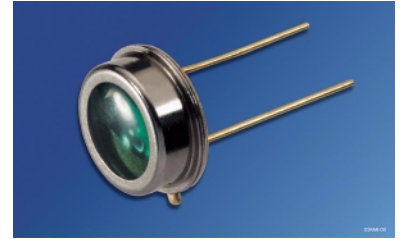


Silizium-Fotodiode für den sichtbaren Spektralbereich Silicon Photodiode for the Visible Spectral Range

BPW 21



Wesentliche Merkmale

- Speziell geeignet für Anwendungen im Bereich von 350 nm bis 820 nm
- Angepaßt an die Augenempfindlichkeit (V_λ)
- Hermetisch dichte Metallbauform (ähnlich TO-5)

Anwendungen

- Belichtungsmesser für Tageslicht
- Für Kunstlicht mit hoher Farbtemperatur in der Fotografie und Farbanalyse

Features

- Especially suitable for applications from 350 nm to 820 nm
- Adapted to human eye sensitivity (V_λ)
- Hermetically sealed metal package (similar to TO-5)

Applications

- Exposure meter for daylight
- For artificial light of high color temperature in photographic fields and color analysis

Typ Type	Bestellnummer Ordering Code
BPW 21	Q62702-P885

Grenzwerte
Maximum Ratings

Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Betriebs- und Lagertemperatur Operating and storage temperature range	$T_{op}; T_{stg}$	- 40 ... + 80	°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	235	°C
Sperrspannung Reverse voltage	V_R	10	V
Verlustleistung, $T_A = 25$ °C Total power dissipation	P_{tot}	250	mW

Kennwerte ($T_A = 25$ °C, Normlicht A, $T = 2856$ K)

Characteristics ($T_A = 25$ °C, standard light A, $T = 2856$ K)

Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Fotoempfindlichkeit, $V_R = 5$ V Spectral sensitivity	S	10 (≥ 5.5)	nA/lx
Wellenlänge der max. Fotoempfindlichkeit Wavelength of max. sensitivity	$\lambda_{S \max}$	550	nm
Spektraler Bereich der Fotoempfindlichkeit $S = 10\%$ von $S_{\max}$ Spectral range of sensitivity $S = 10\%$ of $S_{\max}$	λ	350 ... 820	nm
Bestrahlungsempfindliche Fläche Radiant sensitive area	A	7.34	mm ²
Abmessung der bestrahlungsempfindlichen Fläche Dimensions of radiant sensitive area	$L \times B$ $L \times W$	2.73×2.73	mm $\times$ mm
Abstand Chipoberfläche zu Gehäuseoberfläche Distance chip front to case surface	H	1.9 ... 2.3	mm
Halbwinkel Half angle	φ	± 55	Grad deg.

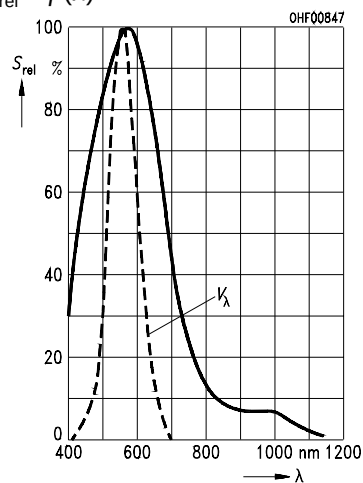
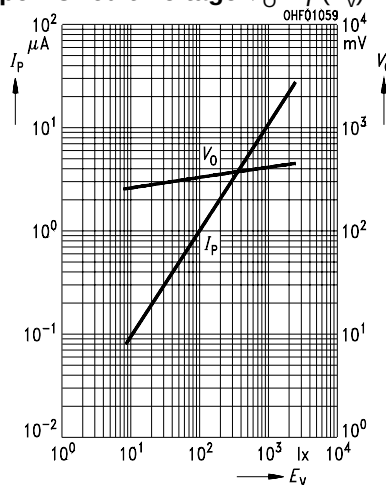
Kennwerte ($T_A = 25\text{ °C}$, Normlicht A, $T = 2856\text{ K}$)

Characteristics ($T_A = 25\text{ °C}$, standard light A, $T = 2856\text{ K}$) (cont'd)

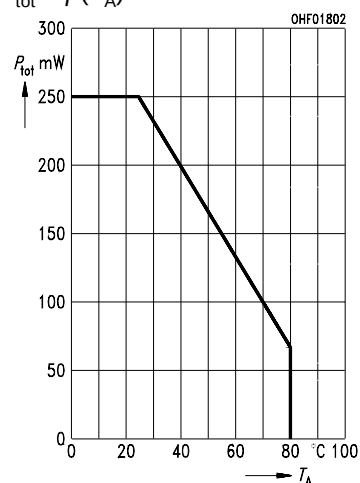
Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Dunkelstrom Dark current $V_R = 5\text{ V}$ $V_R = 10\text{ mV}$	I_R I_R	2 (≤ 30) 8 (≤ 200)	nA pA
Spektrale Fotoempfindlichkeit, $\lambda = 550\text{ nm}$ Spectral sensitivity	S_λ	0.34	A/W
Quantenausbeute, $\lambda = 550\text{ nm}$ Quantum yield	η	0.80	<u>Electrons</u> Photon
Leerlaufspannung, $E_v = 1000\text{ lx}$ Open-circuit voltage	V_O	400 (≥ 320)	mV
Kurzschlußstrom, $E_v = 1000\text{ lx}$ Short-circuit current	I_{SC}	10	μA
Anstiegs- und Abfallzeit des Fotostromes Rise and fall time of the photocurrent $R_L = 1\text{ k}\Omega$; $V_R = 5\text{ V}$; $\lambda = 550\text{ nm}$; $I_p = 10\text{ }\mu\text{A}$	t_r, t_f	1.5	μs
Durchlaßspannung, $I_F = 100\text{ mA}$, $E = 0$ Forward voltage	V_F	1.2	V
Kapazität, $V_R = 0\text{ V}$, $f = 1\text{ MHz}$, $E = 0$ Capacitance	C_0	580	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	- 0.05	%/K
Rauschäquivalente Strahlungsleistung Noise equivalent power $V_R = 5\text{ V}$, $\lambda = 550\text{ nm}$	NEP	7.2×10^{-14}	$\frac{\text{W}}{\sqrt{\text{Hz}}}$
Nachweisgrenze, $V_R = 5\text{ V}$, $\lambda = 550\text{ nm}$ Detection limit	D^*	1×10^{12}	$\frac{\text{cm} \times \sqrt{\text{Hz}}}{\text{W}}$

Relative Spectral Sensitivity

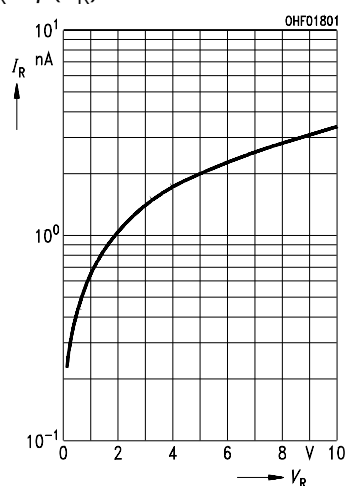
$S_{\text{rel}} = f(\lambda)$

**Photocurrent $I_P = f(E_V), V_R = 5 \text{ V}$
Open-Circuit Voltage $V_O = f(E_V)$** **Total Power Dissipation**

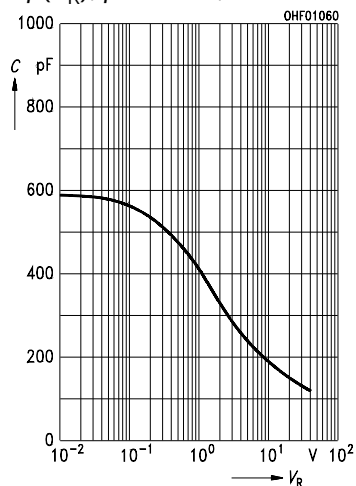
$P_{\text{tot}} = f(T_A)$

**Dark Current**

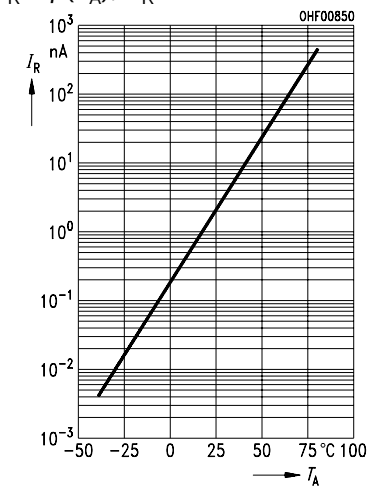
$I_R = f(V_R)$

**Capacitance**

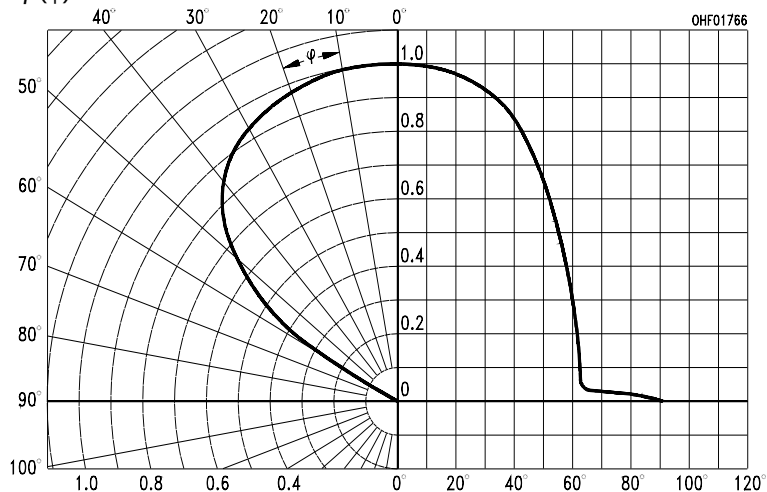
$C = f(V_R), f = 1 \text{ MHz}, E = 0$

**Dark Current**

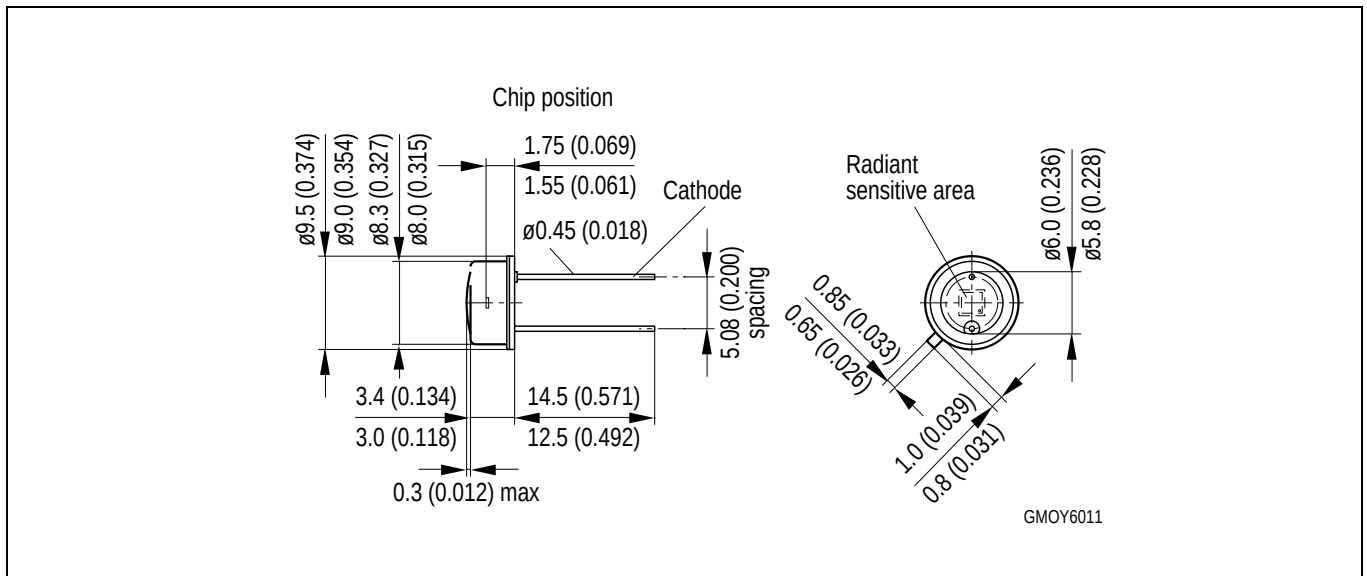
$I_R = f(T_A), V_R = 5 \text{ V}$

**Directional Characteristics**

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



Maßzeichnung Package Outlines



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

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Attention please!

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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 components¹, may only be used in life-support devices or systems² with the express written approval of OSRAM OS.

¹ A critical component is a component used in 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.