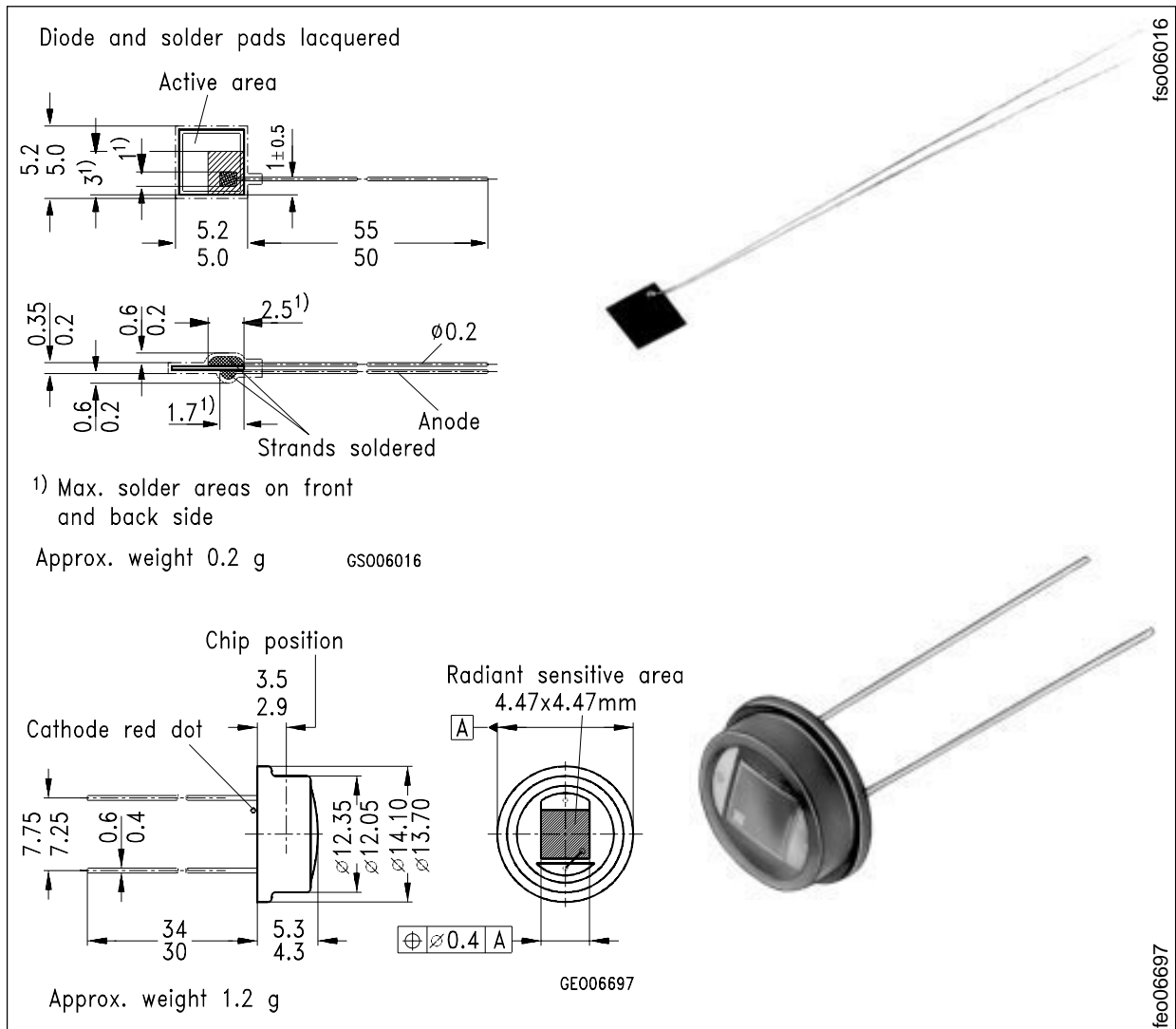


## Silizium-PIN-Fotodiode Silicon-PIN-Photodiode

BPY 12  
BPY 12 H 1



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. 25 ns)

### Anwendungen

- Industrieelektronik
- "Messen/Steuern/Regeln"

### Features

- Especially suitable for applications from 400 nm to 1100 nm
- Short switching time (typ. 25 ns)

### Applications

- Industrial electronics
- For control and drive circuits

Typ Type	Bestellnummer Ordering Code
BPY 12	Q62702-P9
BPY 12 H 1	Q62702-P1029

## Grenzwerte Maximum Ratings

Bezeichnung Description	Symbol Symbol	Wert Value	Einheit Unit
Betriebs- und Lagertemperatur Operating and storage temperature range	$T_{op}; T_{stg}$	- 55 ... + 100	°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	$S$	180 ( $\geq 100$ )	nA/lx
Wellenlänge der max. Fotoempfindlichkeit Wavelength of max. sensitivity	$\lambda_{S\text{ max}}$	920	nm
Spektraler Bereich der Fotoempfindlichkeit $S = 10\%$ von $S_{\text{max}}$ Spectral range of sensitivity $S = 10\%$ of $S_{\text{max}}$	$\lambda$	400 ... 1100	nm
Bestrahlungsempfindliche Fläche Radiant sensitive area	$A$	20	mm <sup>2</sup>
Abmessung der bestrahlungsempfindlichen Fläche Dimensions of radiant sensitive area	$L \times B$ $L \times W$	4.47 × 4.47	mm
Halbwinkel Half angle	$\varphi$	± 60	Grad deg.
Dunkelstrom, $V_R = 20\text{ V}$ Dark current	$I_R$	10 ( $\leq 100$ )	nA

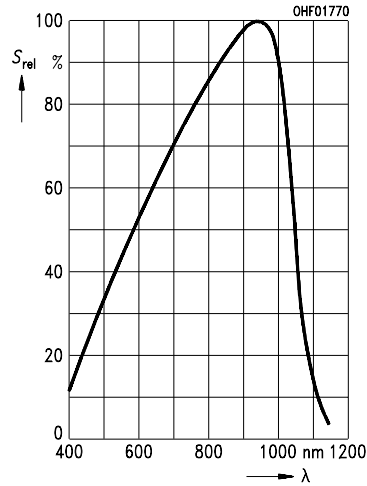
**Kennwerte** ( $T_A = 25\text{ °C}$ , Normlicht A,  $T = 2856\text{ K}$ )

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

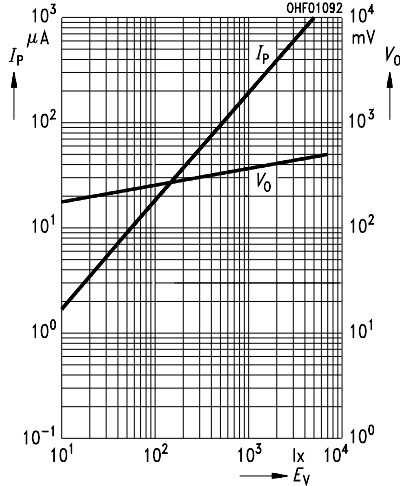
Bezeichnung Description	Symbol Symbol	Wert Value	Einheit Unit
Spektrale Fotoempfindlichkeit, $\lambda = 850\text{ nm}$ Spectral sensitivity	$S_\lambda$	0.60	A/W
Quantenausbeute, $\lambda = 850\text{ nm}$ Quantum yield	$\eta$	0.86	<u>Electrons</u> Photon
Leerlaufspannung, $E_v = 1000\text{ lx}$ Open-circuit voltage	$V_O$	365 ( $\geq 310$ )	mV
Kurzschlußstrom, $E_v = 1000\text{ lx}$ Short-circuit current	$I_{SC}$	180	$\mu\text{A}$
Anstiegs- und Abfallzeit des Fotostromes Rise and fall time of the photocurrent $R_L = 50\ \Omega$ ; $V_R = 5\text{ V}$ ; $\lambda = 850\text{ nm}$ ; $I_p = 800\ \mu\text{A}$	$t_r, t_f$	25	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	$C_0$	140	pF
Temperaturkoeffizient für $V_O$ Temperature coefficient of $V_O$	$TC_V$	- 2.6	mV/K
Temperaturkoeffizient für $I_{SC}$ Temperature coefficient of $I_{SC}$	$TC_I$	0.15	%/K
Rauschäquivalente Strahlungsleistung Noise equivalent power $V_R = 20\text{ V}$ , $\lambda = 850\text{ nm}$	$NEP$	$9.4 \times 10^{-14}$	$\frac{\text{W}}{\sqrt{\text{Hz}}}$
Nachweisgrenze, $V_R = 20\text{ V}$ , $\lambda = 850\text{ nm}$ Detection limit	$D^*$	$4.7 \times 10^{12}$	$\frac{\text{cm} \cdot \sqrt{\text{Hz}}}{\text{W}}$

### Relative spectral sensitivity

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

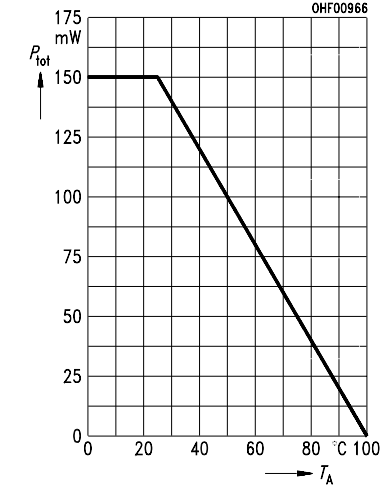


### Photocurrent $I_P = f(E_V), V_R = 5 V$ Open-circuit-voltage $V_O = f(E_V)$



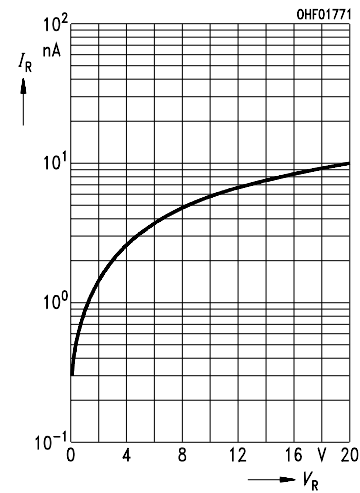
### Total power dissipation

$$P_{tot} = f(T_A)$$



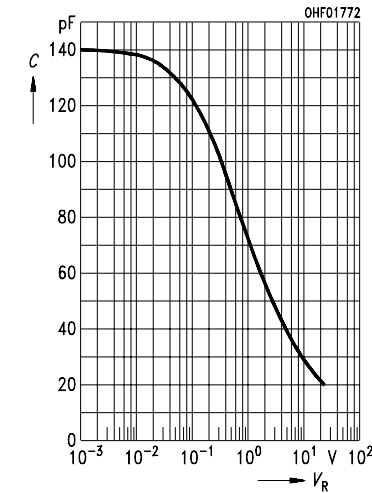
### Dark current

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



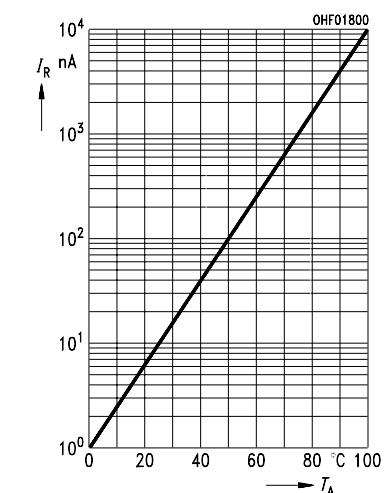
### Capacitance

$$C = f(V_R), f = 1 MHz, E = 0$$

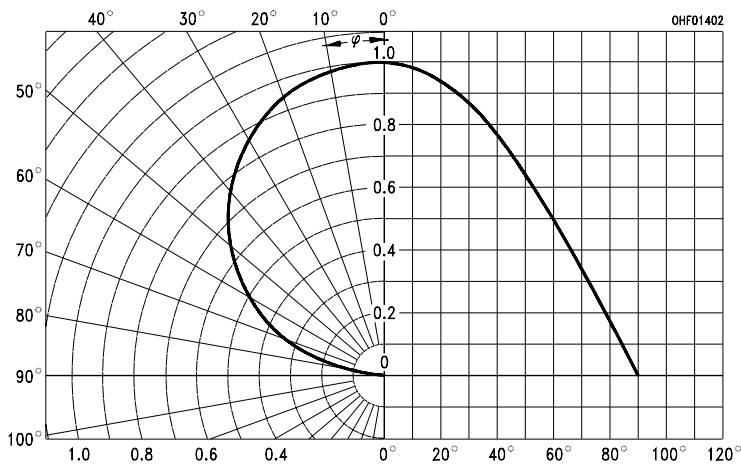


### Dark current

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



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





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