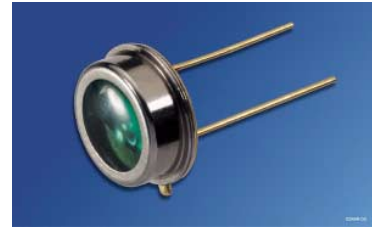


Silicon Photodiode for the Visible Spectral Range

Silicon Photodiode for the Visible Spectral Range

Lead (Pb) Free Product - RoHS Compliant

BPW 21



Wesentliche Merkmale

- Speziell geeignet für Anwendungen im Bereich von 350nm bis 820nm
- 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 350nm to 820nm
- Adapted to human eye sensitivity (V_{λ})
- Hermetically sealed metal package (similar to TO-5)

Application

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

Typ Type	Bestellnummer Ordering Code
BPW 21	Q62702P0885

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
Sperrspannung Reverse voltage	V_R	10	V
Verlustleistung, $T_A = 25\text{ °C}$ Total power dissipation	P_{tot}	250	mW

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

Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Fotoempfindlichkeit, $V_R = 5\text{ V}$ 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 × mm
Halbwinkel Half angle	φ	± 55	Grad deg.
Dunkelstrom $V_R = 10\text{ V}$ 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

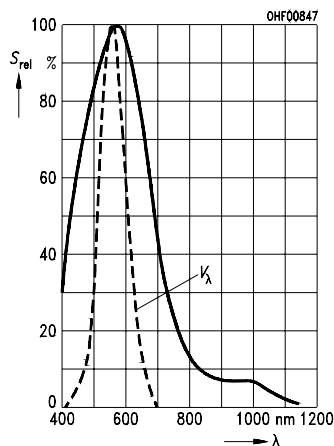
Kennwerte ($T_A = 25\text{ °C}$, Normlicht A, $T = 2856\text{ K}$)

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

Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
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}	$\frac{\text{cm} \times \sqrt{\text{Hz}}}{\text{W}}$

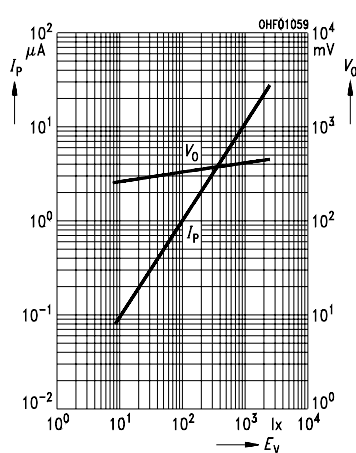
Relative Spectral Sensitivity

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



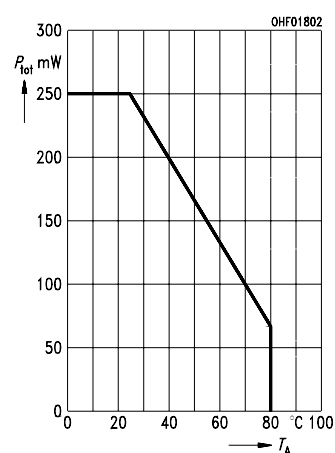
Photocurrent $I_P = f(E_V), V_R = 5 V$

Open-Circuit Voltage $V_O = f(E_V)$



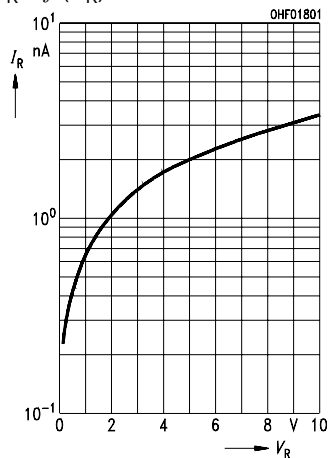
Total Power Dissipation

$P_{tot} = f(T_A)$



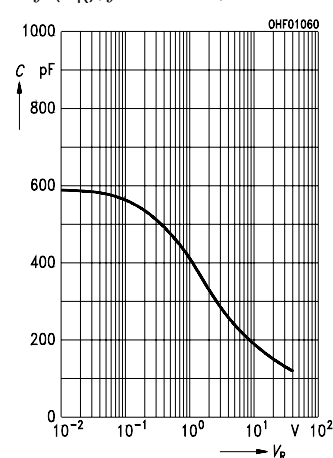
Dark Current

$I_R = f(V_R)$



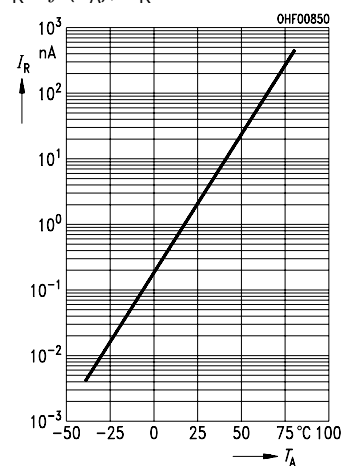
Capacitance

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



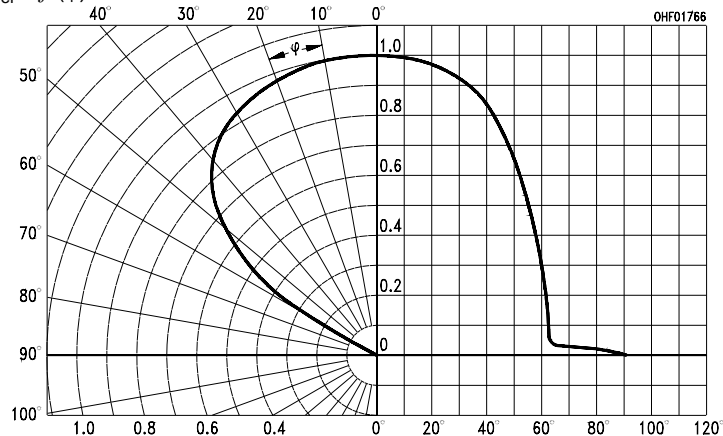
Dark Current

$I_R = f(T_A), V_R = 5 V$

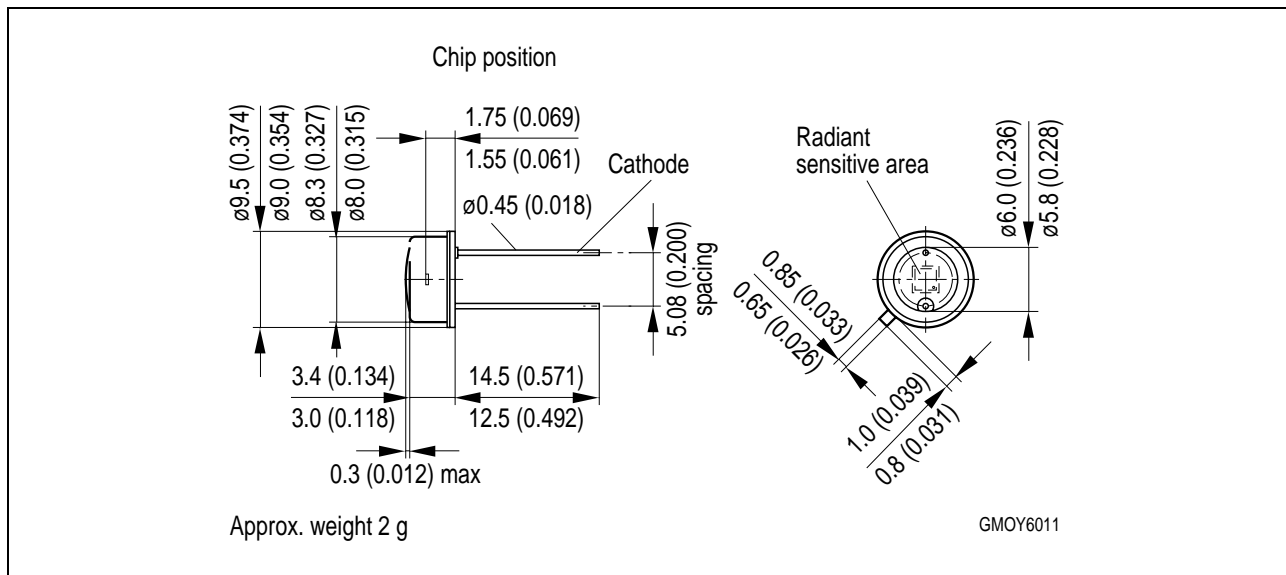


Directional Characteristics

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



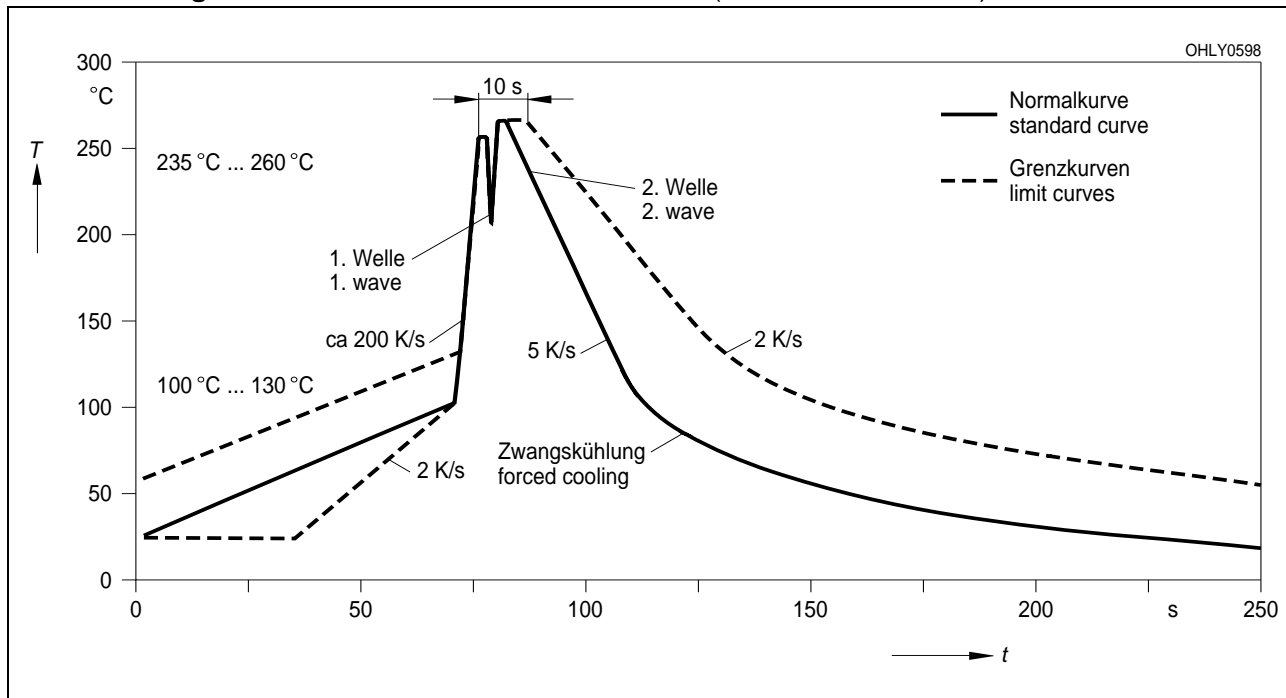
**Maßzeichnung
Package Outlines**



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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EU RoHS and China RoHS compliant product



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