

# NPN-Silizium-Fototransistor Zeilen

## Silicon NPN Phototransistor Arrays

### Lead (Pb) Free Product - RoHS Compliant

**BPX 80**  
**BPX 82 ... 89**



#### Wesentliche Merkmale

- Speziell geeignet für Anwendungen im Bereich von 450 nm bis 1100 nm
- Hohe Linearität
- Mehrstellige Zeilenbauform aus klarem Epoxy
- Gruppiert lieferbar

#### Anwendungen

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

#### Features

- Especially suitable for applications from 450 nm to 1100 nm
- High linearity
- Multiple-digit array package of transparent epoxy
- Available in groups

#### Applications

- Miniature photointerrupters
- Industrial electronics
- For control and drive circuits

Typ Type	Bestellnummer Ordering Code	Fotostrom , $E_e = 0.5 \text{ mW/cm}^2$ , $\lambda = 950 \text{ nm}$ , $V_{CE} = 5 \text{ V}$ Photocurrent $I_{PCE} \text{ (mA)}$
BPX 82	Q62702P0021	> 0.32
BPX 83	Q62702P0025	> 0.32
BPX 84	Q62702P0030	> 0.32
BPX 85	Q62702P0031	> 0.32
BPX 86	Q62702P0022	> 0.32
BPX 87	Q62702P0032	> 0.32
BPX 88	Q62702P0033	> 0.32
BPX 89	Q62702P0026	> 0.32
BPX 80	Q62702P0028	> 0.32

**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
Kollektor-Emitterspannung Collector-emitter voltage	$V_{CE}$	35	V
Kollektorstrom Collector current	$I_C$	50	mA
Kollektorspitzenstrom, $\tau < 10 \mu s$ Collector surge current	$I_{CS}$	200	mA
Verlustleistung, $T_A = 25 \text{ °C}$ Total power dissipation	$P_{tot}$	90	mW
Wärmewiderstand Thermal resistance	$R_{thJA}$	750	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 $S_{\text{max}}$	$\lambda$	450 ... 1100	nm
Bestrahlungsempfindliche Fläche Radiant sensitive area	$A$	0.11	mm <sup>2</sup>
Abmessung der Chipfläche Dimensions of chip area	$L \times B$ $L \times W$	$0.5 \times 0.5$	mm $\times$ mm
Halbwinkel Half angle	$\varphi$	$\pm 18$	Grad deg.
Kapazität Capacitance $V_{\text{CE}} = 0\text{ V}$ , $f = 1\text{ MHz}$ , $E = 0$	$C_{\text{CE}}$	7.5	pF
Dunkelstrom Dark current $V_{\text{CE}} = 20\text{ V}$ , $E = 0$	$I_{\text{CEO}}$	1 ( $\leq 50$ )	nA

Die Fototransistoren werden nach ihrer Fotoempfindlichkeit gruppiert und mit Buchstaben gekennzeichnet.

The phototransistors are grouped according to their spectral sensitivity and distinguished by alphabetic characters.

Bezeichnung Parameter	Symbol Symbol	Werte Value			Einheit Unit
		-A	-B	-C	
Fotostrom Photocurrent $E_e = 0.5 \text{ mW/cm}^2, \lambda = 950 \text{ nm}, V_{CE} = 5 \text{ V}$ $E_v = 1000 \text{ lx, Normlicht/standard light A,}$ $V_{CE} = 5 \text{ V}$	$I_{PCE}$ $I_{PCE}$	0.32...0.63 1.5	0.40...0.80 1.9	$\geq 0.50$ 2.3	mA mA
Anstiegszeit/Abfallzeit Rise and fall time $I_C = 1 \text{ mA}, V_{CC} = 5 \text{ V}, R_L = 1 \text{ k}\Omega$	$t_r, t_f$	5.5	6	8	$\mu\text{s}$
Kollektor-Emitter-Sättigungsspannung Collector-emitter saturation voltage $I_C = I_{PCEmin}^{1)} \times 0.3,$ $E_e = 0.5 \text{ mW/cm}^2, \lambda = 950 \text{ nm}$	$V_{CEsat}$	150	150	150	mV

<sup>1)</sup>  $I_{PCEmin}$  ist der minimale Fotostrom der jeweiligen Gruppe.

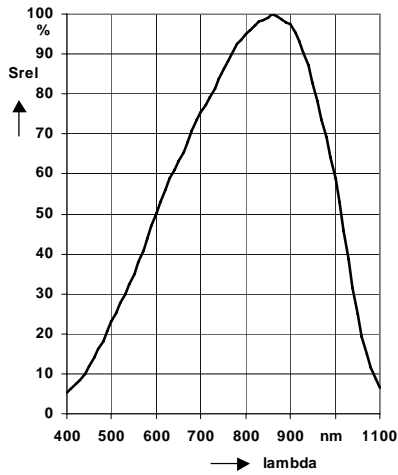
<sup>1)</sup>  $I_{PCEmin}$  is the min. photocurrent of the specified group.

Die gelieferten Bauelemente sind mit -A, -B, -C gekennzeichnet. Wegen Ausbeuteschwankungen ist jedoch die Bestellung einer definierten Gruppe -A, -B, -C nicht möglich.

For delivery the components are marked -A, -B, -C. Due to differing yields, it is not possible to order a definite group.

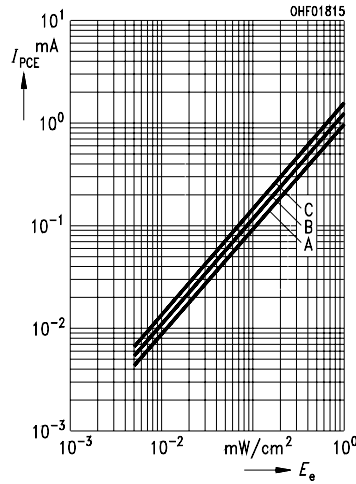
**Relative Spectral Sensitivity**

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



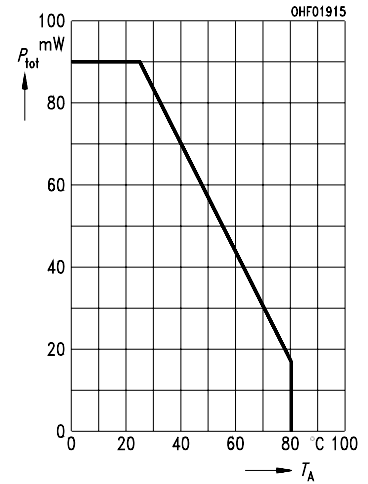
**Photocurrent**

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



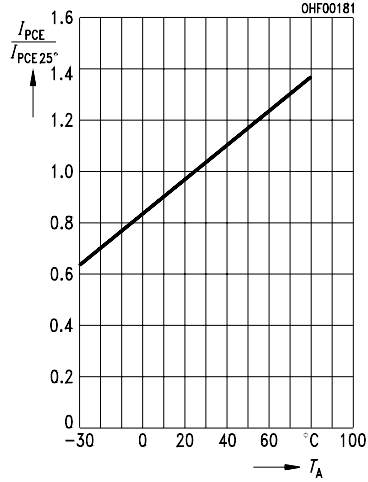
**Total Power Dissipation**

$P_{tot} = f(T_A)$



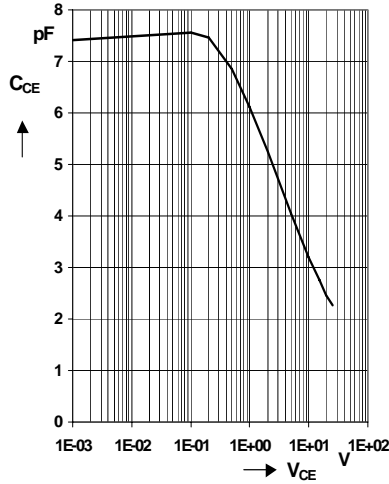
**Photocurrent**

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



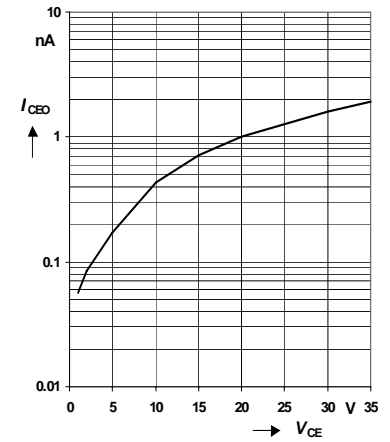
**Collector-Emitter Capacitance**

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



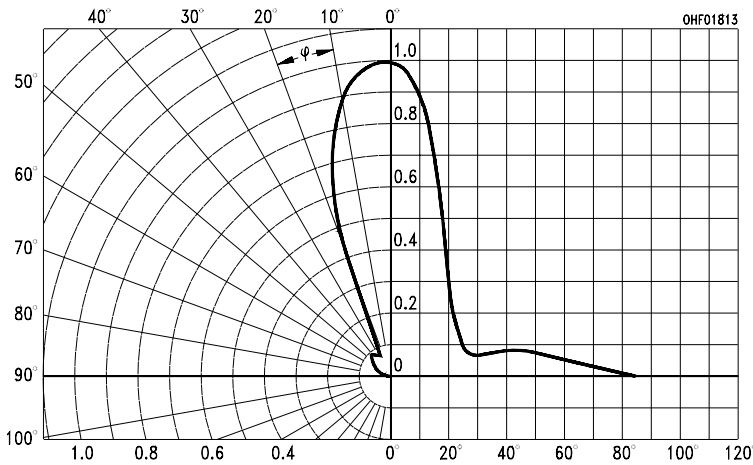
**Dark Current**

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



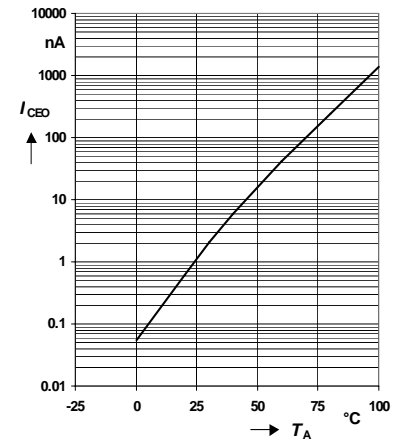
**Directional Characteristics**

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

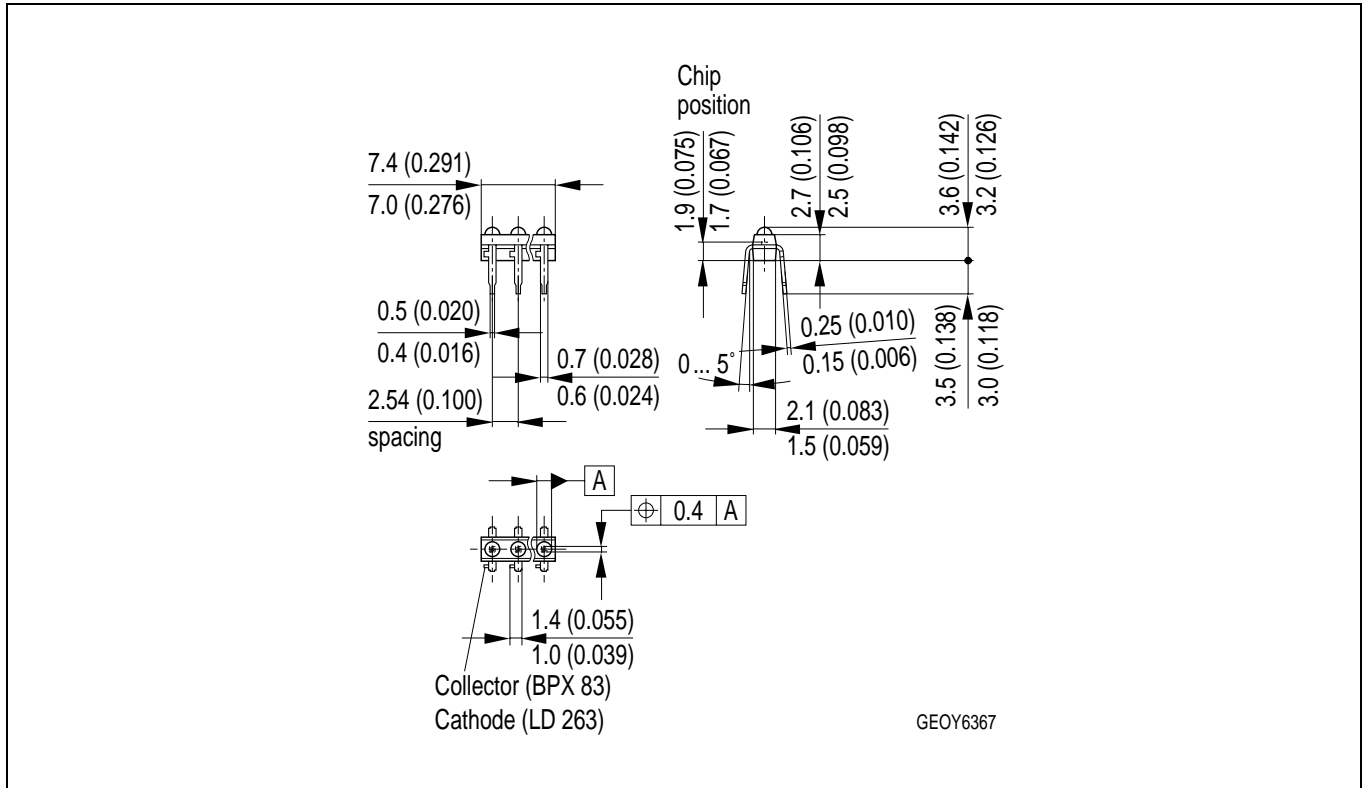


**Dark Current**

$I_{CEO} = f(T_A), V_{CE} = 20 V, E = 0$

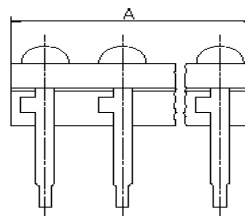


Maßzeichnung  
Package Outlines



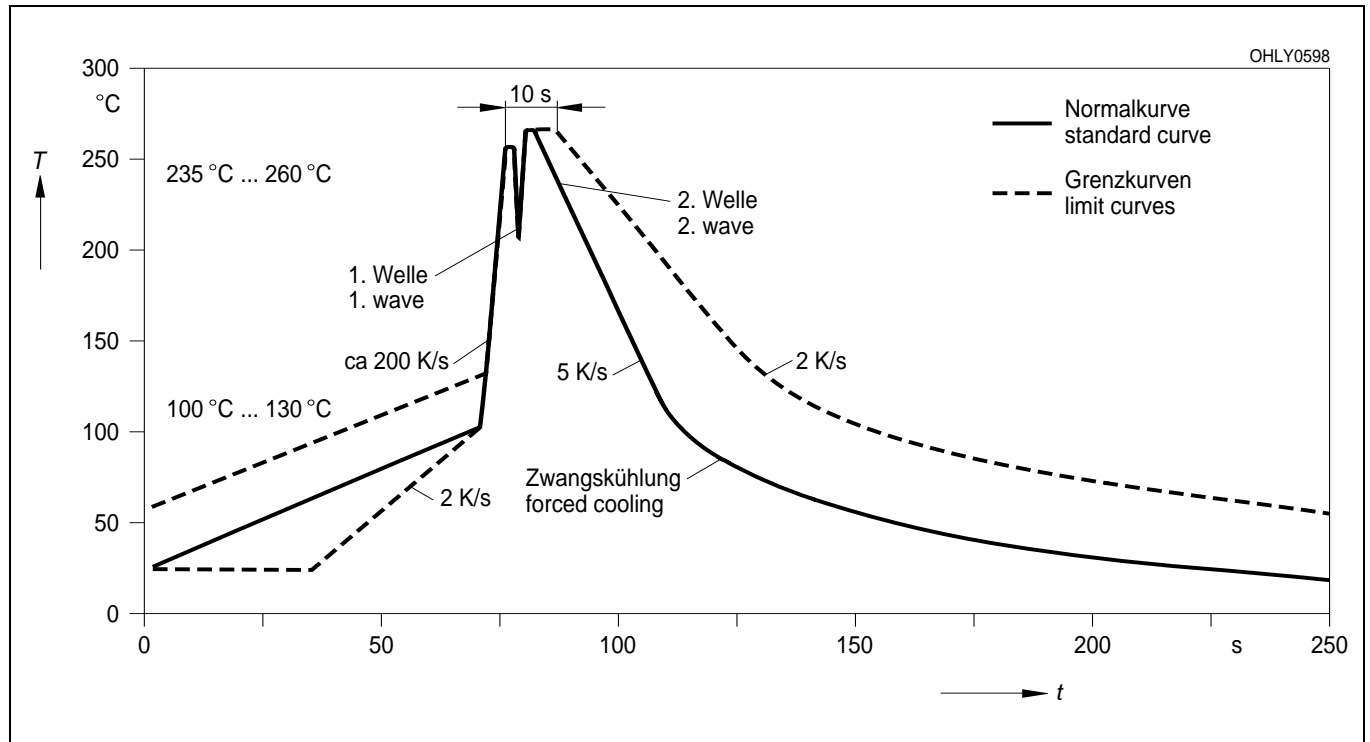
Maße in mm (inch) / Dimensions in mm (inch).

Transistoren pro Zeile Number of Transistors per Array	Maße „A“ Dimensions „A“
2	4.5 ... 4.9
3	7.0 ... 7.4
4	9.6 ... 10.0
5	12.1 ... 12.5
6	14.6 ... 16.0
7	17.2 ... 17.6
8	19.7 ... 20.1
9	22.3 ... 22.7
10	24.8 ... 25.2



**Lötbedingungen**  
**Soldering Conditions**  
**Wellenlöten (TTW)**  
**TTW Soldering**

(nach CECC 00802)  
(acc. to CECC 00802)



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