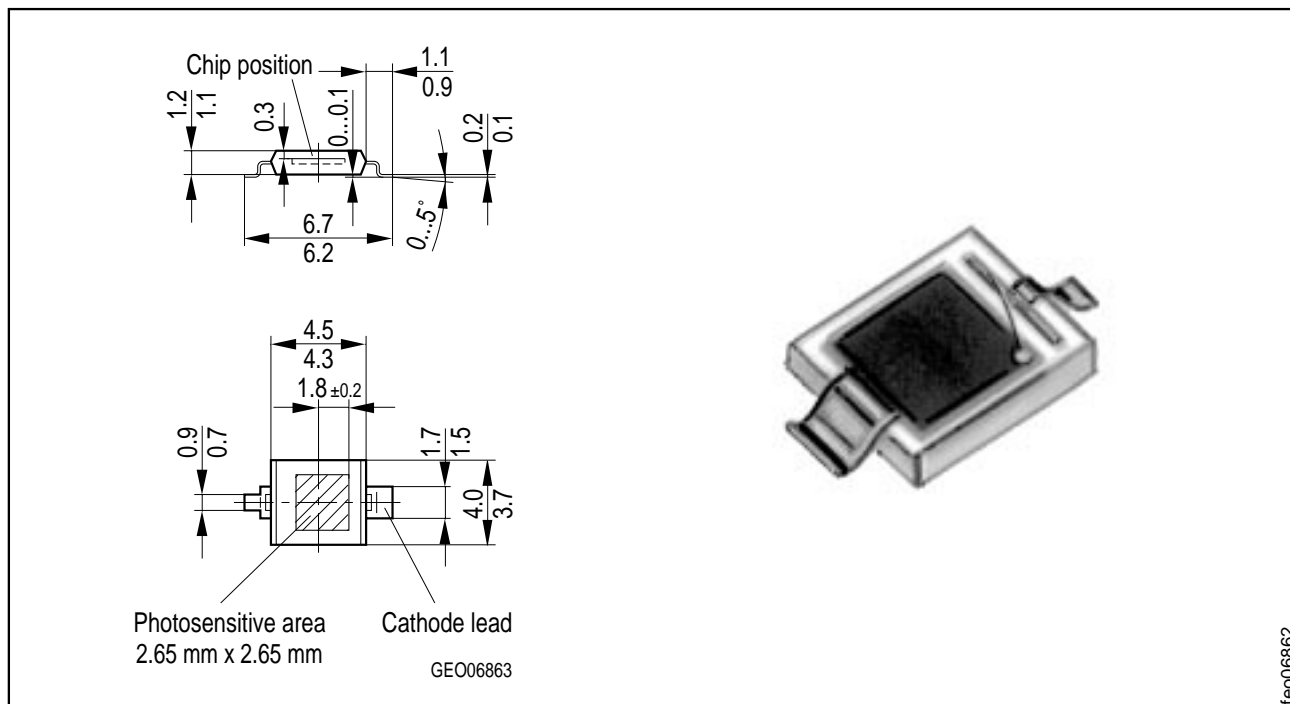


## Silizium-PIN-Fotodiode Silicon PIN Photodiode

BPW 34 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 (JEDEC level 4)

### 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 (JEDEC level 4)

### Application

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

| Typ<br>Type | Bestellnummer<br>Ordering Code |
|-------------|--------------------------------|
| BPW 34 S    | Q62702-P1602                   |

## Grenzwerte Maximum Ratings

| Bezeichnung<br>Description   | Symbol<br>Symbol  | Wert<br>Value | Einheit<br>Unit |
|--|-------------------|---------------|-----------------|
| Betriebs- und Lagertemperatur<br>Operating and storage temperature range | $T_{op}; T_{stg}$ | - 40 ... + 85 | °C              |
| Sperrspannung<br>Reverse voltage   | $V_R$             | 32            | V               |
| Verlustleistung, $T_A = 25\text{ °C}$<br>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<br>Description   | Symbol<br>Symbol             | Wert<br>Value      | Einheit<br>Unit            |
|--|------------------------------|--------------------|----------------------------|
| Fotoempfindlichkeit, $V_R = 5\text{ V}$<br>Spectral sensitivity  | $S$                          | 80 ( $\geq 50$ )   | nA/lx                      |
| Wellenlänge der max. Fotoempfindlichkeit<br>Wavelength of max. sensitivity   | $\lambda_{S\max}$            | 850                | nm                         |
| Spektraler Bereich der Fotoempfindlichkeit<br>$S = 10\%$ von $S_{\max}$<br>Spectral range of sensitivity<br>$S = 10\%$ of $S_{\max}$ | $\lambda$                    | 400 ... 1100       | nm                         |
| Bestrahlungsempfindliche Fläche<br>Radiant sensitive area  | $A$                          | 7.00               | mm <sup>2</sup>            |
| Abmessung der bestrahlungsempfindlichen Fläche<br>Dimensions of radiant sensitive area   | $L \times B$<br>$L \times W$ | $2.65 \times 2.65$ | mm                         |
| Abstand Chipoberfläche zu Gehäuseoberfläche<br>Distance chip front to case surface   | $H$                          | 0.3                | mm                         |
| Halbwinkel<br>Half angle   | $\varphi$                    | $\pm 60$           | Grad<br>deg.               |
| Dunkelstrom, $V_R = 10\text{ V}$<br>Dark current   | $I_R$                        | 2 ( $\leq 30$ )    | nA                         |
| Spektrale Fotoempfindlichkeit, $\lambda = 850\text{ nm}$<br>Spectral sensitivity   | $S_\lambda$                  | 0.62               | A/W                        |
| Quantenausbeute, $\lambda = 850\text{ nm}$<br>Quantum yield  | $\eta$                       | 0.90               | <u>Electrons</u><br>Photon |

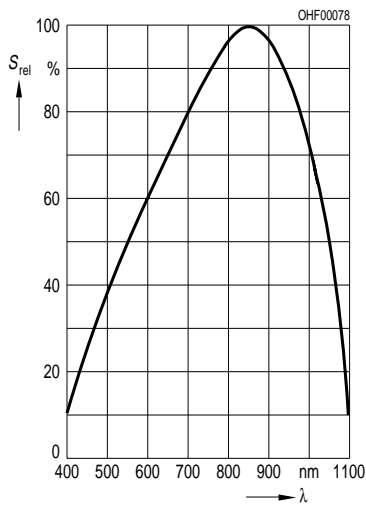
**Kennwerte** ( $T_A = 25\text{ °C}$ , Normlicht A,  $T = 2856\text{ K}$ )

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

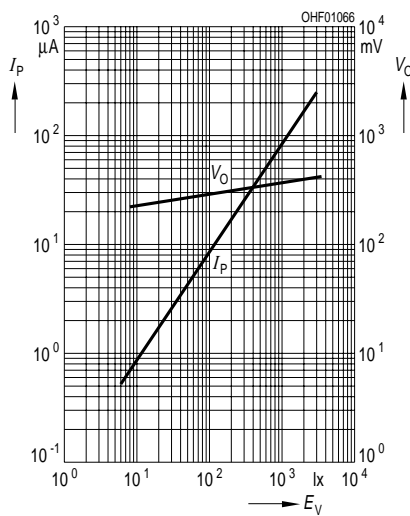
| Bezeichnung<br>Description  | Symbol<br>Symbol | Wert<br>Value         | Einheit<br>Unit                                     |
|---|------------------|-----------------------|---|
| Leerlaufspannung, $E_V = 1000\text{ lx}$<br>Open-circuit voltage  | $V_O$            | 365 ( $\geq 300$ )    | mV  |
| Kurzschlußstrom, $E_V = 1000\text{ lx}$<br>Short-circuit current  | $I_{SC}$         | 80                    | $\mu\text{A}$                                       |
| Anstiegs und Abfallzeit des Fotostromes<br>Rise and fall time of the photocurrent<br>$R_L = 50\ \Omega$ ; $V_R = 5\text{ V}$ ; $\lambda = 850\text{ nm}$ ; $I_p = 800\ \mu\text{A}$ | $t_r, t_f$       | 10                    | ns  |
| Durchlaßspannung, $I_F = 100\text{ mA}$ , $E = 0$<br>Forward voltage  | $V_F$            | 1.3                   | V   |
| Kapazität, $V_R = 0\text{ V}$ , $f = 1\text{ MHz}$ , $E = 0$<br>Capacitance   | $C_0$            | 72                    | pF  |
| Temperaturkoeffizient von $V_O$<br>Temperature coefficient of $V_O$   | $TC_V$           | - 2.6                 | mV/K  |
| Temperaturkoeffizient von $I_{SC}$<br>Temperature coefficient of $I_{SC}$   | $TC_I$           | 0.18                  | %/K   |
| Rauschäquivalente Strahlungsleistung<br>Noise equivalent power<br>$V_R = 10\text{ V}$ , $\lambda = 850\text{ nm}$   | $NEP$            | $4.1 \times 10^{-14}$ | $\frac{\text{W}}{\sqrt{\text{Hz}}}$                 |
| Nachweisgrenze, $V_R = 10\text{ V}$ , $\lambda = 850\text{ nm}$<br>Detection limit  | $D^*$            | $6.6 \times 10^{12}$  | $\frac{\text{cm} \cdot \sqrt{\text{Hz}}}{\text{W}}$ |

### Relative spectral sensitivity

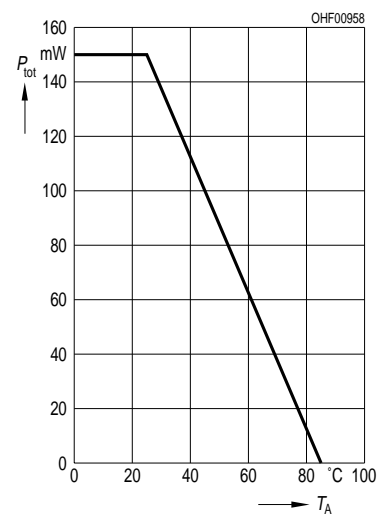
$$S_{rel} = f(\lambda)$$



### Photocurrent $I_P = f(E_V), V_R = 5 V$ Open-circuit-voltage $V_O = f(E_V)$

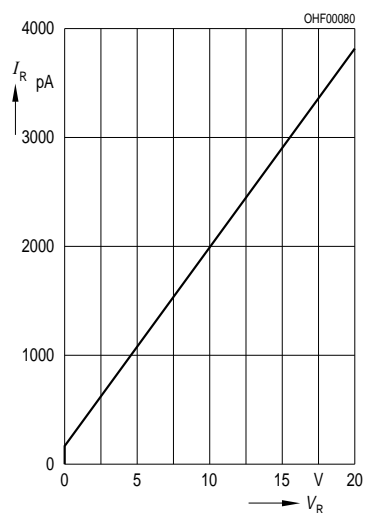


### Total power dissipation $P_{tot} = f(T_A)$



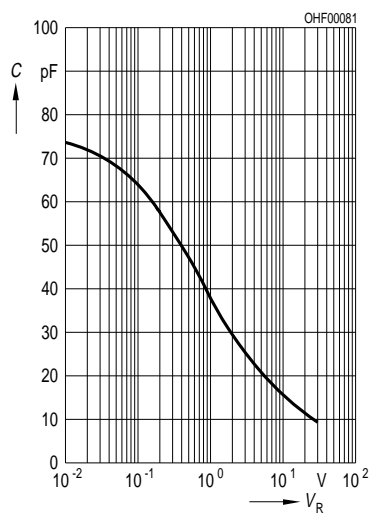
### Dark current

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



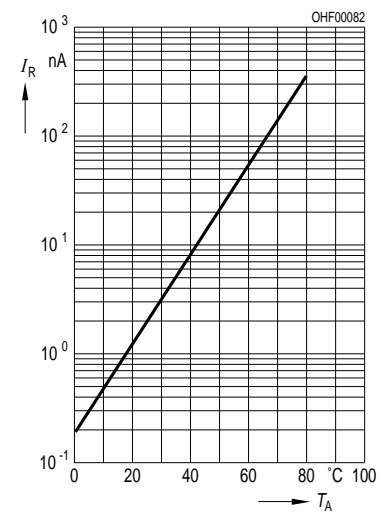
### Capacitance

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



### Dark current

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



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

