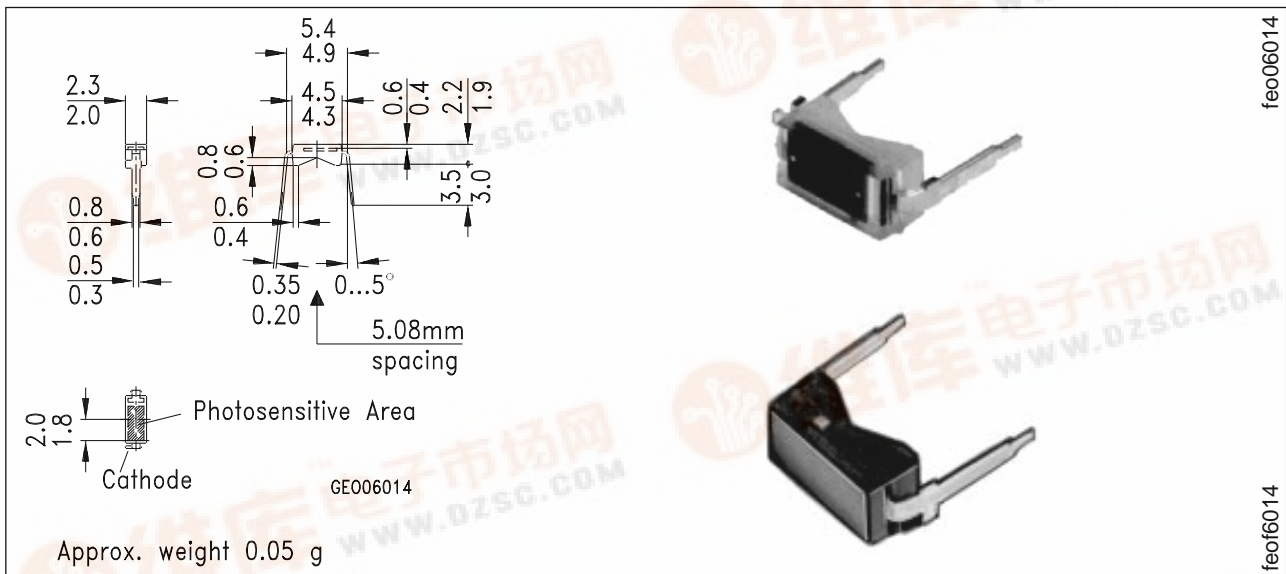


SIEMENS

Silizium-Fotodiode Silicon Photodiode

BPX 90
BPX 90 F



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 (BPX 90) und bei 950 nm (BPX 90 F)
- Hohe Fotoempfindlichkeit
- DIL-Plastikbauform mit hoher Packungsdichte

Anwendungen

- Industrieelektronik
- "Messen/Steuern/Regeln"

Features

- Especially suitable for applications from 400 nm to 1100 nm (BPX 90) and of 950 nm (BPX 90 F)
- High photosensitivity
- DIL plastic package with high packing density

Applications

- Industrial electronics
- For control and drive circuits

Typ Type	Bestellnummer Ordering Code
BPX 90	Q62702-P47
BPX 90 F	Q62702-P928

Grenzwerte Maximum Ratings

Bezeichnung Description	Symbol Symbol	Wert Value	Einheit Unit
Betriebs- und Lagertemperatur Operating and storage temperature range	$T_{op}; T_{stg}$	- 40 ... + 80	°C
Löttemperatur (Lötstelle 2 mm vom Gehäuse entfernt bei Lötzeit $t \leq 3$ s) Soldering temperature in 2 mm distance from case bottom ($t \leq 3$ s)	T_S	230	°C
Sperrspannung Reverse voltage	V_R	32	V
Verlustleistung, $T_A = 25$ °C Total power dissipation	P_{tot}	100	mW

Kennwerte $T_A = 25$ °C Characteristics

Bezeichnung Description	Symbol Symbol	Wert Value		Einheit Unit
		BPX 90	BPX 90 F	
Fotoempfindlichkeit Spectral sensitivity $V_R = 5$ V, Normlicht/standard light A, $T = 2856$ K, $V_R = 5$ V, $\lambda = 950$ nm, $E_e = 1$ mW/cm ²	S	45 (≥ 32)	–	nA/lx
	S	–	26 (≥ 16)	μ A
Wellenlänge der max. Fotoempfindlichkeit Wavelength of max. sensitivity	$\lambda_{S\ max}$	830	950	nm
Spektraler Bereich der Fotoempfindlichkeit $S = 10$ % von S_{max} Spectral range of sensitivity $S = 10$ % of S_{max}	λ	400 ... 1150	800 ... 1150	nm
Bestrahlungsempfindliche Fläche Radiant sensitive area	A	5.5	5.5	mm ²
Abmessung der bestrahlungsempfindlichen Fläche Dimensions of radiant sensitive area	$L \times B$	1.75 × 3.15	1.75 × 3.15	mm × mm
	$L \times W$			
Abstand Chipoberfläche zu Gehäuseoberfläche Distance chip front to case surface	H	0.5	0.5	mm

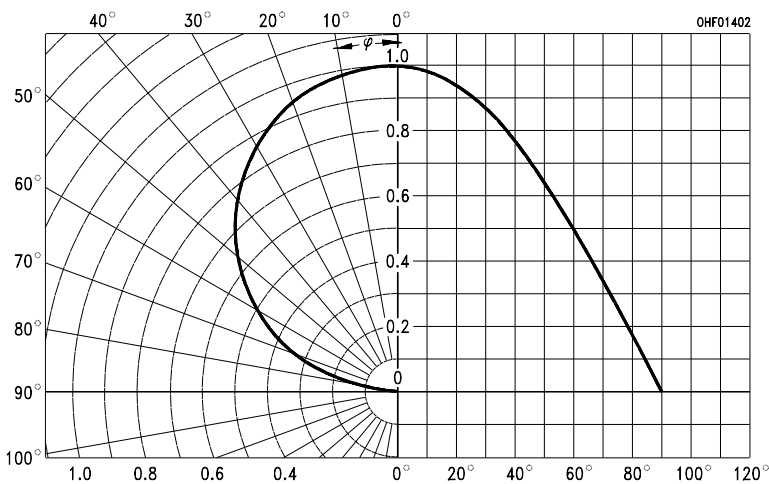
Kennwerte $T_A = 25\text{ °C}$
Characteristics (cont'd)

Bezeichnung Description	Symbol Symbol	Wert Value		Einheit Unit
		BPX 90	BPX 90 F	
Halbwinkel Half angle	φ	± 60	± 60	Grad deg.
Dunkelstrom, $V_R = 10\text{ V}$ Dark current	I_R	$5 (\leq 180)$	$5 (\leq 180)$	nA
Spektrale Fotoempfindlichkeit, $\lambda = 950\text{ nm}$ Spectral sensitivity	S_λ	0.48	0.48	A/W
Quantenausbeute, $\lambda = 950\text{ nm}$ Quantum yield	η	0.62	0.62	<u>Electrons</u> Photon
Leerlaufspannung Open-circuit voltage $E_v = 1000\text{ lx}$, Normlicht/standard light A, $T = 2856\text{ K}$ $E_e = 0.5\text{ mW/cm}^2$, $\lambda = 950\text{ nm}$	V_O	$450 (\geq 380)$	–	mV
	V_O	–	$400 (\geq 340)$	mV
Kurzschlußstrom Short-circuit current $E_v = 1000\text{ lx}$, Normlicht/standard light A, $T = 2856\text{ K}$ $E_e = 0.5\text{ mW/cm}^2$, $\lambda = 950\text{ nm}$	I_{SC}	45	–	μA
	I_{SC}	–	13	μA
Anstiegs- und Abfallzeit des Fotostromes Rise and fall time of the photocurrent $R_L = 1\text{ k}\Omega$; $V_R = 5\text{ V}$; $\lambda = 850\text{ nm}$; $I_p = 30\text{ }\mu\text{A}$	t_r, t_f	1.3	1.3	μs
Durchlaßspannung, $I_F = 80\text{ mA}$, $E = 0$ Forward voltage	V_F	1.3	1.3	V
Kapazität, $V_R = 0\text{ V}$, $f = 1\text{ MHz}$, $E = 0$ Capacitance	C_0	430	430	pF

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

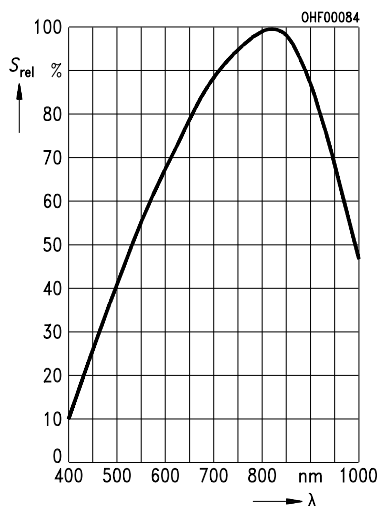
Bezeichnung Description	Symbol Symbol	Wert Value		Einheit Unit
		BPX 90	BPX 90 F	
Temperaturkoeffizient von V_O Temperature coefficient of V_O	TC_V	- 2.6	- 2.6	mV/K
Temperaturkoeffizient von I_{SC} Temperature coefficient of I_{SC} Normlicht/standard light A $\lambda = 950\text{ nm}$	TC_1 TC_1	0.18 -	- 0.2	%/K %/K
Rauschäquivalente Strahlungsleistung Noise equivalent power $V_R = 10\text{ V}, \lambda = 950\text{ nm}$	NEP	8×10^{-14}	8×10^{-14}	$\frac{W}{\sqrt{Hz}}$
Nachweisgrenze, $V_R = 10\text{ V}, \lambda = 950\text{ nm}$ Detection limit	D^*	2.9×10^{12}	2.9×10^{12}	$\frac{cm \cdot \sqrt{Hz}}{W}$

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



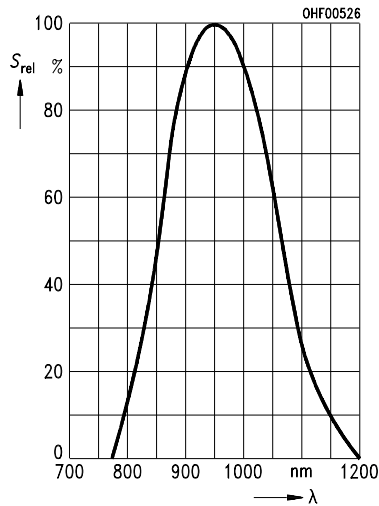
Relative spectral sensitivity BPX 90

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



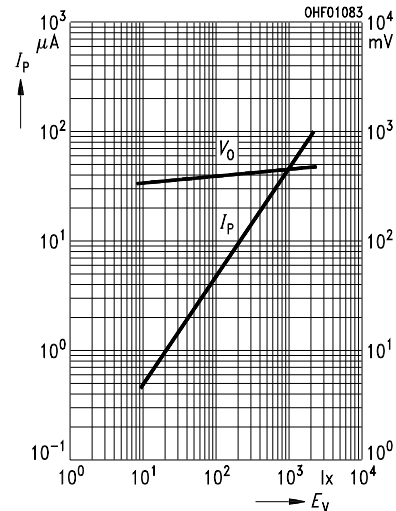
Relative spectral sensitivity BPX 90 F

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



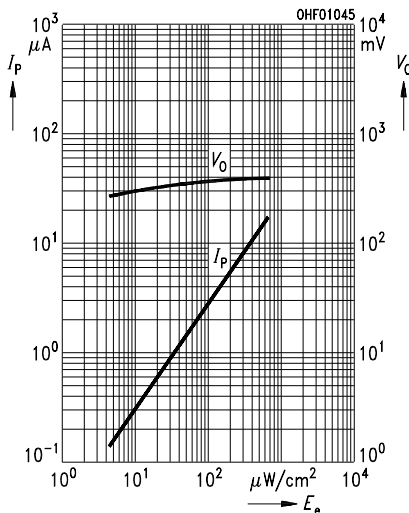
Photocurrent $I_P = f(E_V)$, $V_R = 5 V$

Open-circuit volt. BPX 90 $V_O = f(E_V)$



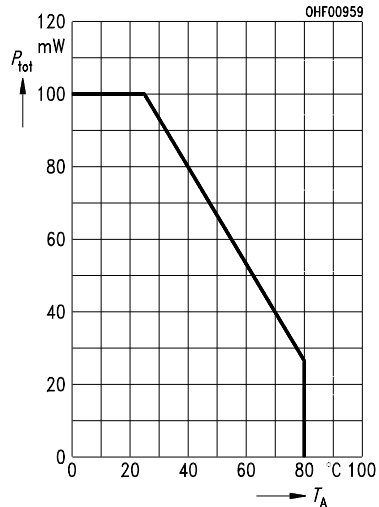
Photocurrent $I_P = f(E_e)$, $V_R = 5 V$

Open-circuit-volt. BPX 90 F $V_O = f(E_e)$



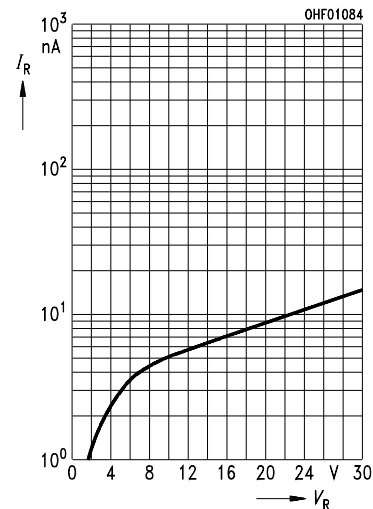
Total power dissipation

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



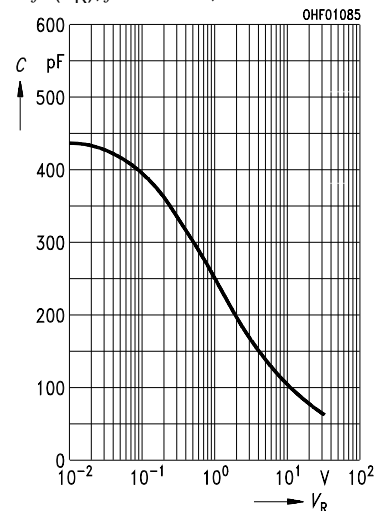
Dark current

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



Capacitance

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



Dark current

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

