

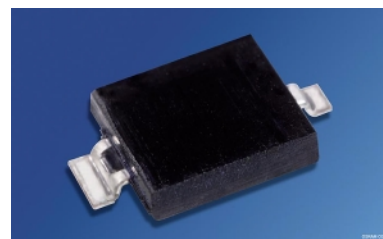
Silizium-Pin-Fotodiode mit Tageslichtsperrfilter; in SMT

Silicon Pin Photodiode with Daylight Filter; in SMT

BP 104 F
BP 104 FS



BP 104 F



BP 104 FS

Wesentliche Merkmale

- Speziell geeignet für Anwendungen bei 950 nm
- Kurze Schaltzeit (typ. 20 ns)
- DIL-Plastikbauform mit hoher Packungsdichte
- BP 104 FS: geeignet für Vapor-Phase Löten und IR-Reflow Löten

Anwendungen

- IR-Fernsteuerung von Fernseh- und Rundfunkgeräten, Videorecordern, Lichtdimmern, Gerätefernsteuerungen
- Lichtschranken für Gleich- und Wechsellichtbetrieb

Features

- Especially suitable for applications of 950 nm
- Short switching time (typ. 20 ns)
- DIL plastic package with high packing density
- BP 104 FS: suitable for vapor-phase and IR-reflow soldering

Applications

- IR remote control of hi-fi and TV sets, video tape recorders, dimmers, remote controls of various equipment
- Photointerrupters

| Typ Type | Bestellnummer Ordering Code | Gehäuse Package |
|-------------|--------------------------------|---|
| BP 104 F | Q62702-P84 | DIL-Gehäuse, schwarzes Epoxy-Gießharz, Kathodenkennzeichnung: Fähnchen am Anschluß DIL package, black epoxy resin Cathode marking: flag on lead |
| BP 104 FS | Q62702-P1646 | DIL/SMT-Gehäuse, schwarzes Epoxy-Gießharz, Kathodenkennzeichnung: Langer, breiter Anschluß DIL/SMT package, black epoxy resin Cathode marking: long broad lead |

Grenzwerte
Maximum Ratings

| Bezeichnung Parameter | Symbol Symbol | Wert Value | Einheit Unit |
|--|-------------------|----------------|-----------------|
| Betriebs- und Lagertemperatur Operating and storage temperature range | $T_{op}; T_{stg}$ | - 40 ... + 100 | °C |
| Sperrspannung Reverse voltage | V_R | 20 | V |
| Verlustleistung, $T_A = 25\text{ °C}$ | P_{tot} | 150 | mW |

Kennwerte ($T_A = 25\text{ °C}$, $\lambda = 950\text{ nm}$)
Characteristics

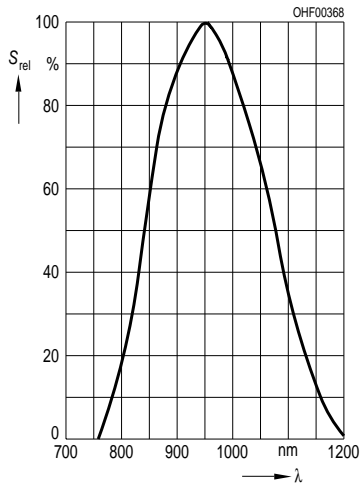
| Bezeichnung Parameter | Symbol Symbol | Wert Value | Einheit Unit |
|--|------------------------------|------------------------|------------------------------|
| Fotostrom Photocurrent $V_R = 5\text{ V}$, $E_e = 1\text{ mW/cm}^2$ | I_P | 34 (≥ 25) | μA |
| Wellenlänge der max. Fotoempfindlichkeit Wavelength of max. sensitivity | $\lambda_{S\text{ max}}$ | 950 | nm |
| Spektraler Bereich der Fotoempfindlichkeit $S = 10\%$ von S_{max} Spectral range of sensitivity $S = 10\%$ of S_{max} | λ | 800 ... 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 | $\text{mm} \times \text{mm}$ |
| Abstand Chipoberfläche zu Gehäuseoberfläche Distance chip front to case surface | H | 0.5 0.3 (BP 104 FS) | mm |
| Halbwinkel Half angle | φ | ± 60 | Grad deg. |
| Dunkelstrom, $V_R = 10\text{ V}$ Dark current | I_R | 2 (≤ 30) | nA |
| Spektrale Fotoempfindlichkeit Spectral sensitivity | S_λ | 0.70 | A/W |
| Quantenausbeute Quantum yield | η | 0.90 | <u>Electrons</u> Photon |

Kennwerte ($T_A = 25\text{ °C}$, $\lambda = 950\text{ nm}$)
Characteristics (cont'd)

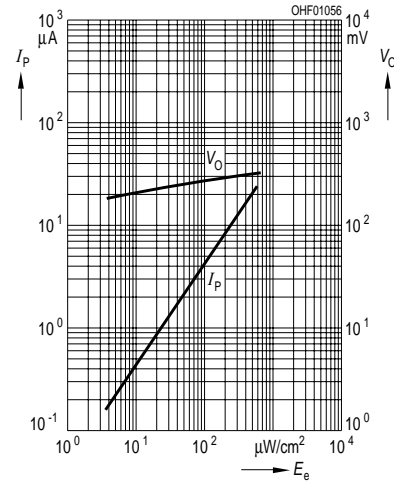
| Bezeichnung Parameter | Symbol Symbol | Wert Value | Einheit Unit |
|--|------------------|-----------------------|--|
| Leerlaufspannung, $E_e = 0.5\text{ mW/cm}^2$ Open-circuit voltage | V_O | 330 (≥ 250) | mV |
| Kurzschlußstrom, $E_e = 0.5\text{ mW/cm}^2$ Short-circuit current | I_{SC} | 17 | μA |
| 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 | TC_V | - 2.6 | mV/K |
| Temperaturkoeffizient von I_{SC} Temperature coefficient of I_{SC} | TC_I | 0.18 | %/K |
| Rauschäquivalente Strahlungsleistung Noise equivalent power $V_R = 10\text{ V}$ | NEP | 3.6×10^{-14} | $\frac{\text{W}}{\sqrt{\text{Hz}}}$ |
| Nachweisgrenze, $V_R = 10\text{ V}$ Detection limit | D^* | 6.1×10^{12} | $\frac{\text{cm} \times \sqrt{\text{Hz}}}{\text{W}}$ |

Relative Spectral Sensitivity

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

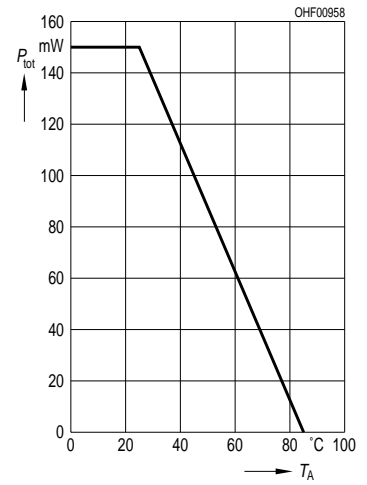


**Photocurrent $I_P = f(E_e), V_R = 5 V$
Open-Circuit Voltage $V_O = f(E_e)$**



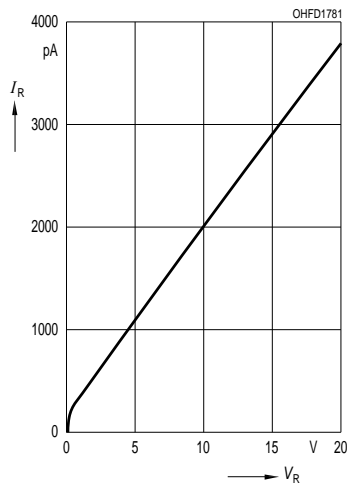
Total Power Dissipation

$P_{tot} = f(T_A)$



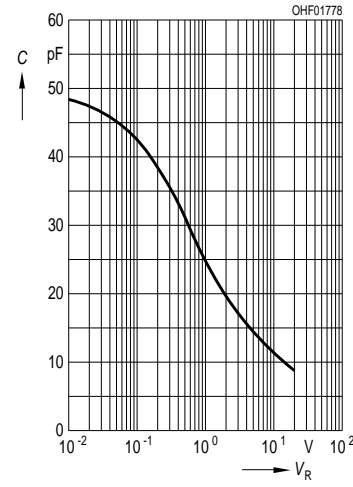
Dark Current

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



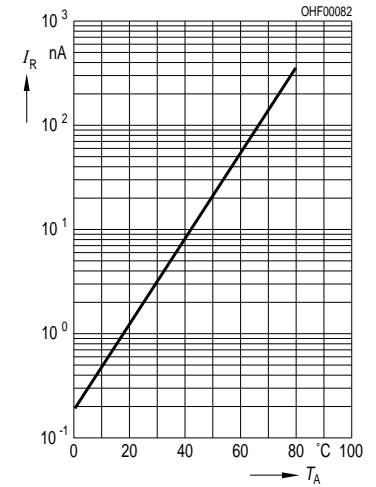
Capacitance

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



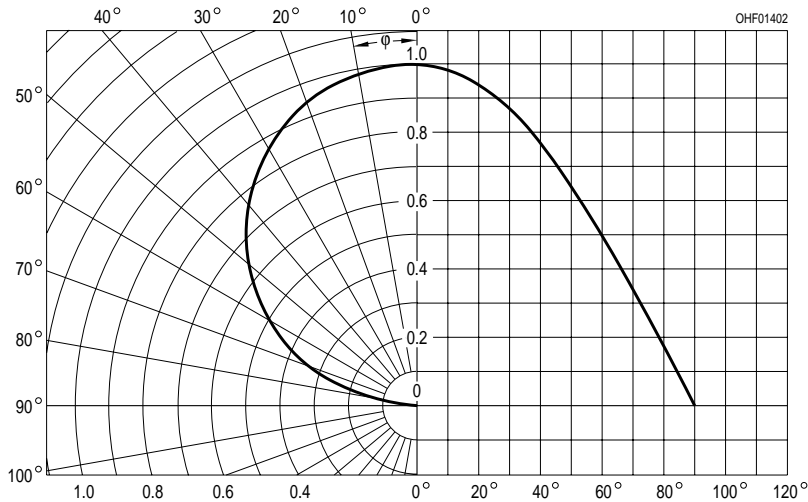
Dark Current

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

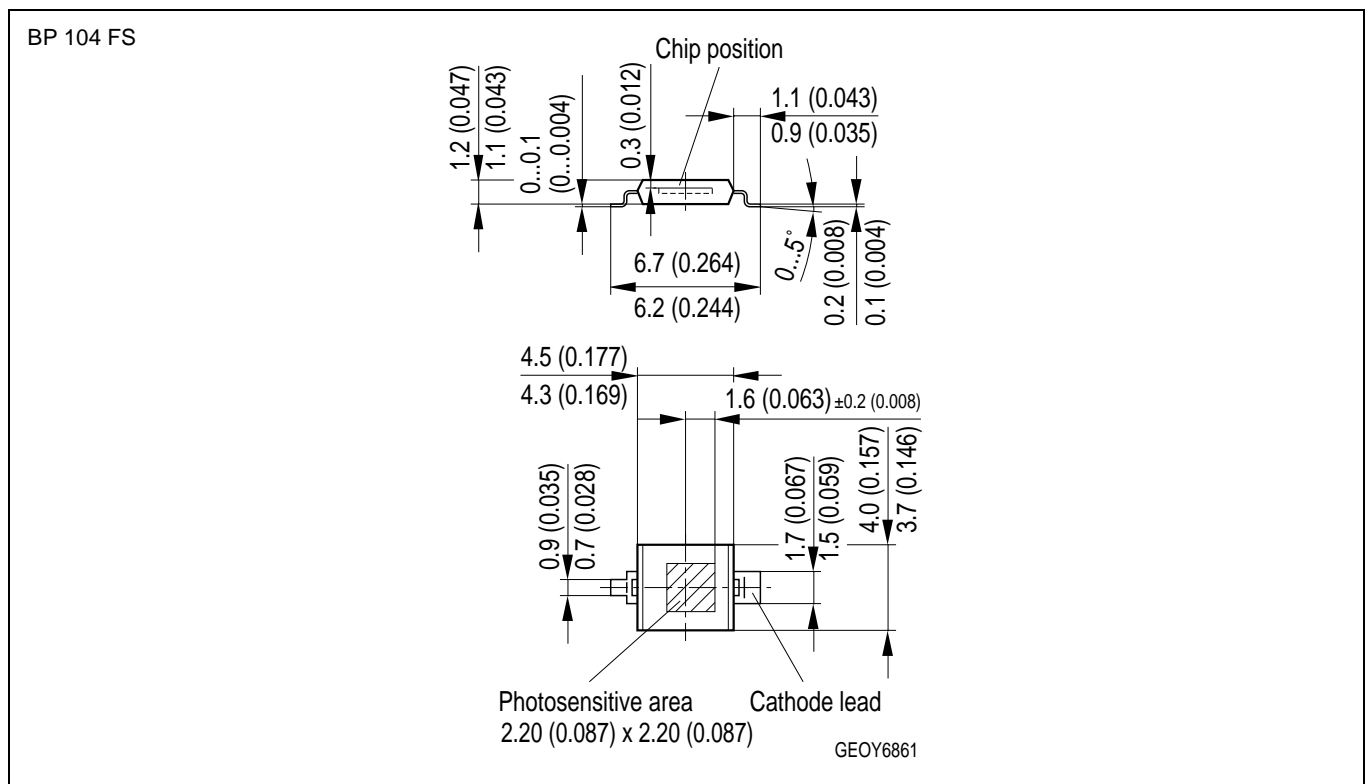
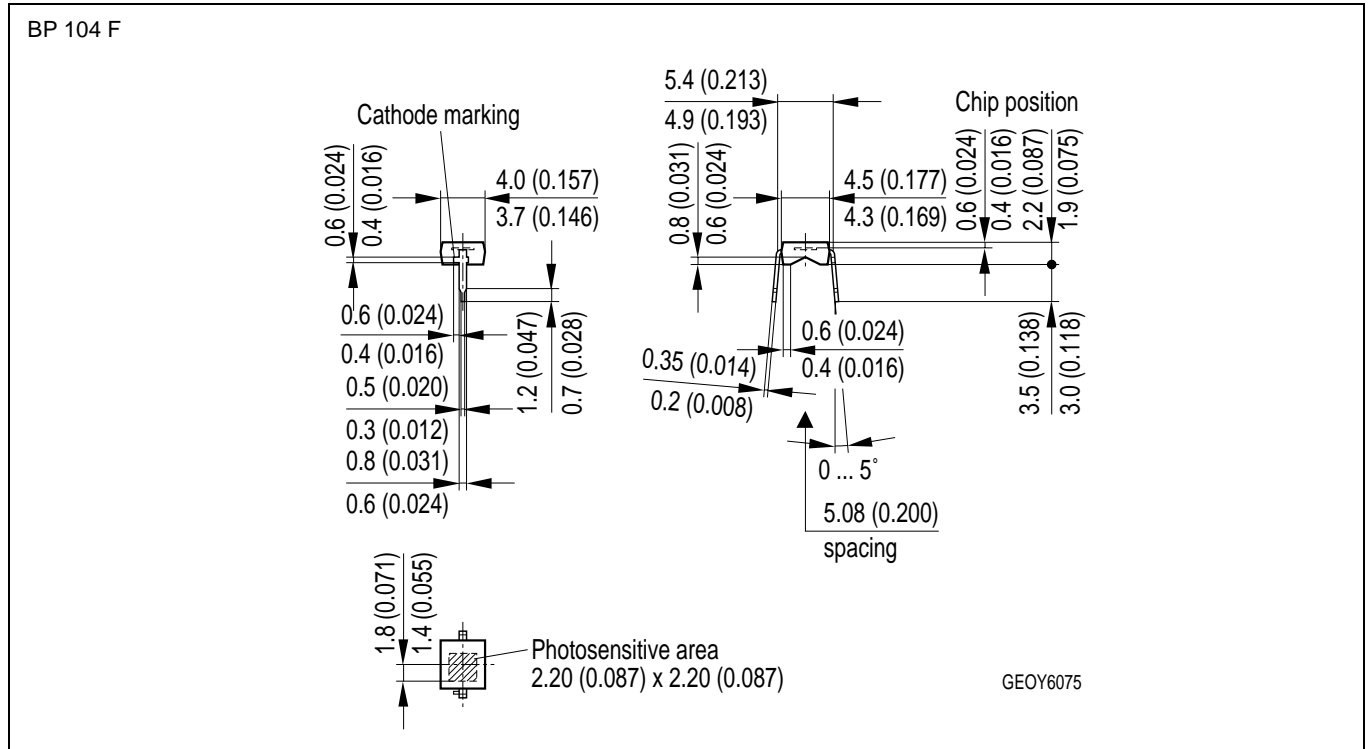


Directional Characteristics

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



Maßzeichnung
Package Outlines



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

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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.

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