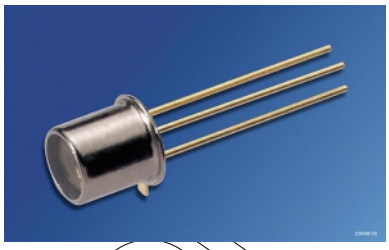
NPN-Silizium-Fototransistor
Silicon NPN Phototransistor

BPX 38



Wesentliche Merkmale

- Speziell geeignet für Anwendungen im Bereich von 450 nm bis 1120 nm
- Hohe Linearität
- Hermetisch dichte Metallbauform (TO-18) mit Basisanschluß, geeignet bis 125 °C
- Gruppiert lieferbar

Features

- Especially suitable for applications from 450 nm to 1120 nm
- High linearity
- Hermetically sealed metal package (TO-18) with base connection, suitable up to 125 °C
- Available in groups

Anwendungen

- Lichtschranken für Gleich- und Wechsellichtbetrieb
- Industrieelektronik
- „Messen/Steuern/Regeln“

Applications

- Photointerrupters
- Industrial electronics
- For control and drive circuits

Typ Type	Bestellnummer Ordering Code	Typ Type	Bestellnummer Ordering Code
BPX 38	Q62702-P15	BPX 38-4	Q62702-P15-S4
BPX 38-2/3	Q62702-P3578	BPX 38-4/5	Q62702-P5197
BPX 38-3	Q62702-P15-S3	BPX 38-5[1)]	Q62702-P15-S5
BPX 38-3/4	Q62702-P3579		

1) Eine Lieferung in dieser Gruppe kann wegen Ausbeuteschwankungen nicht immer sichergestellt werden. Wir behalten uns in diesem Fall die Lieferung einer Ersatzgruppe vor.

1) Supplies out of this group cannot always be guaranteed due to unforseeable spread of yield. In this case we will reserve us the right of delivering a substitute group.

Grenzwerte
Maximum Ratings

Bezeichnung **Parameter**	**Symbol** **Symbol**	**Wert** **Value**	**Einheit** **Unit**
Betriebs- und Lagertemperatur Operating and storage temperature range	T_{op}; T_{stg}	– 40 … + 125	°C
Löttemperatur bei Tauchlötung Lötstelle ≥ 2 mm vom Gehäuse, Lötzeit $t \leq 5$ s Dip soldering temperature ≥ 2 mm distance from case bottom, soldering time $t \leq 5$ s	T_S	260	°C
Löttemperatur bei Kolbenlötung Lötstelle ≥ 2 mm vom Gehäuse, Lötzeit $t \leq 3$ s Iron soldering temperature ≥ 2 mm distance from case bottom, soldering time $t \leq 3$ s	T_S	300	°C
Kollektor-Emitterspannung Collector-emitter voltage	V_{CE}	50	V
Kollektorstrom Collector current	I_C	50	mA
Kollektorspitzenstrom, $\tau < 10$ µs Collector surge current	I_{CS}	200	mA
Emitter-Basisspannung Emitter-base voltage	V_{EB}	7	V
Verlustleistung, $T_A = 25$ °C Total power dissipation	P_{tot}	220	mW
Wärmewiderstand Thermal resistance	R_{thJA}	450	K/W

Kennwerte (T_A = 25 °C, λ = 950 nm)
Characteristics

Bezeichnung **Parameter**	**Symbol** **Symbol**	**Wert** **Value**	**Einheit** **Unit**
Wellenlänge der max. Fotoempfindlichkeit Wavelength of max. sensitivity	$\lambda_{S\ max}$	880	nm
Spektraler Bereich der Fotoempfindlichkeit S = 10% von S_{max} Spectral range of sensitivity S = 10% of S_{max}	λ	450 … 1120	nm
Bestrahlungsempfindliche Fläche Radiant sensitive area	A	0.675	mm^2
Abmessung der Chipfläche Dimensions of chip area	$L \times B$ $L \times W$	1 × 1	mm × mm
Abstand Chipoberfläche zu Gehäuseoberfläche Distance chip front to case surface	H	2.05 … 2.35	mm
Halbwinkel Half angle	φ	± 40	Grad deg.
Fotostrom der Kollektor-Basis-Fotodiode Photocurrent of collector-base photodiode E_e = 0.5 mW/cm², V_{CB} = 5 V E_v = 1000 lx, Normlicht/standard light A, V_{CB} = 5 V	 I_{PCB} I_{PCB}	 1.8 5.5	 µA µA
Kapazität Capacitance V_{CE} = 0 V, f = 1 MHz, E = 0 V_{CB} = 0 V, f = 1 MHz, E = 0 V_{EB} = 0 V, f = 1 MHz, E = 0	 C_{CE} C_{CB} C_{EB}	 23 39 47	 pF pF pF
Dunkelstrom Dark current V_{CE} = 25 V, E = 0	I_{CEO}	20 (≤ 300)	nA

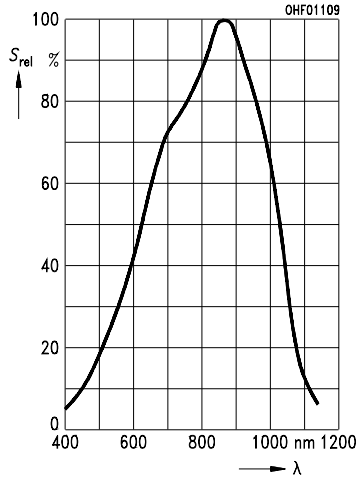
Die Fototransistoren werden nach ihrer Fotoempfindlichkeit gruppiert und mit arabischen Ziffern gekennzeichnet.
The phototransistors are grouped according to their spectral sensitivity and distinguished by arabian figures.

Bezeichnung **Parameter**	**Symbol** **Symbol**	**Wert** **Value**				**Einh.** **Unit**
		-2	**-3**	**-4**	**-5**	
Fotostrom, $\lambda = 950$ nm Photocurrent E_e = 0.5 mW/cm², V_{CE} = 5 V E_v = 1000 lx, Normlicht/standard light A, V_{CE} = 5 V	 I_{PCE} I_{PCE}	 0.2 … 0.4 0.95	 0.32 … 0.63 1.5	 0.5 … 1.0 2.3	 ≥ 0.8 3.6	 mA mA
Anstiegszeit/Abfallzeit Rise and fall time I_C = 1 mA, V_{CC} = 5 V, R_L = 1 kΩ	t_r, t_f	9	12	15	18	µs
Kollektor-Emitter-Sättigungsspannung Collector-emitter saturation voltage $I_C = I_{PCEmin}$ [1] × 0.3 E_e = 0.5 mW/cm²	V_{CEsat}	200	200	200	200	mV
Stromverstärkung Current gain E_e = 0.5 mW/cm², V_{CE} = 5 V	$\frac{I_{PCE}}{I_{PCB}}$	170	280	420	650	–

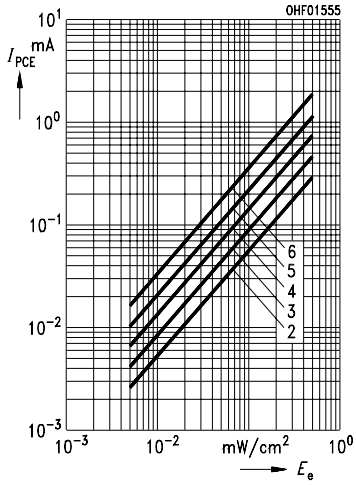
[1] I_{PCEmin} ist der minimale Fotostrom der jeweiligen Gruppe.

[1] I_{PCEmin} is the min. photocurrent of the specified group.

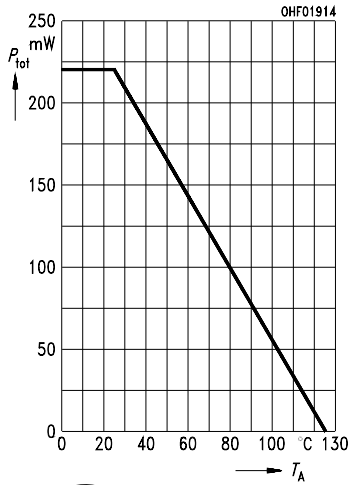
Relative Spectral Sensitivity
$S_{rel} = f(\lambda)$



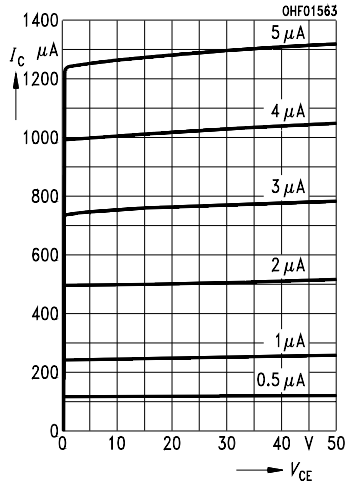
Photocurrent
$I_{PCE} = f(E_e)$, V_{CE} = 5 V



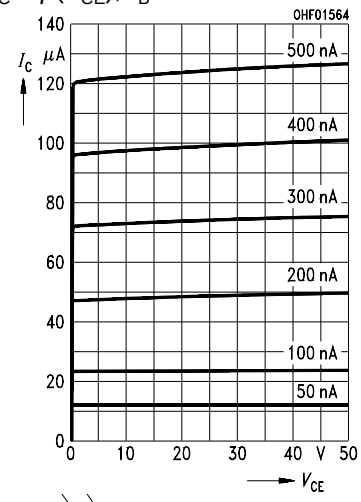
Total Power Dissipation
$P_{tot} = f(T_A)$



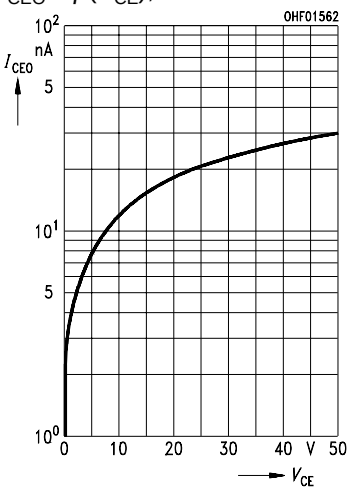
Output Characteristics
$I_C = f(V_{CE})$, I_B = Parameter



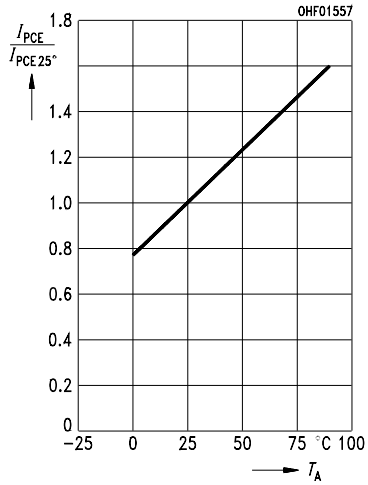
Output Characteristics
$I_C = f(V_{CE})$, I_B = Parameter



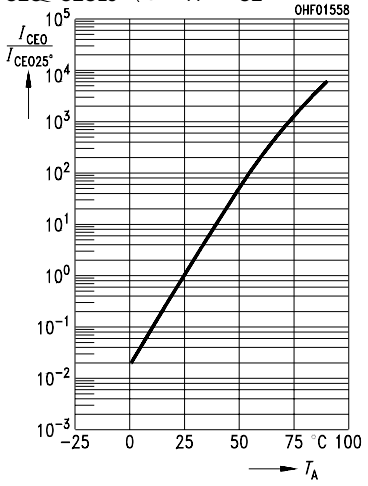
Dark Current
$I_{CEO} = f(V_{CE})$, E = 0



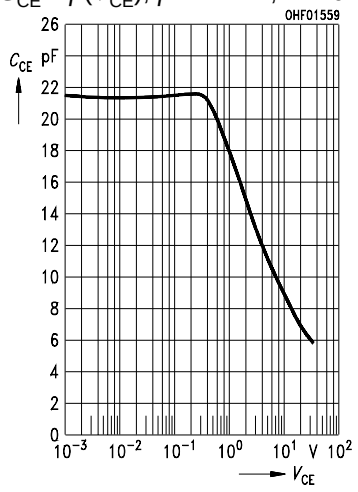
Photocurrent
$I_{PCE}/I_{PCE25°} = f(T_A)$, V_{CE} = 5 V



Dark Current
$I_{CEO}/I_{CEO25°} = f(T_A)$, V_{CE} = 25 V, E = 0

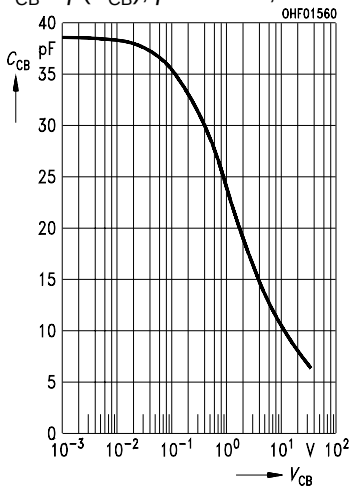


Collector-Emitter Capacitance
$C_{CE} = f(V_{CE})$, f = 1 MHz, E = 0



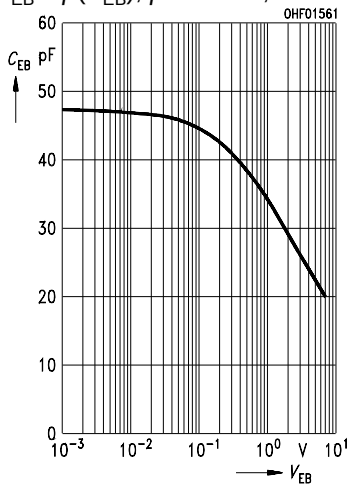
Collector-Base Capacitance

$C_{CB} = f(V_{CB})$, f = 1 MHz, E = 0



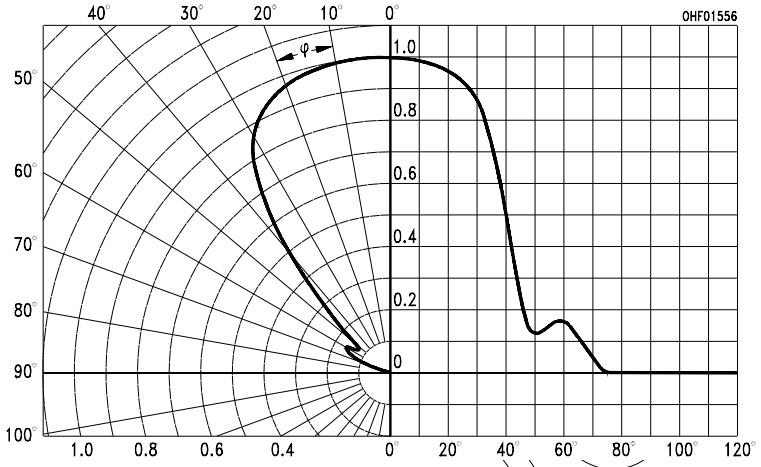
Emitter-Base Capacitance

$C_{EB} = f(V_{EB})$, f = 1 MHz, E = 0

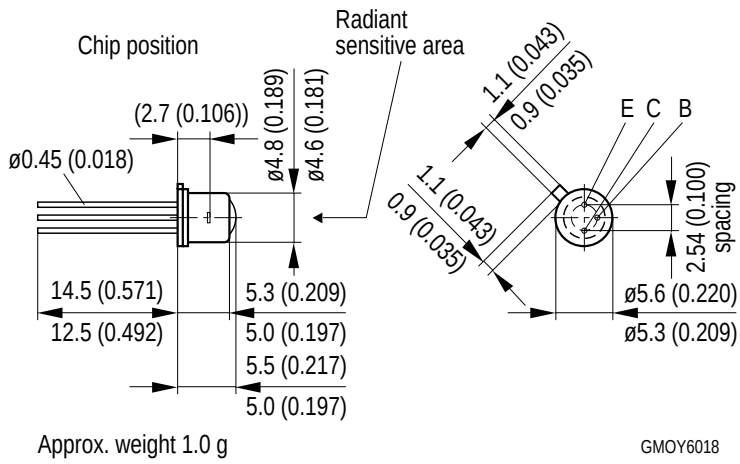


Directional Characteristics

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



Maßzeichnung
Package Outlines



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

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