

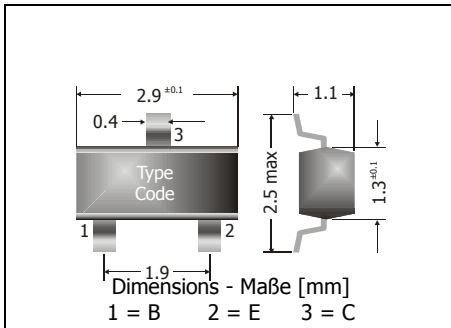
## BCW60A ... BCW60D

NPN

**Surface Mount General Purpose Si-Epi-Planar Transistors**  
**Si-Epi-Planar Universaltransistoren für die Oberflächenmontage**

NPN

Version 2006-07-31



Power dissipation – Verlustleistung

250 mW

Plastic case  
KunststoffgehäuseSOT-23  
(TO-236)

Weight approx. – Gewicht ca.

0.01 g

Plastic material has UL classification 94V-0  
Gehäusematerial UL94V-0 klassifiziertStandard packaging taped and reeled  
Standard Lieferform gegurtet auf Rolle

### Maximum ratings (T<sub>A</sub> = 25°C)

### Grenzwerte (T<sub>A</sub> = 25°C)

			BCW60A ... BCW60D
Collector-Emitter-volt. – Kollektor-Emitter-Spannung	B open	V <sub>CEO</sub>	32 V
Collector-Base-voltage – Kollektor-Basis-Spannung	E open	V <sub>CBO</sub>	32 V
Collector-Base-voltage – Kollektor-Basis-Spannung	C open	V <sub>EB0</sub>	5 V
Power dissipation – Verlustleistung		P <sub>tot</sub>	250 mW <sup>1)</sup>
Collector current – Kollektorstrom (dc)		I <sub>C</sub>	100 mA
Peak Collector current – Kollektor-Spitzenstrom		I <sub>CM</sub>	200 mA
Peak Base current – Basis-Spitzenstrom		I <sub>BM</sub>	200 mA
Junction temperature – Sperrschichttemperatur		T <sub>j</sub>	-55...+150°C
Storage temperature – Lagerungstemperatur		T <sub>s</sub>	-55...+150°C

### Characteristics (T<sub>j</sub> = 25°C)

### Kennwerte (T<sub>j</sub> = 25°C)

			Min.	Typ.	Max.
DC current gain – Kollektor-Basis-Stromverhältnis <sup>2)</sup>					
V <sub>CE</sub> = 5 V, I <sub>C</sub> = 10 μA	BCW60A	h <sub>FE</sub>	20	140	–
	BCW60B	h <sub>FE</sub>	20	200	–
	BCW60C	h <sub>FE</sub>	40	300	–
	BCW60D	h <sub>FE</sub>	100	460	–
V <sub>CE</sub> = 5 V, I <sub>C</sub> = 2 mA	BCW60A	h <sub>FE</sub>	120	170	220
	BCW60B	h <sub>FE</sub>	180	250	310
	BCW60C	h <sub>FE</sub>	250	350	460
	BCW60D	h <sub>FE</sub>	380	500	630
V <sub>CE</sub> = 1 V, I <sub>C</sub> = 50 mA	BCW60A	h <sub>FE</sub>	50	–	–
	BCW60B	h <sub>FE</sub>	70	–	–
	BCW60C	h <sub>FE</sub>	90	–	–
	BCW60D	h <sub>FE</sub>	100	–	–

1 Mounted on P.C. board with 3 mm<sup>2</sup> copper pad at each terminal  
 Montage auf Leiterplatte mit 3 mm<sup>2</sup> Kupferbelag (Löt-pad) an jedem Anschluss

2 Tested with pulses t<sub>p</sub> = 300 μs, duty cycle ≤ 2% – Gemessen mit Impulsen t<sub>p</sub> = 300 μs, Schaltverhältnis ≤ 2%

**Characteristics (T<sub>j</sub> = 25°C)****Kennwerte (T<sub>j</sub> = 25°C)**

	<b>Min.</b>	<b>Typ.</b>	<b>Max.</b>	
Collector-Emitter saturation voltage – Kollektor-Sättigungsspannung <sup>2)</sup> I <sub>C</sub> = 10 mA, I <sub>B</sub> = 0.25 mA I <sub>C</sub> = 50 mA, I <sub>B</sub> = 1.25 mA	V <sub>CEsat</sub> V <sub>CEsat</sub>	– –	120 mV 200 mV	250 mV 550 mV
Base-Emitter saturation voltage – Basis-Sättigungsspannung <sup>2)</sup> I <sub>C</sub> = 10 mA, I <sub>B</sub> = 0.25 mA I <sub>C</sub> = 50 mA, I <sub>B</sub> = 1.25 mA	V <sub>BEsat</sub> V <sub>BEsat</sub>	– –	700 mV 830 mV	850 mV 1050 mV
Base-Emitter-voltage – Basis-Emitter-Spannung <sup>2)</sup> I <sub>C</sub> = 10 μA, V <sub>CE</sub> = 5 V I <sub>C</sub> = 2 mA, V <sub>CE</sub> = 5 V I <sub>C</sub> = 50 mA, V <sub>CE</sub> = 1 V	V <sub>BE</sub> V <sub>BE</sub> V <sub>BE</sub>	– 550 mV –	520 mV 650 mV 780 mV	– 750 mV –
Collector-Base cutoff current – Kollektor-Basis-Reststrom V <sub>CB</sub> = 30 V, (E open) V <sub>CE</sub> = 30 V, T <sub>j</sub> = 125°C, (E open)	I <sub>CB0</sub> I <sub>CB0</sub>	– –	– –	20 nA 20 μA
Emitter-Base cutoff current V <sub>EB</sub> = 4 V, (C open)	I <sub>EB0</sub>	–	–	20 nA
Gain-Bandwidth Product – Transitfrequenz V <sub>CE</sub> = 5 V, I <sub>C</sub> = 10 mA, f = 100 MHz	f <sub>T</sub>	100 MHz	250 MHz	–
Collector-Base Capacitance – Kollektor-Basis-Kapazität V <sub>CB</sub> = 10 V, I <sub>E</sub> = i <sub>e</sub> = 0, f = 1 MHz	C <sub>CB0</sub>	–	2 pF	–
Emitter-Base Capacitance – Emitter-Basis-Kapazität V <sub>EB</sub> = 10 V, I <sub>C</sub> = i <sub>c</sub> = 0, f = 1 MHz	C <sub>EBO</sub>	–	11 pF	–
Noise figure – Rauschzahl V <sub>CE</sub> = 5 V, I <sub>C</sub> = 200 μA, R <sub>G</sub> = 2 kΩ f = 1 kHz, Δf = 200 Hz	F	–	2 dB	6 dB
Thermal resistance junction to ambient air Wärmewiderstand Sperrschicht – umgebende Luft	R <sub>thA</sub>	< 420 K/W <sup>1)</sup>		
Recommended complementary PNP transistors Empfohlene komplementäre PNP-Transistoren	BCW61A ... BCW61D			
Marking - Stempelung	BCW60A = AA BCW60B = AB BCW60C = AC BCW60D = AD			

<sup>2)</sup> Tested with pulses t<sub>p</sub> = 300 μs, duty cycle ≤ 2% – Gemessen mit Impulsen t<sub>p</sub> = 300 μs, Schaltverhältnis ≤ 2%

<sup>1)</sup> Mounted on P.C. board with 3 mm<sup>2</sup> copper pad at each terminal  
Montage auf Leiterplatte mit 3 mm<sup>2</sup> Kupferbelag (Löt-pad) an jedem Anschluss