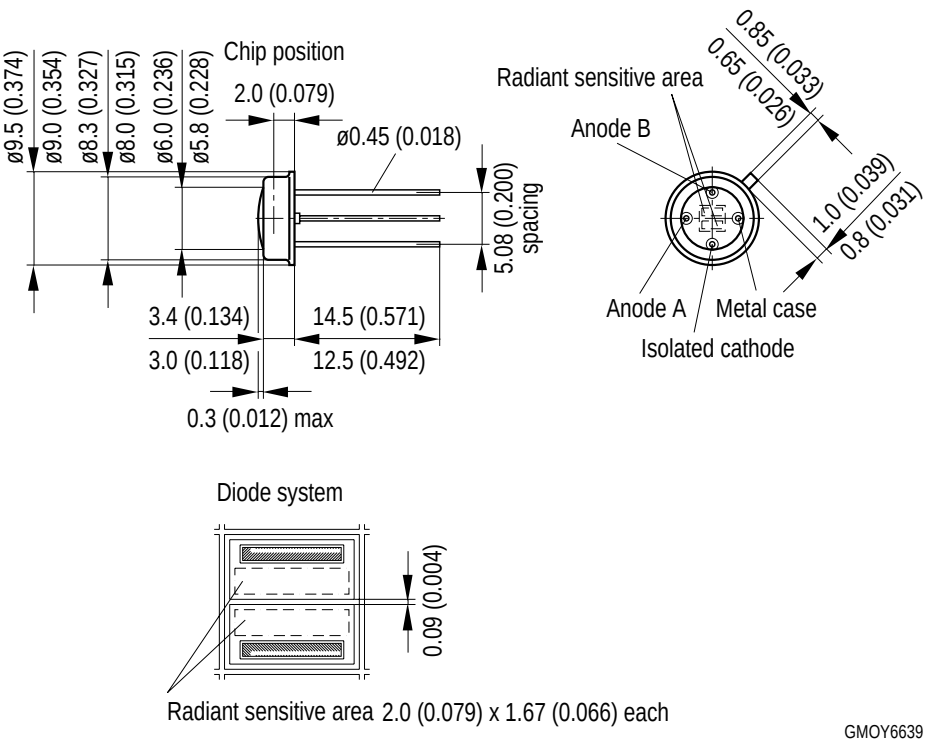
Dark Current
$I_R = f(T_A)$, V_R = 1 V, E = 0



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



Maßzeichnung
Package Outlines



Maße werden wie folgt angegeben: mm (inch) / Dimensions are specified as follows: mm (inch).

Published by OSRAM Opto Semiconductors GmbH & Co. OHG
Wernerwerkstrasse 2, D-93049 Regensburg

Attention please!
The information describes the type of component and shall not be considered as assured characteristics.
Terms of delivery and rights to change design reserved. Due to technical requirements components may contain dangerous substances. For information on the types in question please contact our Sales Organization.
Packing
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.
Components used in life-support devices or systems must be expressly authorized for such purpose! Critical components [1] , may only be used in life-support devices or systems [2] with the express written approval of OSRAM OS.
[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.