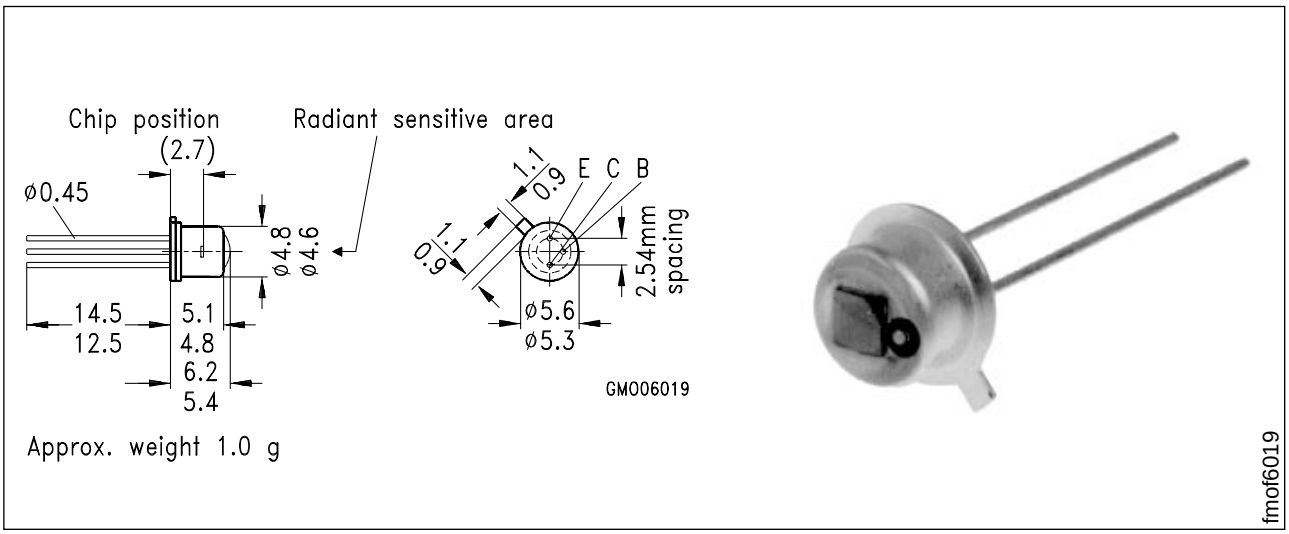
SIEMENS

NPN-Silizium-Fototransistor
Silicon NPN Phototransistor

BPX 43



Maße in mm, wenn nicht anders angegeben/Dimensions in mm, unless otherwise specified

Wesentliche Merkmale

- Speziell geeignet für Anwendungen im Bereich von 450 nm bis 1100 nm
- Hohe Linearität
- Hermetisch dichte Metallbauform (TO-18) mit Basisanschluß, geeignet bis 125 °C
- Gruppiert lieferbar

Anwendungen

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

Features

- Especially suitable for applications from 450 nm to 1100 nm
- High linearity
- Hermetically sealed metal package (TO-18) with base connection suitable up to 125 °C
- Available in groups

Applications

- Photointerrupters
- Industrial electronics
- For control and drive circuits

Typ Type	Bestellnummer Ordering Code
BPX43	Q62702-P16
BPX 43-2	Q62702-P16-S2
BPX 43-3	Q62702-P16-S3
BPX 43-4	Q62702-P16-S4
BPX 43-5	Q 62702-P16-S5

Grenzwerte
Maximum Ratings

Bezeichnung **Description**	**Symbol** **Symbol**	**Wert** **Value**	**Einheit** **Unit**
Betriebs- und Lagertemperatur Operating and storage temperature range	T_{op}; T_{stg}	– 55 ... + 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 **Description**	**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 ... 1100	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	2.4 ... 3.0	mm
Halbwinkel Half angle	φ	± 15	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}	 11 35	 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

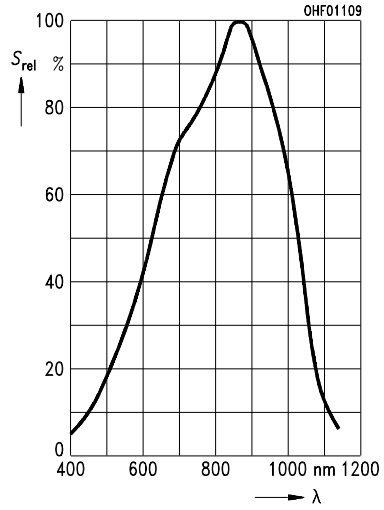
Die Fototransistoren werden nach ihrer Fotoempfindlichkeit gruppiert und mit arabischen Ziffern gekennzeichnet.
The phototransistors are grouped according to their spectral sensitivity and distinguished by arabian figures.

Bezeichnung **Description**	**Symbol** **Symbol**	**Wert** **Value**				**Einheit** **Unit**
		-2	**-3**	**-4**	**-5**	
Fotostrom, $\lambda = 950$ nm Photocurrent E_e = 0.5 mW/cm^2, V_{CE} = 5 V E_v = 1000 lx, Normlicht/standard light A, V_{CE} = 5 V	 I_{PCE} I_{PCE}	 0.8 ... 1.6 3.8	 1.25 ... 2.5 6.0	 2.0 ... 4.0 9.5	 ≥ 3.2 15.0	 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/cm^2	V_{CEsat}	200	220	240	260	mV
Stromverstärkung Current gain E_e = 0.5 mW/cm^2, V_{CE} = 5 V	$\frac{I_{PCE}}{I_{PCB}}$	110	170	270	430	

[1] I_{PCEmin} ist der minimale Fotostrom der jeweiligen Gruppe
[1] I_{PCEmin} is the min. photocurrent of the specified group

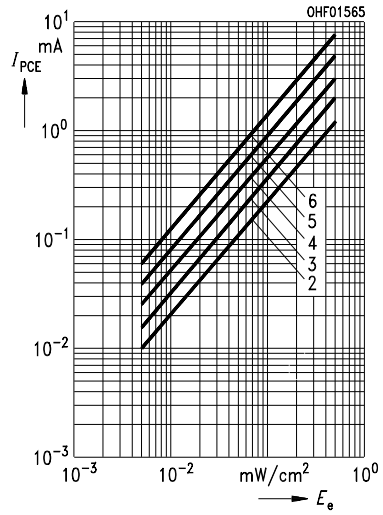
Relative spectral sensitivity

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



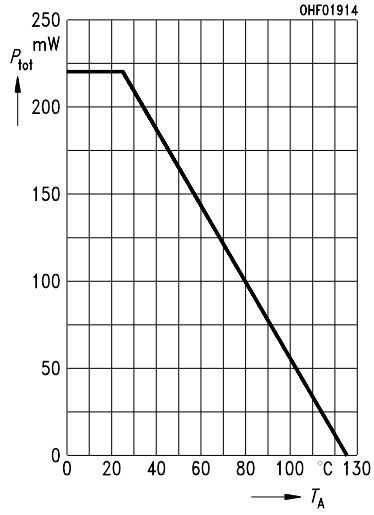
Photocurrent

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



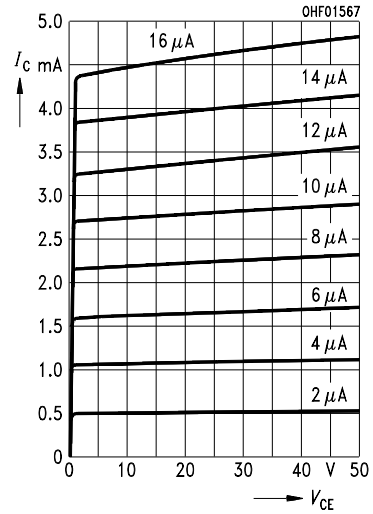
Total power dissipation

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



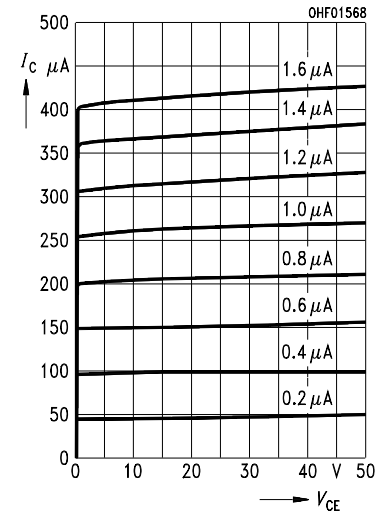
Output characteristics

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



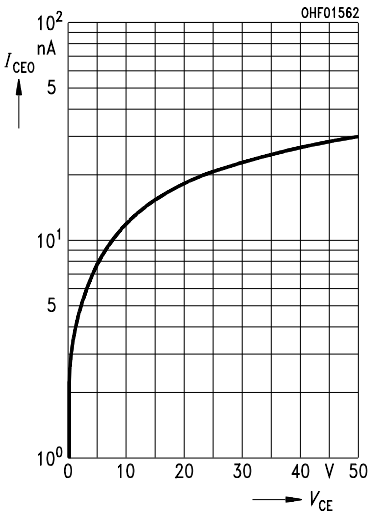
Output characteristics

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



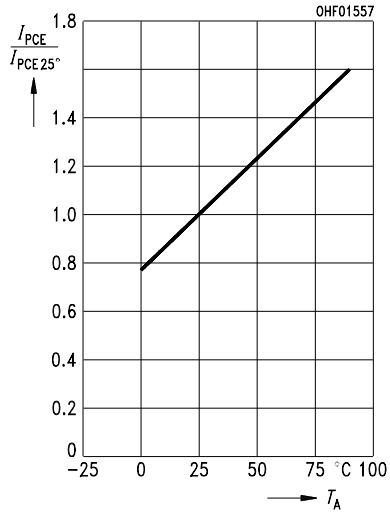
Dark current

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



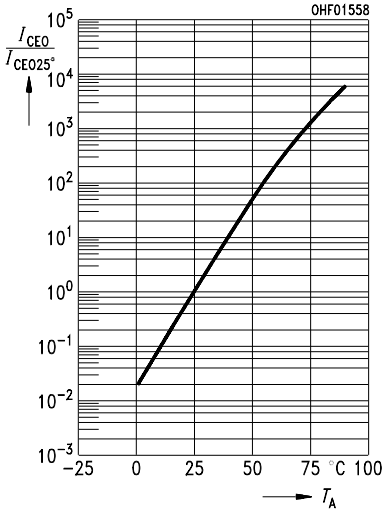
Photocurrent

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



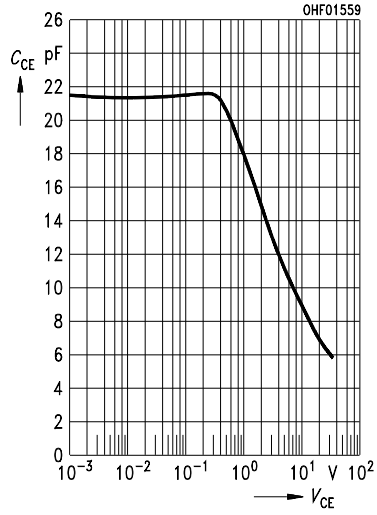
Dark current

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

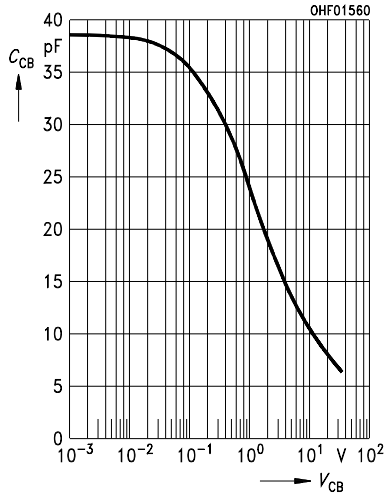


Collector-emitter capacitance

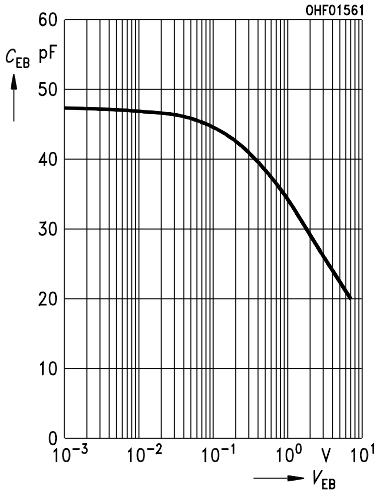
$C_{CE} = f\ (V_{CE})$, f = 1 MHz, E = 0



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