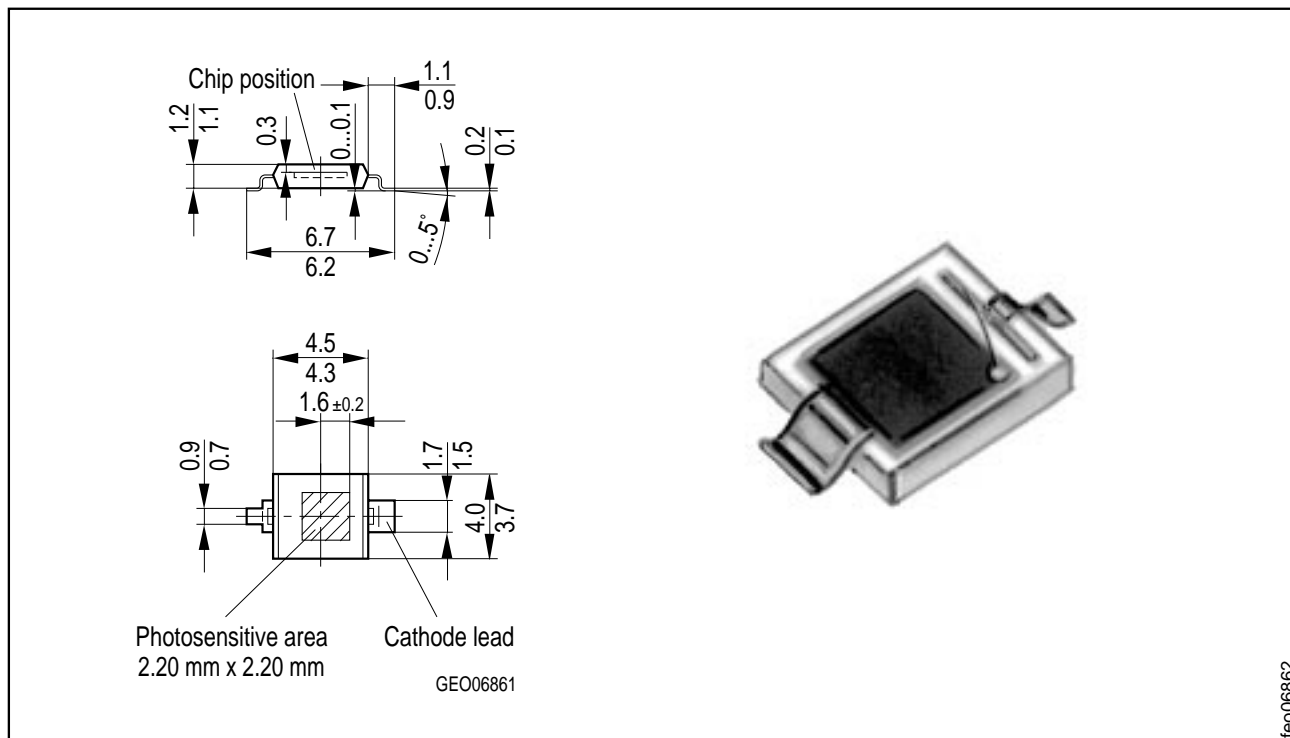


Neu: Silizium-PIN-Fotodiode
New: Silicon PIN Photodiode

BP 104 S



Maße in mm, wenn nicht anders angegeben/Dimensions in mm, unless otherwise specified.

Wesentliche Merkmale

- Speziell geeignet für Anwendungen im Bereich von 400 nm bis 1100 nm
- Kurze Schaltzeit (typ. 20 ns)
- geeignet für Vapor-Phase Löten und IR-Reflow-Löten
- SMT-fähig

Anwendungen

- Lichtschranken für Gleich- und Wechsellichtbetrieb
- IR-Fernsteuerungen
- Industrieelektronik
- "Messen/Steuern/Regeln"

Features

- Especially suitable for applications from 400 nm to 1100 nm
- Short switching time (typ. 20 ns)
- Suitable for vapor-phase and IR-reflow soldering
- Suitable for SMT

Applications

- Photointerrupters
- IR remote controls
- Industrial electronics
- For control and drive circuits

Typ Type	Bestellnummer Ordering Code
BP 104 S	Q62702-P1605

Grenzwerte Maximum Ratings

Bezeichnung Description	Symbol Symbol	Wert Value	Einheit Unit
Betriebs- und Lagertemperatur Operating and storage temperature range	$T_{op}; T_{stg}$	- 40 ... + 85	°C
Sperrspannung Reverse voltage	V_R	20	V
Verlustleistung, $T_A = 25\text{ °C}$ Total power dissipation	P_{tot}	150	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 Description	Symbol Symbol	Wert Value	Einheit Unit
Fotoempfindlichkeit $V_R = 5\text{ V}$ Spectral sensitivity	S	55 (≥ 40)	nA/lx
Wellenlänge der max. Fotoempfindlichkeit Wavelength of max. sensitivity	$\lambda_{S\max}$	850	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	4.84	mm ²
Abmessung der bestrahlungsempfindlichen Fläche Dimensions of radiant sensitive area	$L \times B$ $L \times W$	2.20 × 2.20	mm × mm
Abstand Chipoberfläche zu Gehäuseoberfläche Distance chip front to case surface	H	0.3	mm
Halbwinkel Half angle	φ	± 60	Grad deg.
Dunkelstrom, $V_R = 10\text{ V}$ Dark current	I_R	2 (≤ 30)	nA
Spektrale Fotoempfindlichkeit, $\lambda = 850\text{ nm}$ Spectral sensitivity	S_λ	0.62	A/W
Quantenausbeute, $\lambda = 850\text{ nm}$ Quantum yield	η	0.90	<u>Electrons</u> Photon

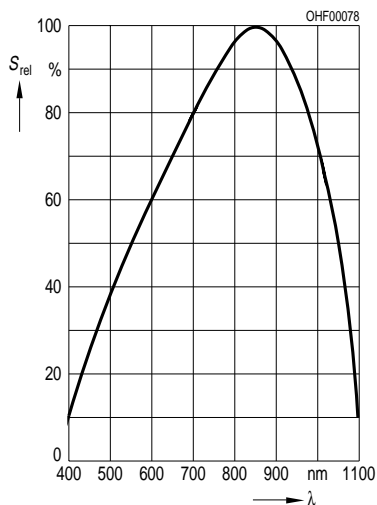
Kennwerte ($T_A = 25\text{ °C}$, Normlicht A, $T = 2856\text{ K}$)

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

Bezeichnung Description	Symbol Symbol	Wert Value	Einheit Unit
Leerlaufspannung, $E_V = 1000\text{ lx}$ Open-circuit voltage	V_O	360 (≥ 280)	mV
Kurzschlußstrom, $E_V = 1000\text{ lx}$ Short-circuit current	I_{SC}	50	μA
Anstiegs- und Abfallzeit des Fotostromes Rise and fall time of the photocurrent $R_L = 50\ \Omega$; $V_R = 5\text{ V}$; $\lambda = 850\text{ nm}$; $I_p = 800\ \mu\text{A}$	t_r, t_f	20	ns
Durchlaßspannung, $I_F = 100\text{ mA}$, $E = 0$ Forward voltage	V_F	1.3	V
Kapazität, $V_R = 0\text{ V}$, $f = 1\text{ MHz}$, $E = 0$ Capacitance	C_0	48	pF
Temperaturkoeffizient von V_O Temperature coefficient of V_O	TK_V	- 2.6	mV/K
Temperaturkoeffizient von I_{SC} Temperature coefficient of I_{SC}	TK_I	0.18	%/K
Rauschäquivalente Strahlungsleistung Noise equivalent power $V_R = 10\text{ V}$, $\lambda = 850\text{ nm}$	NEP	3.6×10^{-14}	$\frac{\text{W}}{\sqrt{\text{Hz}}}$
Nachweisgrenze, $V_R = 10\text{ V}$, $\lambda = 850\text{ nm}$ Detection limit	D^*	6.1×10^{12}	$\frac{\text{cm} \cdot \sqrt{\text{Hz}}}{\text{W}}$

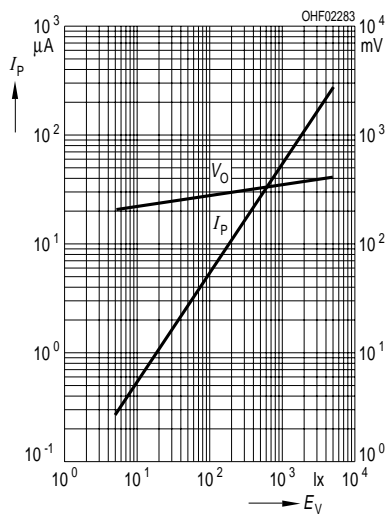
Relative spectral sensitivity

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

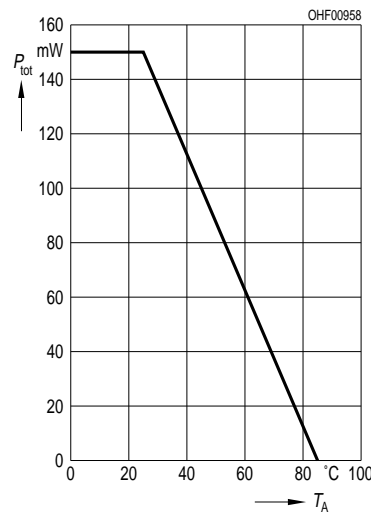


Photocurrent $I_P = f(E_V), V_R = 5 V$

$$\text{Open-circuit voltage } V_O = f(E_V)$$

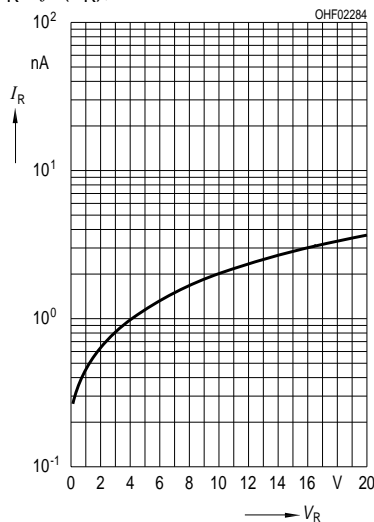


Total power dissipation $P_{tot} = f(T_A)$



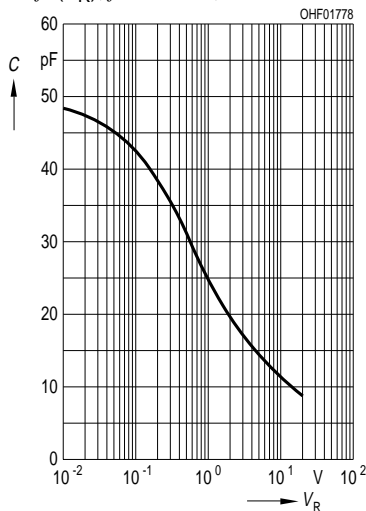
Dark current

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



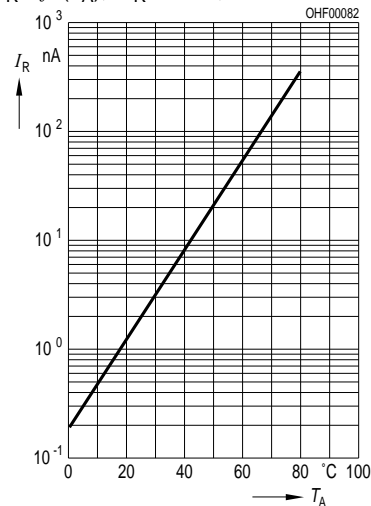
Capacitance

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

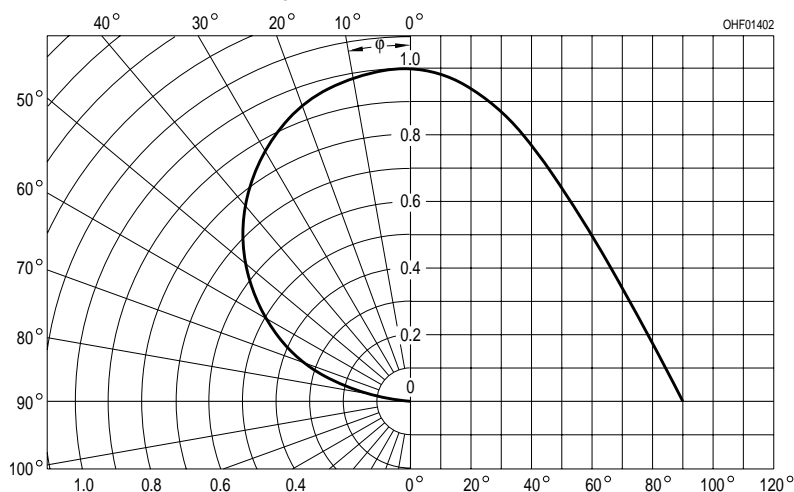


Dark current

$$I_R = f(T_A), V_R = 10 V, E = 0$$



Directional characteristics $S_{rel} = f(\phi)$





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