

**SOT-23 Formed SMD Package**

**BCW61A BCW61B  
BCW61C BCW61D**

**SILICON PLANAR EPITAXIAL TRANSISTORS**

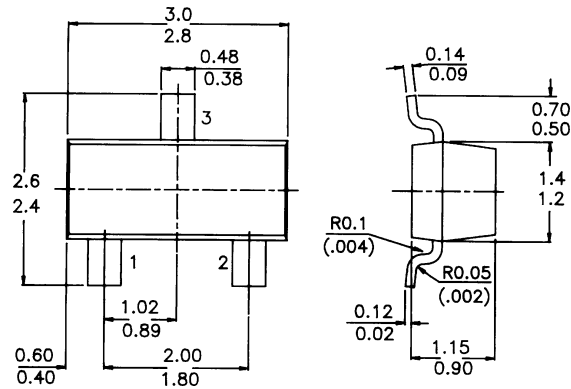
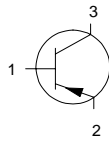
*P-N-P silicon transistors*

**Marking**

- BCW61A = BA
- BCW61B = BB
- BCW61C = BC
- BCW61D = BD

**PACKAGE OUTLINE DETAILS  
ALL DIMENSIONS IN mm**

**Pin configuration**  
1 = BASE  
2 = EMITTER  
3 = COLLECTOR



**ABSOLUTE MAXIMUM RATINGS**

Collector-emitter voltage ( $V_{BE} = 0$ )  
 Collector-emitter voltage (open base)  
 Collector current (d.c.)  
 Total power dissipation  
 Junction temperature  
 Transition frequency at  $f = 100$  MHz  
 $-V_{CE} = 5$  V;  $-I_C = 10$  mA  
 Noise figure at  $f = 1$  kHz  
 $-V_{CE} = 5$  V;  $-I_C = 200$  mA

$-V_{CES}$	max.	32 V
$-V_{CEO}$	max.	32 V
$-I_C$	max.	200 mA
$P_{tot}$	max.	250 mW
$T_j$	max.	150 °C
$f_T$	typ.	180 MHz
$F$	typ.	2 dB

**BCW61A BCW61B  
BCW61C BCW61D**

**RATINGS** (at  $T_A = 25^\circ\text{C}$  unless otherwise specified)

Limiting values

Collector-emitter voltage ( $V_{BE} = 0$ )	$-V_{CES}$	max.	32 V
Collector-emitter voltage (open base)	$-V_{CE0}$	max.	32 V
Emitter-base voltage (open collector)	$-V_{EB0}$	max.	5 V
Collector current (d.c.)	$-I_C$	max.	200 mA
Base current	$-I_B$	max.	50 mA
Total power dissipation up to $T_{amb} = 25^\circ\text{C}$	$P_{tot}$	max.	250 mW
Storage temperature	$T_{stg}$		-55 to +150 °C
Junction temperature	$T_j$	max.	150 °C

**THERMAL RESISTANCE**

From junction to ambient	$R_{th\ j-a}$	=	500 kW
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**CHARACTERISTICS**

$T_{amb} = 25^\circ\text{C}$  unless otherwise specified

Collector-emitter cut-off current

$V_{EB} = 0$ ; $-V_{CE} = 32\text{ V}$	$-I_{CES}$	<	20 nA
$V_{EB} = 0$ ; $-V_{CE} = 32\text{ V}$ ; $T_{amb} = 150^\circ\text{C}$	$-I_{CES}$	<	20 mA

Emitter-base cut-off current

$I_C = 0$ ; $-V_{EB} = 4\text{ V}$	$-I_{EB0}$	<	20 nA
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Saturation voltages

$-I_C = 10\text{ mA}$ ; $-I_B = 0,25\text{ mA}$	$-V_{CEsat}$	0,06 to 0,25 V
	$-V_{BESat}$	0,6 to 0,85 V
$-I_C = 50\text{ mA}$ ; $-I_B = 1,25\text{ mA}$	$-V_{CEsat}$	0,12 to 0,55 V
	$-V_{BESat}$	0,68 to 1,05 V

Transition frequency at  $f = 100\text{ MHz}$  .

$-V_{CE} = 5\text{ V}$ ; $-I_C = 10\text{ mA}$	$f_T$	typ.	180 MHz
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Collector capacitance at  $f = 1\text{ MHz}$

$-V_{CB} = 10\text{ V}$ ; $I_E; I_e = 0$	$C_c$	typ.	4,5 pF
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Emitter capacitance at  $f = 1\text{ MHz}$

$-V_{EB} = 0,5\text{ V}$ ; $I_C = I_c = 0$	$C_e$	typ.	11 pF
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Noise figure at  $R_S = 2\text{ kW}$

$-V_{CE} = 5\text{ V}$ ; $-I_C = 200\text{ mA}$ ; $B = 200\text{ Hz}$	$F$	<	6 dB
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**BCW61A 61B 61C 61D**

D.C. current gain

$-V_{CE} = 5\text{ V}$ ; $-I_C = 10\text{ mA}$	$h_{FE}$	>	20	30	40	100
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$-V_{CE} = 5\text{ V}$ ; $-I_C = 2\text{ mA}$	$h_{FE}$	>	120	180	250	380
		<	220	310	460	630

$-V_{CE} = 1\text{ V}$ ; $-I_C = 50\text{ mA}$	$h_{FE}$	>	60	80	100	110
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Input impedance

$-V_{CE} = 5\text{ V}$ ; $-I_C = 2\text{ mA}$ ; $f = 1\text{ kHz}$	$h_{ie}$	typ.	2,7	3,6	4,5	7,5 kW
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**BCW61A BCW61B  
BCW61C BCW61D**

		A	B	C	D	
<i>Reverse voltage transfer ratio</i>						
$-V_{CE} = 5\text{ V}; -I_C = 2\text{ mA}; f = 1\text{ kHz}$	$h_{re}$	<i>typ.</i>	1,5	2	2	3 $10^{-4}$
<i>Small-signal current gain</i>						
$-V_{CE} = 5\text{ V}; -I_C = 2\text{ mA}; f = 1\text{ kHz}$	$h_{fe}$	<i>min.</i>	125	175	250	350
		<i>max.</i>	250	350	500	700
<i>Output admittance</i>						
$-V_{CE} = 5\text{ V}; -I_C = 2\text{ mA}; f = 1\text{ kHz}$	$h_{oe}$	<i>typ.</i>	18	24	30	50 mS
<i>Base-emitter voltage</i>						
$-V_{CE} = 5\text{ V}; -I_C = 2\text{ mA}$	$V_{BE}$		0,6 to 0,75		V	
		<i>typ.</i>	0,65		V	
$-V_{CE} = 5\text{ V}; -I_C = 10\text{ mA}$	$V_{BE}$	<i>typ.</i>	0,55		V	
$-V_{CE} = 1\text{ V}; -I_C = 50\text{ mA}$	$V_{BE}$	<i>typ.</i>	0,72		V	

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