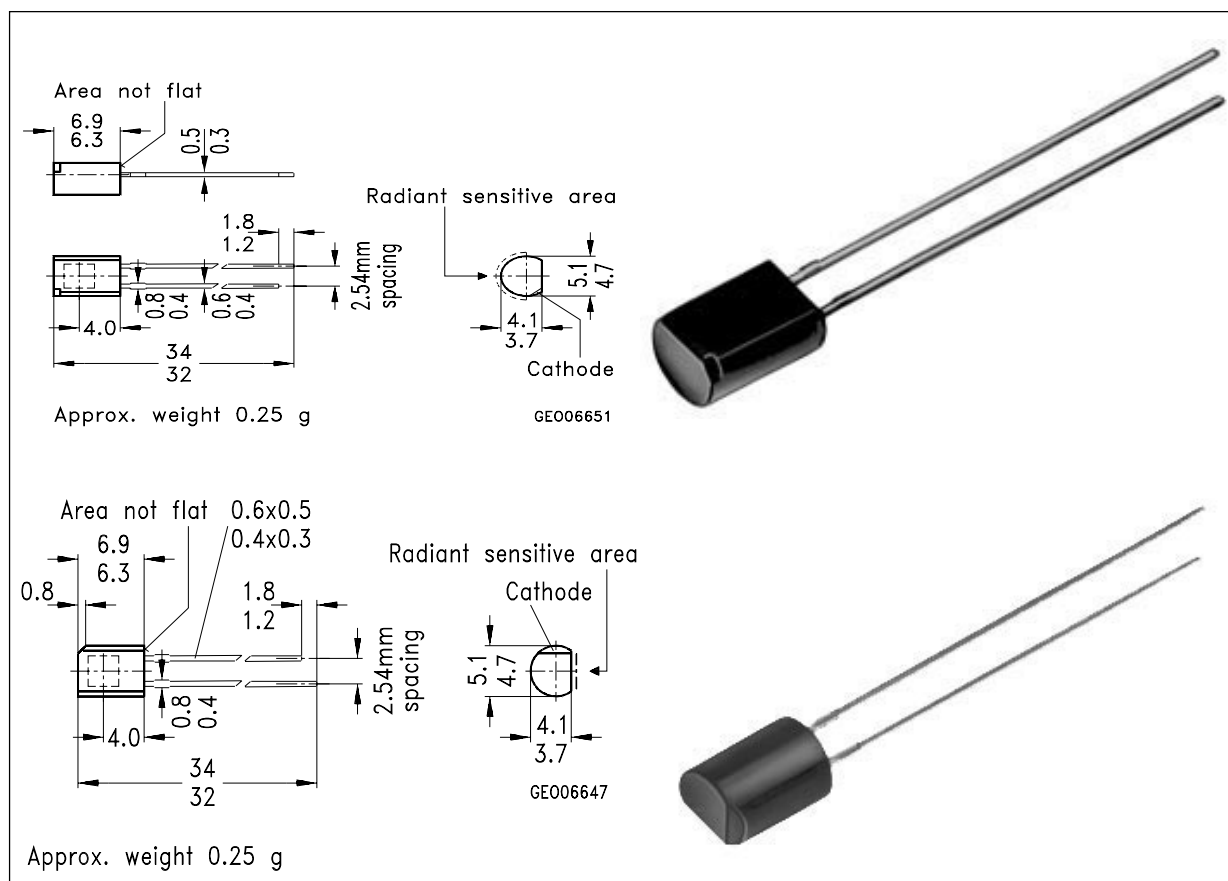


Silizium-PIN-Fotodiode mit Tageslichtsperrfilter Silicon-PIN-Photodiode with Daylight Filter

SFH 205
SFH 206



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

Wesentliche Merkmale

- Speziell geeignet für Anwendungen bei 950 nm
- Kurze Schaltzeit (typ. 20 ns)
- 5 mm-Plastikbauform im LED-Gehäuse
- Auch gegurtet lieferbar

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)
- 5 mm LED plastic package
- Also available on tape

Applications

- IR-remote control of hi-fi and TV sets, video tape recorders, dimmers, remote control of various equipment
- Light reflecting switches for steady and varying intensity

| Typ (* ab 4/95) Type (* as of 4/95) | Bestellnummer Ordering Code | Gehäuse Package |
|----------------------------------------|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SFH 205 (* SFH 205 F) | Q62702-P102 | 10 A3 DIN 41868 (TO-92-ähnlich), schwarzes Epoxy-Gießharz, Lötspieße im 2.54-mm-Raster (¹ / ₁₀), Kathodenkennzeichnung: Gehäusekerbe 10 A3 DIN 41 868 (similar to TO-92), black epoxy resin, solder tabs 2.54 (¹ / ₁₀) lead spacing, cathode marking: notch at package |
| SFH 206 (* SFH 206 F) | Q62702-P128 | |

Grenzwerte Maximum Ratings

| Bezeichnung Description | Symbol Symbol | Wert Value | Einheit Unit |
|---------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|---------------|-----------------|
| Betriebs- und Lagertemperatur Operating and storage temperature range | $T_{op}; T_{stg}$ | -55 ... +80 | °C |
| Löttemperatur (Lötstelle 2 mm vom Gehäuse entfernt bei Lötzeit $t \leq 3s$) Soldering temperature in 2 mm distance from case bottom ($t \leq 3s$) | T_S | 230 | °C |
| Sperrspannung Reverse voltage | V_R | 32 | V |
| Verlustleistung, $T_A = 25\text{ °C}$ Total power dissipation | P_{tot} | 150 | mW |

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

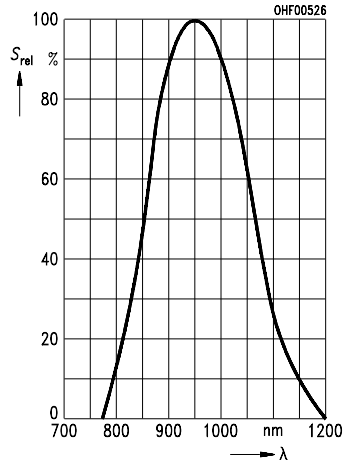
| Bezeichnung Description | Symbol Symbol | Wert Value | Einheit Unit |
|--------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|------------------|-----------------|
| Fotoempfindlichkeit Spectral sensitivity $V_R = 5\text{ V}$, $E_e = 0.5\text{ mW/cm}^2$ | S | 25 (≥ 15) | 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 | 7.00 | mm^2 |

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

| Bezeichnung Description | Symbol Symbol | Wert Value | Einheit Unit |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|----------------------------|-----------------------------------------------------|
| Abmessung der bestrahlungsempfindlichen Fläche Dimensions of radiant sensitive area | $L \times B$ $L \times W$ | 2.65 x 2.65 | mm |
| Abstand Chipoberfläche zu Gehäuseoberfläche Distance chip surface to case surface SFH 205 SFH 206 | H H | 2.3 ... 2.5 1.2 ... 1.4 | mm 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 | 0.59 | A/W |
| Quantenausbeute Quantum yield | η | 0.77 | <u>Electrons</u> Photon |
| Leerlaufspannung, $E_e = 0.5\text{ mW/cm}^2$ Open-circuit voltage | V_L | 330 (≥ 250) | mV |
| Kurzschlußstrom, $E_e = 0.5\text{ mW/cm}^2$ Short-circuit current | I_K | 25 | 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 | 72 | pF |
| Temperaturkoeffizient von V_L Temperature coefficient of V_L | TC_V | -2.6 | mV/K |
| Temperaturkoeffizient von I_K , Temperature coefficient of I_K | TC_I | 0.18 | %/K |
| Rauschäquivalente Strahlungsleistung Noise equivalent power $V_R = 10\text{ V}$ | NEP | 4.3×10^{-14} | $\frac{\text{W}}{\sqrt{\text{Hz}}}$ |
| Nachweisgrenze, $V_R = 10\text{ V}$ Detection limit | D^* | 6.2×10^{12} | $\frac{\text{cm} \cdot \sqrt{\text{Hz}}}{\text{W}}$ |

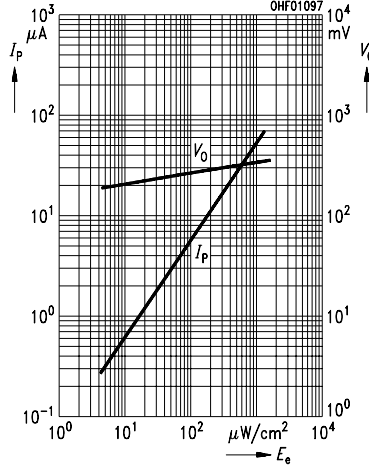
Relative spectral sensitivity

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

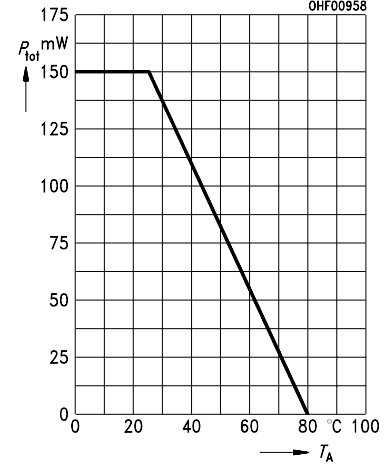


Photocurrent $I_P = f(E_e), V_R = 5\text{ V}$

$$\text{Open-circuit-voltage } V_L = f(E_e)$$

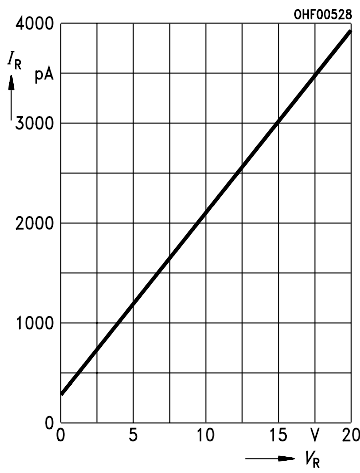


Total power dissipation $P_{tot} = f(T_A)$



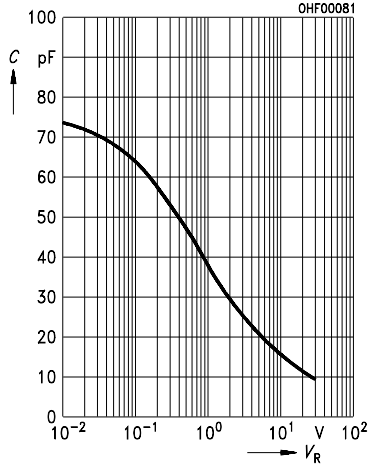
Dark current

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



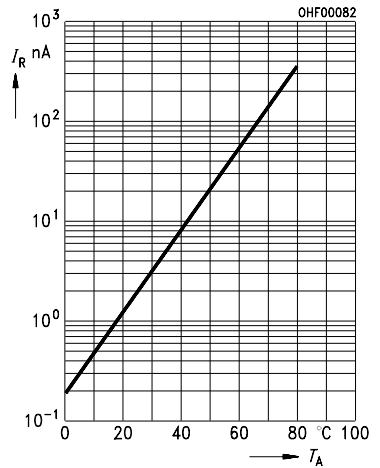
Capacitance

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



Dark current

$$I_R = f(T_A), V_R = 10\text{ V}, E = 0$$



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

