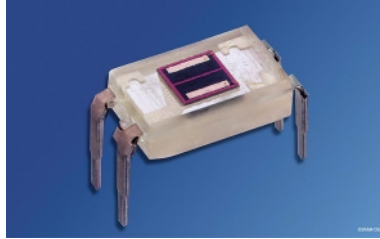


Silizium-Differential-Fotodiode Silicon Differential Photodiode

BPX 48 BPX 48 F



BPX 48



BPX 48 F

Wesentliche Merkmale

- Speziell geeignet für Anwendungen im Bereich von 400 nm bis 1100 nm (BPX 48) und bei 920 nm (BPX 48 F)
- Hohe Fotoempfindlichkeit
- DIL-Plastikbauform mit hoher Packungsdichte
- Doppeldiode mit extrem hoher Gleichmäßigkeit

Anwendungen

- Nachlaufsteuerung
- Kantenführungen
- Weg- bzw. Winkelabtastungen
- Industrieelektronik
- „Messen/Steuern/Regeln“

Features

- Especially suitable for applications from 400 nm to 1100 nm (BPX 48) and of 920 nm (BPX 48 F)
- High photosensitivity
- DIL plastic package with high packing density
- Double diode with extremely high homogeneousness

Application

- Follow-up control
- Edge control
- Path and angle scanning
- Industrial electronics
- For control and drive circuits

Typ Type	Bestellnummer Ordering Code
BPX 48	Q62702-P17-S1
BPX 48 F	Q62702-P305

**Grenzwerte
Maximum Ratings**

Bezeichnung Parameter	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	10	V
Verlustleistung, $T_A = 25$ °C Total power dissipation	P_{tot}	50	mW

**Kennwerte ($T_A = 25$ °C) für jede Einzeldiode
Characteristics ($T_A = 25$ °C) per single diode system**

Bezeichnung Parameter	Symbol Symbol	Wert Value		Einheit Unit
		BPX 48	BPX 48 F	
Fotostrom Photocurrent $V_R = 5$ V, Normlicht/standard light A, $T = 2856$ K, $E_V = 1000$ lx $V_R = 5$ V, $\lambda = 950$ nm, $E_e = 0.5$ mW/cm ²	I_P I_P	24 (≥ 15) –	– 7.5 (≥ 4.0)	μ A μ A
Wellenlänge der max. Fotoempfindlichkeit Wavelength of max. sensitivity	$\lambda_{S\ max}$	900	920	nm
Spektraler Bereich der Fotoempfindlichkeit $S = 10\%$ von S_{max} Spectral range of sensitivity $S = 10\%$ of S_{max}	λ	400 ... 1150	750 ... 1150	nm
Bestrahlungsempfindliche Fläche Radiant sensitive area	A	1.54	1.54	mm ²
Abmessung der bestrahlungsempfindlichen Fläche Dimensions of radiant sensitive area	$L \times B$ $L \times W$	0.7×2.2	0.7×2.2	mm \times mm
Abstand Chipoberfläche zu Gehäuseoberfläche Distance chip front to case surface	H	0.5	0.5	mm

Kennwerte ($T_A = 25\text{ °C}$) für jede Einzeldiode
Characteristics ($T_A = 25\text{ °C}$) per single diode system (cont'd)

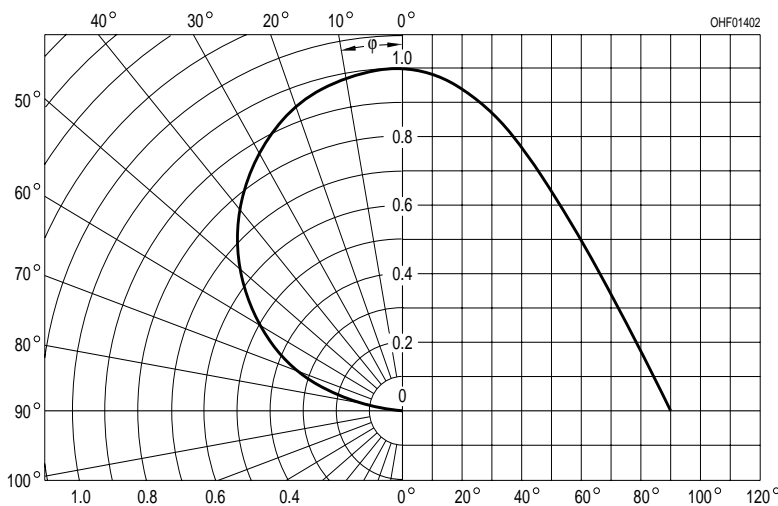
Bezeichnung Parameter	Symbol Symbol	Wert Value		Einheit Unit
		BPX 48	BPX 48 F	
Halbwinkel Half angle	φ	± 60	± 60	Grad deg.
Dunkelstrom, $V_R = 10\text{ V}$ Dark current	I_R	10 (≤ 100)	10 (≤ 100)	nA
Spektrale Fotoempfindlichkeit Spectral sensitivity				
$\lambda = 850\text{ nm}$	S_λ	0.55	–	A/W
$\lambda = 950\text{ nm}$	S_λ	–	0.65	
Max. Abweichung der Fotoempfindlichkeit der Systeme vom Mittelwert Max. deviation of the system spectral sensitivity from the average	ΔS	± 5	± 5	%
Quantenausbeute Quantum yield				<u>Electrons</u> Photon
$\lambda = 850\text{ nm}$	η	0.8	–	
$\lambda = 950\text{ nm}$	η	–	0.95	
Leerlaufspannung Open-circuit voltage				
$E_v = 1000\text{ lx}$, Normlicht/standard light A, $T = 2856\text{ K}$	V_O	330 (≥ 280)	–	mV
$E_e = 0.5\text{ mW/cm}^2$, $\lambda = 950\text{ nm}$	V_O	–	300 (≥ 280)	mV
Kurzschlußstrom Short-circuit current				
$E_v = 1000\text{ lx}$, Normlicht/standard light A, $T = 2856\text{ K}$	I_{SC}	24	–	μA
$E_e = 0.5\text{ mW/cm}^2$, $\lambda = 950\text{ nm}$	I_{SC}	–	7	μA
Anstiegs- und Abfallzeit des Fotostromes Rise and fall time of the photocurrent	t_r, t_f	500	500	ns
$R_L = 1\text{ k}\Omega$; $V_R = 5\text{ V}$; $\lambda = 850\text{ nm}$; $I_p = 20\text{ }\mu\text{A}$				
Durchlaßspannung, $I_F = 40\text{ mA}$, $E = 0$ Forward voltage	V_F	1.3	1.3	V
Kapazität, $V_R = 0\text{ V}$, $f = 1\text{ MHz}$, $E = 0$ Capacitance	C_0	25	25	pF
Temperaturkoeffizient von V_O Temperature coefficient of V_O	TC_V	– 2.6	– 2.6	mV/K

Kennwerte ($T_A = 25\text{ °C}$) für jede Einzeldiode
Characteristics ($T_A = 25\text{ °C}$) per single diode system (cont'd)

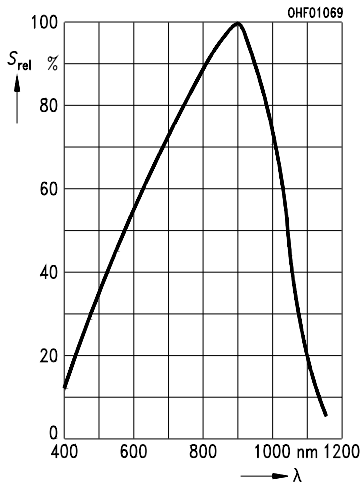
Bezeichnung Parameter	Symbol Symbol	Wert Value		Einheit Unit
		BPX 48	BPX 48 F	
Temperaturkoeffizient von I_{SC} Temperature coefficient of I_{SC} Normlicht/standard light A $\lambda = 950\text{ nm}$	TC_1 TC_1	0.18 –	– 0.2	%/K %/K
Rauschäquivalente Strahlungsleistung Noise equivalent power $V_R = 10\text{ V}, \lambda = 950\text{ nm}$	NEP	1.0×10^{-13}	1.0×10^{-13}	$\frac{W}{\sqrt{Hz}}$
Nachweisgrenze, $V_R = 10\text{ V}, \lambda = 950\text{ nm}$ Detection limit	D^*	1.2×10^{12}	1.2×10^{12}	$\frac{cm \times \sqrt{Hz}}{W}$

Directional Characteristics

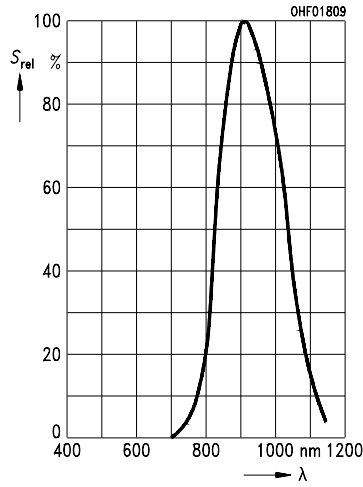
$S_{rel} = f(\varphi)$



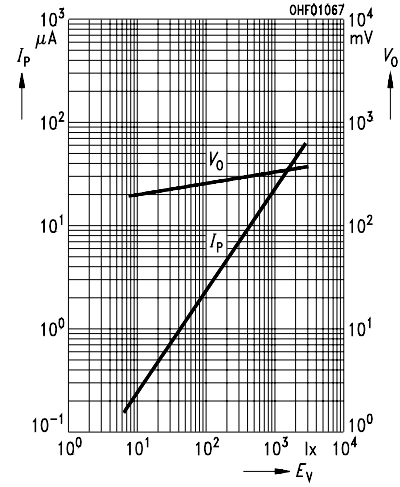
Relative Spectral Sensitivity
BPX 48 $S_{rel} = f(\lambda)$



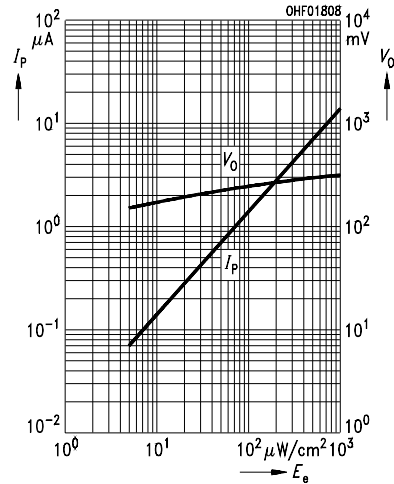
Relative Spectral Sensitivity
BPX 48 F $S_{rel} = f(\lambda)$



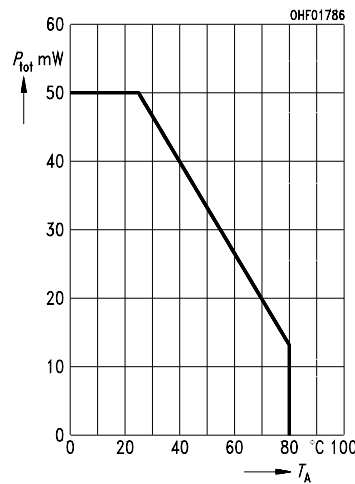
Photocurrent $I_P = f(E_V)$, $V_R = 5 V$
Open-Circuit Voltage $V_O = f(E_V)$
BPX 48



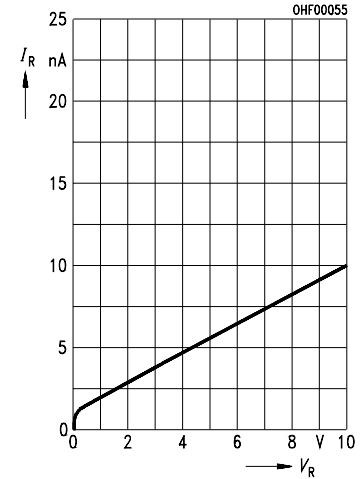
Photocurrent $I_P = f(E_e)$, $V_R = 5 V$
Open-Circuit Voltage $V_O = f(E_e)$
BPX 48 F



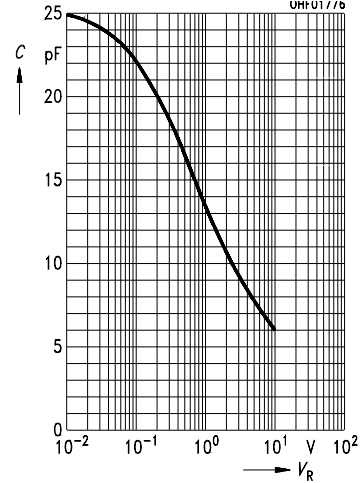
Total Power Dissipation
 $P_{tot} = f(T_A)$



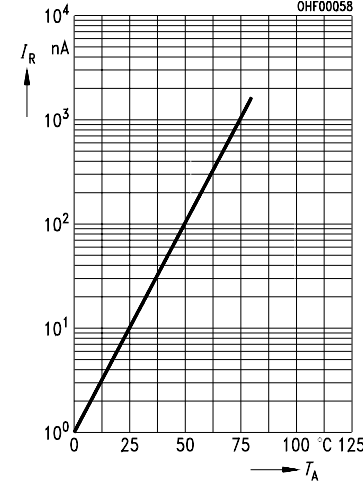
Dark Current
 $I_R = f(V_R), E = 0$



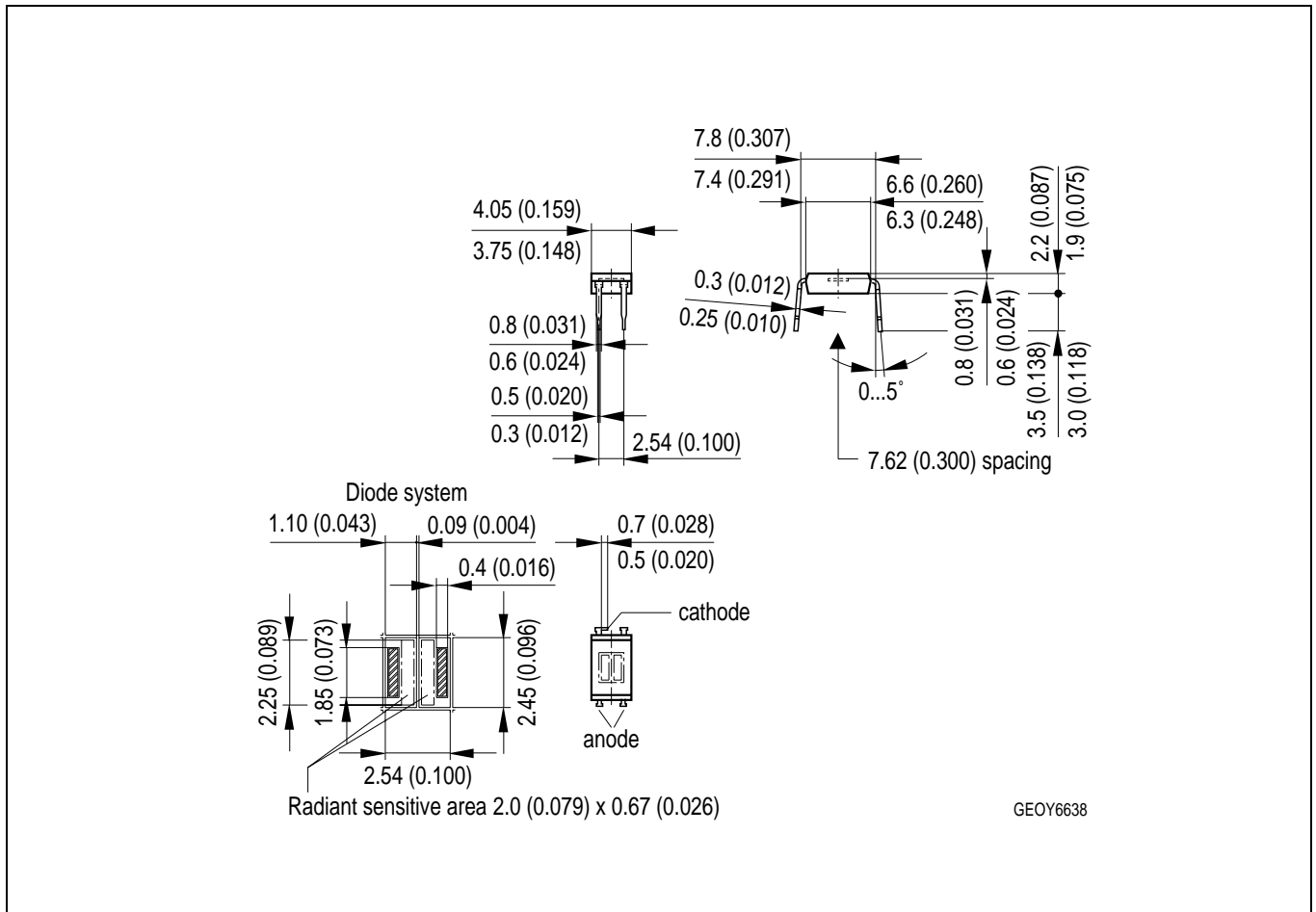
Capacitance
 $C = f(V_R), f = 1 MHz, E = 0$



Dark Current
 $I_R = f(T_A), V_R = 10 V$



**Maßzeichnung
Package Outlines**



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

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Attention please!

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Packing

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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¹ A critical component is a component used in a life-support device or system whose failure can reasonably be expected to cause the failure of that life-support device or system, or to affect its safety or effectiveness of that device or system.

² Life support devices or systems are intended (a) to be implanted in the human body, or (b) to support and/or maintain and sustain human life. If they fail, it is reasonable to assume that the health of the user may be endangered.