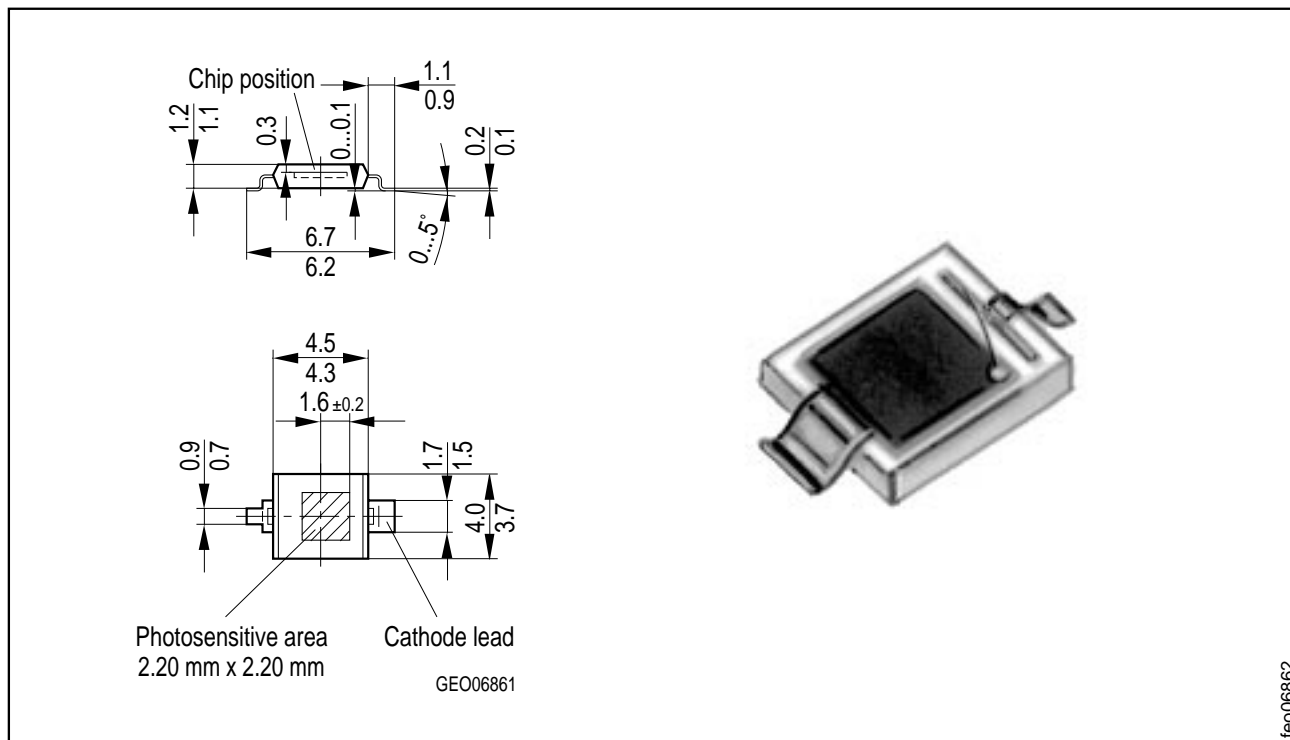


Neu: Silizium-PIN-Fotodiode
New: Silicon PIN Photodiode

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 |

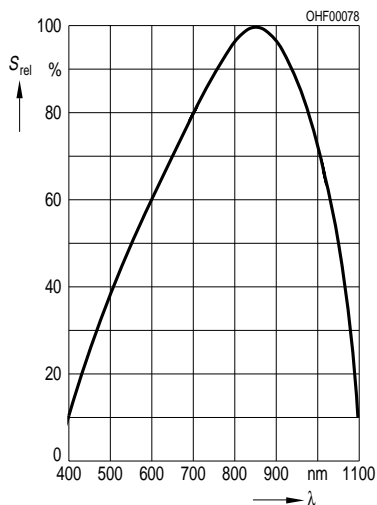
Kennwerte ($T_A = 25\text{ °C}$, Normlicht A, $T = 2856\text{ K}$)

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} | $\frac{\text{cm} \cdot \sqrt{\text{Hz}}}{\text{W}}$ |

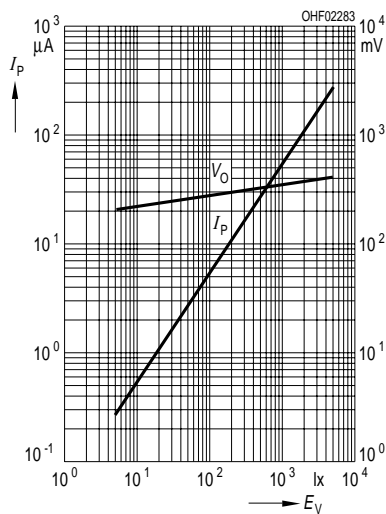
Relative spectral sensitivity

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

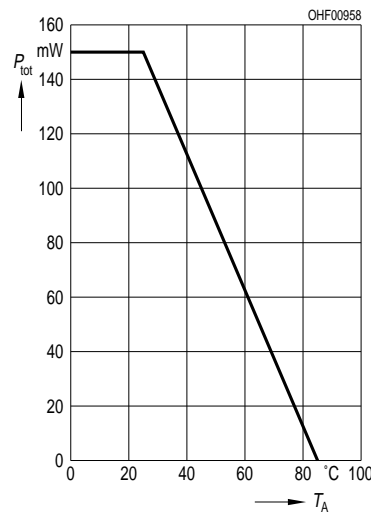


Photocurrent $I_P = f(E_V), V_R = 5 V$

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

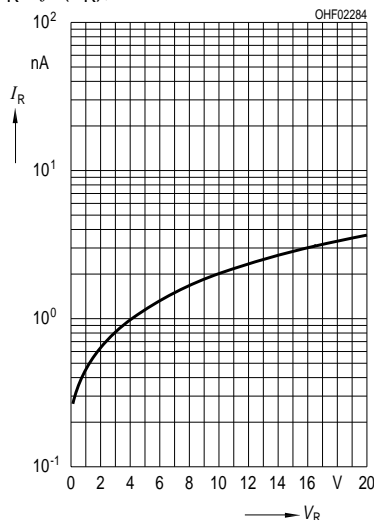


Total power dissipation $P_{tot} = f(T_A)$



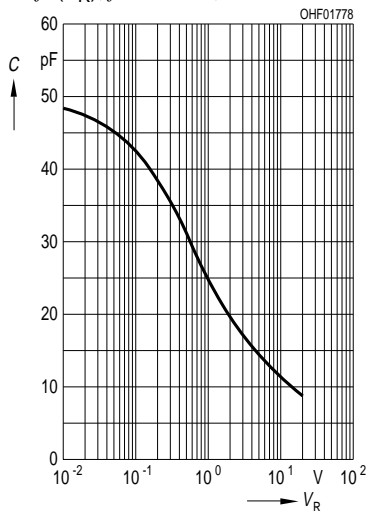
Dark current

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



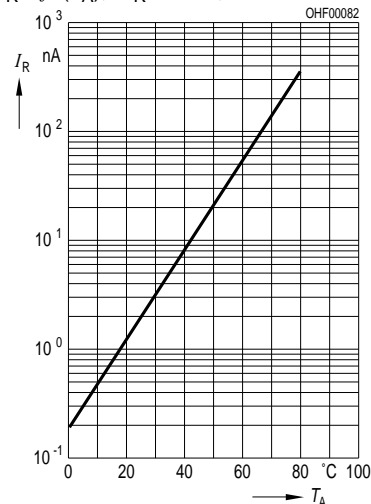
Capacitance

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



Dark current

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



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

