



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



## Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China



# NPN-Silizium-Fototransistor Silicon NPN Phototransistor

## BP 103



### Wesentliche Merkmale

- Speziell geeignet für Anwendungen im Bereich von 420 nm bis 1130 nm
- Hohe Linearität
- TO-18, Bodenplatte, klares Epoxy-Gießharz, mit Basisanschluß

### Anwendungen

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

### Features

- Especially suitable for applications from 420 nm to 1130 nm
- High linearity
- TO-18, base plate, transparent epoxy resin lens, with base connection

### Applications

- Computer-controlled flashes
- Photointerrupters
- Industrial electronics
- For control and drive circuits

Typ Type	Bestellnummer Ordering Code
BP 103	Q62702-P75
BP 103-3	Q62702-P79-S2
BP 103-3/4	Q62702-P3577
BP 103-4	Q62702-P79-S4

**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 bei Tauchlötung Lötstelle $\geq 2$ mm vom Gehäuse, Lötzeit $t \leq 5$ s Dip soldering temperature, $\geq 2$ mm distance from case bottom $t \leq 5$ s	$T_S$	260	°C
Löttemperatur bei Kolbenlötung Lötstelle $\geq 2$ mm vom Gehäuse, Lötzeit $t \leq 3$ s Iron soldering temperature, $\geq 2$ mm distance from case bottom $t \leq 3$ s	$T_S$	300	°C
Kollektor-Emitterspannung Collector-emitter voltage	$V_{CE}$	50	V
Kollektorstrom Collector current	$I_C$	100	mA
Kollektorspitzenstrom, $\tau < 10 \mu\text{s}$ Collector surge current	$I_{CS}$	200	mA
Emitter-Basisspannung Emitter-base voltage	$V_{EB}$	7	V
Verlustleistung, $T_A = 25 \text{ °C}$ Total power dissipation	$P_{tot}$	150	mW
Wärmewiderstand Thermal resistance	$R_{thJA}$	500	K/W

**Kennwerte** ( $T_A = 25\text{ °C}$ ,  $\lambda = 950\text{ nm}$ )

**Characteristics**

Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Wellenlänge der max. Fotoempfindlichkeit Wavelength of max. sensitivity	$\lambda_{S\text{ max}}$	850	nm
Spektraler Bereich der Fotoempfindlichkeit $S = 10\%$ von $S_{\text{max}}$ Spectral range of sensitivity $S = 10\%$ of $S_{\text{max}}$	$\lambda$	420 ... 1130	nm
Bestrahlungsempfindliche Fläche Radiant sensitive area	$A$	0.12	mm <sup>2</sup>
Abmessungen der Chipfläche Dimensions of chip area	$L \times B$ $L \times W$	$0.5 \times 0.5$	mm × mm
Abstand Chipoberfläche zu Gehäuseoberfläche Distance chip front to case surface	$H$	0.2 ... 0.8	mm
Halbwinkel Half angle	$\varphi$	$\pm 55$	Grad deg.
Fotostrom der Kollektor-Basis-Fotodiode Photocurrent of collector-base photodiode $E_e = 0.5\text{ mW/cm}^2$ , $V_{CB} = 5\text{ V}$ $E_v = 1000\text{ lx}$ , Normlicht/standard light a $V_{CB} = 5\text{ V}$	$I_{PCB}$ $I_{PCB}$	0.9 2.7	$\mu\text{A}$ $\mu\text{A}$
Kapazität Capacitance $V_{CE} = 0\text{ V}$ , $f = 1\text{ MHz}$ , $E = 0$ $V_{CB} = 0\text{ V}$ , $f = 1\text{ MHz}$ , $E = 0$ $V_{EB} = 0\text{ V}$ , $f = 1\text{ MHz}$ , $E = 0$	$C_{CE}$ $C_{CB}$ $C_{EB}$	8 11 19	pF pF pF
Dunkelstrom Dark current $V_{CE} = 35\text{ V}$ , $E = 0$	$I_{CEO}$	5 ( $\leq 100$ )	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.

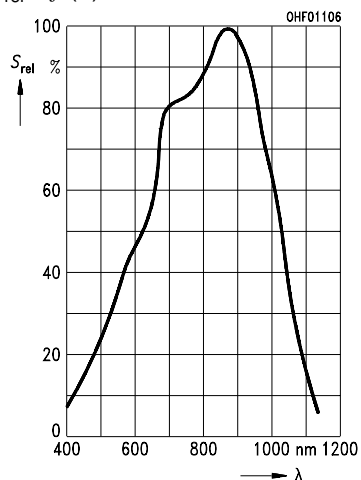
Bezeichnung Parameter	Symbol Symbol	Wert Value				Einheit Unit
		-2	-3	-4	-5	
Fotostrom, $\lambda = 950 \text{ nm}$ Photocurrent $E_e = 0.5 \text{ mW/cm}^2$ , $V_{CE} = 5 \text{ V}$ $E_v = 1000 \text{ lx}$ Normlicht/standard light A $V_{CE} = 5 \text{ V}$	$I_{PCE}$	80 ... 160	125 ... 250	200 ... 400	$\geq 320$	$\mu\text{A}$
	$I_{PCE}$	0.38	0.6	0.95	1.4	$\text{mA}$
Anstiegszeit/Abfallzeit Rise and fall time $I_C = 1 \text{ mA}$ , $V_{CC} = 5 \text{ V}$ , $R_L = 1 \text{ k}\Omega$	$t_r, t_f$	5	7	9	12	$\mu\text{s}$
Kollektor-Emitter-Sättigungsspannung Collector-emitter saturation voltage $I_C = I_{PCEmin}^{1)} \times 0.3$ $E_e = 0.5 \text{ mW/cm}^2$	$V_{CEsat}$	150	150	150	150	$\text{mV}$
Stromverstärkung Current gain $E_e = 0.5 \text{ mW/cm}^2$ , $V_{CE} = 5 \text{ V}$	$\frac{I_{PCE}}{I_{PCB}}$	140	210	340	530	–

1)  $I_{PCEmin}$  ist der minimale Fotostrom der jeweiligen Gruppe.

1)  $I_{PCEmin}$  is the min. photocurrent of the specified group.

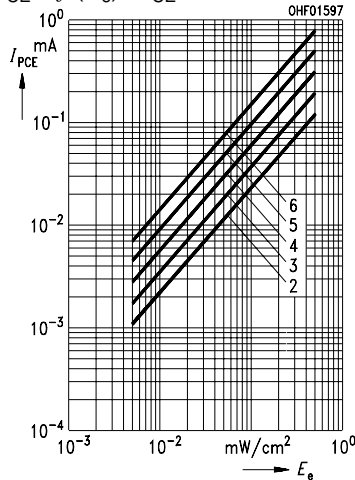
**Relative Spectral Sensitivity**

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



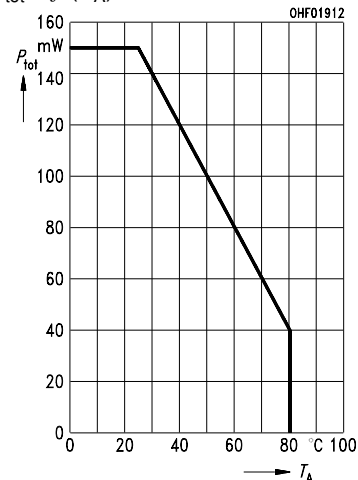
**Photocurrent**

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



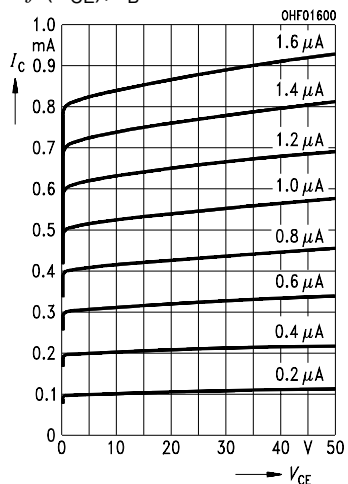
**Total Power Dissipation**

$P_{tot} = f(T_A)$



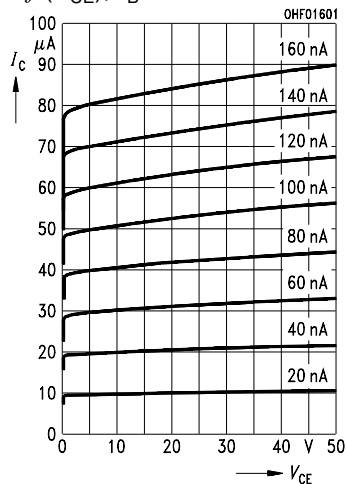
**Output Characteristics**

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



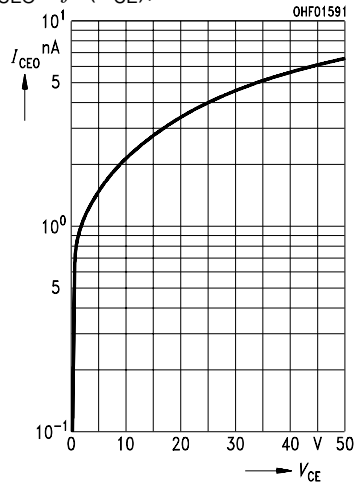
**Output Characteristics**

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



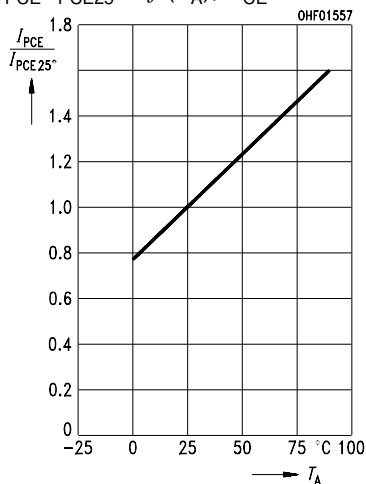
**Dark Current**

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

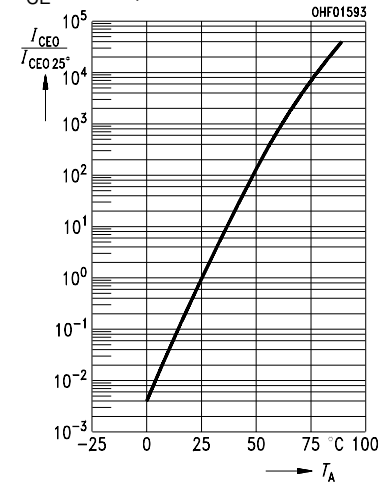


**Photocurrent**

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

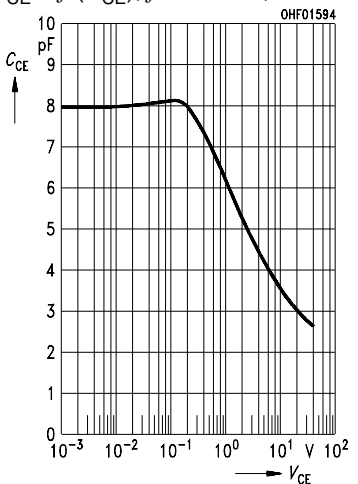


**Dark Current  $I_{CEO}/I_{CEO25^\circ} = f(T_A), V_{CE} = 25 V, E = 0$**



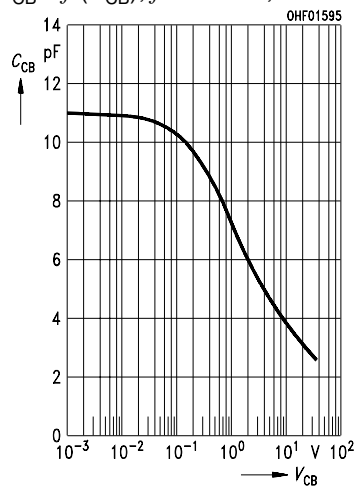
**Collector-Emitter Capacitance**

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



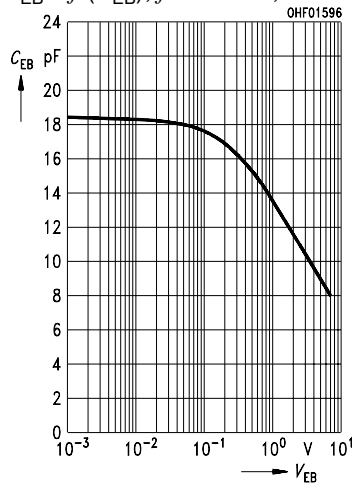
**Collector-Emitter Capacitance**

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



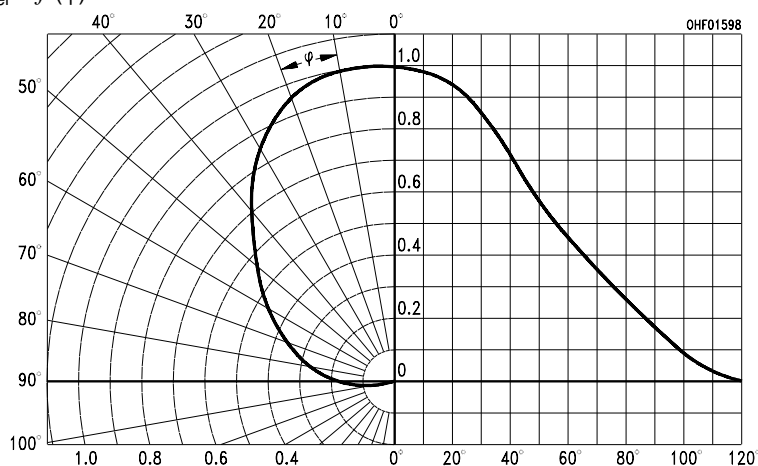
**Emitter-Base Capacitance**

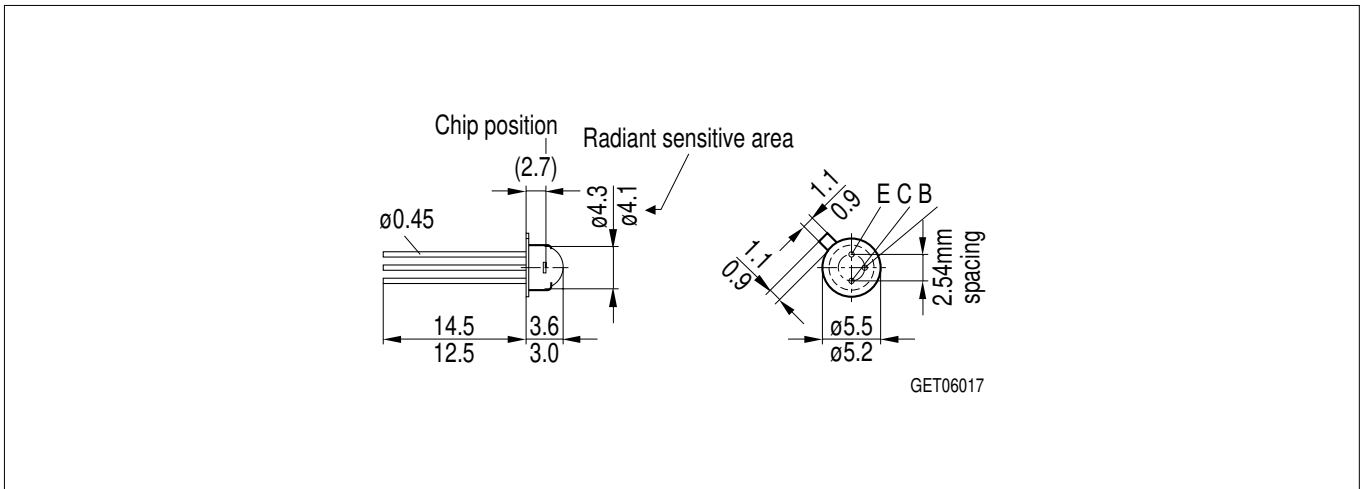
$C_{EB} = f(V_{EB}), f = 1 \text{ MHz}, E = 0$



**Directional Characteristics**

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



**Maßzeichnung  
Package Outlines**

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