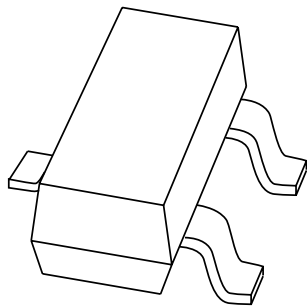


# DATA SHEET



## **BCW61 series** PNP general purpose transistors

Product data sheet  
Supersedes data of 1997 May 28

1999 Apr 12

# PNP general purpose transistors

# BCW61 series

### FEATURES

- Low current (max. 100 mA)
- Low voltage (max. 32 V).

### APPLICATIONS

- General purpose switching and amplification.

### DESCRIPTION

PNP transistor in a SOT23 plastic package.  
NPN complement: BCW60.

### MARKING

TYPE NUMBER	MARKING CODE <sup>(1)</sup>
BCW61B	BB*
BCW61C	BC*
BCW61D	BD*

### Note

1. \* = p : Made in Hong Kong.  
\* = t : Made in Malaysia.

### PINNING

PIN	DESCRIPTION
1	base
2	emitter
3	collector

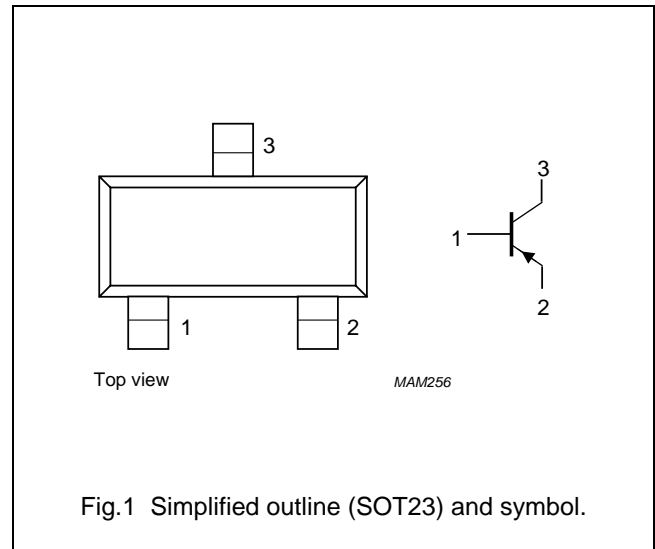


Fig.1 Simplified outline (SOT23) and symbol.

### LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V <sub>CBO</sub>	collector-base voltage	open emitter	–	–32	V
V <sub>CEO</sub>	collector-emitter voltage	open base	–	–32	V
V <sub>EBO</sub>	emitter-base voltage	open collector	–	–5	V
I <sub>C</sub>	collector current (DC)		–	–100	mA
I <sub>CM</sub>	peak collector current		–	–200	mA
I <sub>BM</sub>	peak base current		–	–100	mA
P <sub>tot</sub>	total power dissipation	T <sub>amb</sub> ≤ 25 °C; note 1	–	250	mW
T <sub>stg</sub>	storage temperature		–65	+150	°C
T <sub>j</sub>	junction temperature		–	150	°C
T <sub>amb</sub>	operating ambient temperature		–65	+150	°C

### Note

1. Transistor mounted on an FR4 printed-circuit board.

## PNP general purpose transistors

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## THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j-a}$	thermal resistance from junction to ambient	note 1	500	K/W

## Note

1. Transistor mounted on an FR4 printed-circuit board.

## CHARACTERISTICS

$T_{amb} = 25\text{ °C}$  unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$I_{CBO}$	collector cut-off current	$I_E = 0; V_{CB} = -32\text{ V}$	–	–	–20	nA
		$I_E = 0; V_{CB} = -32\text{ V}; T_{amb} = 150\text{ °C}$	–	–	–20	$\mu\text{A}$
$I_{EBO}$	emitter cut-off current	$I_C = 0; V_{EB} = -4\text{ V}$	–	–	–20	nA
$h_{FE}$	DC current gain BCW61B BCW61C BCW61D	$I_C = -10\text{ }\mu\text{A}; V_{CE} = -5\text{ V}$	30	–	–	
			40	–	–	
			100	–	–	
	DC current gain BCW61B BCW61C BCW61D	$I_C = -2\text{ mA}; V_{CE} = -5\text{ V}$	180	–	310	
			250	–	460	
			380	–	630	
	DC current gain BCW61B BCW61C BCW61D	$I_C = -50\text{ mA}; V_{CE} = -1\text{ V}$	80	–	–	
			100	–	–	
			110	–	–	
$V_{CEsat}$	collector-emitter saturation voltage	$I_C = -10\text{ mA}; I_B = -0.25\text{ mA}$	–60	–	–250	mV
		$I_C = -50\text{ mA}; I_B = -1.25\text{ mA}$	–120	–	–550	mV
$V_{BEsat}$	base-emitter saturation voltage	$I_C = -10\text{ mA}; I_B = -0.25\text{ mA}$	–600	–	–850	mV
		$I_C = -50\text{ mA}; I_B = -1.25\text{ mA}$	–0.68	–	–1.05	V
$V_{BE}$	base-emitter voltage	$I_C = -2\text{ mA}; V_{CE} = -5\text{ V}$	–600	–650	–750	mV
		$I_C = -10\text{ }\mu\text{A}; V_{CE} = -5\text{ V}$	–	–550	–	mV
		$I_C = -50\text{ mA}; V_{CE} = -1\text{ V}$	–	–720	–	mV
$C_c$	collector capacitance	$I_E = I_C = 0; V_{CB} = -10\text{ V}; f = 1\text{ MHz}$	–	4.5	–	pF
$C_e$	emitter capacitance	$I_C = I_E = 0; V_{EB} = -0.5\text{ V}; f = 1\text{ MHz}$	–	11	–	pF
$f_T$	transition frequency	$I_C = -10\text{ mA}; V_{CE} = -5\text{ V};$ $f = 100\text{ MHz};$ note 1	100	–	–	MHz
F	noise figure	$I_C = -200\text{ }\mu\text{A}; V_{CE} = -5\text{ V}; R_S = 2\text{ k}\Omega;$ $f = 1\text{ kHz}; B = 200\text{ Hz}$	–	2	6	dB

## Note

1. Pulse test:  $t_p \leq 300\text{ }\mu\text{s}; \delta \leq 0.02$ .

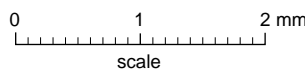
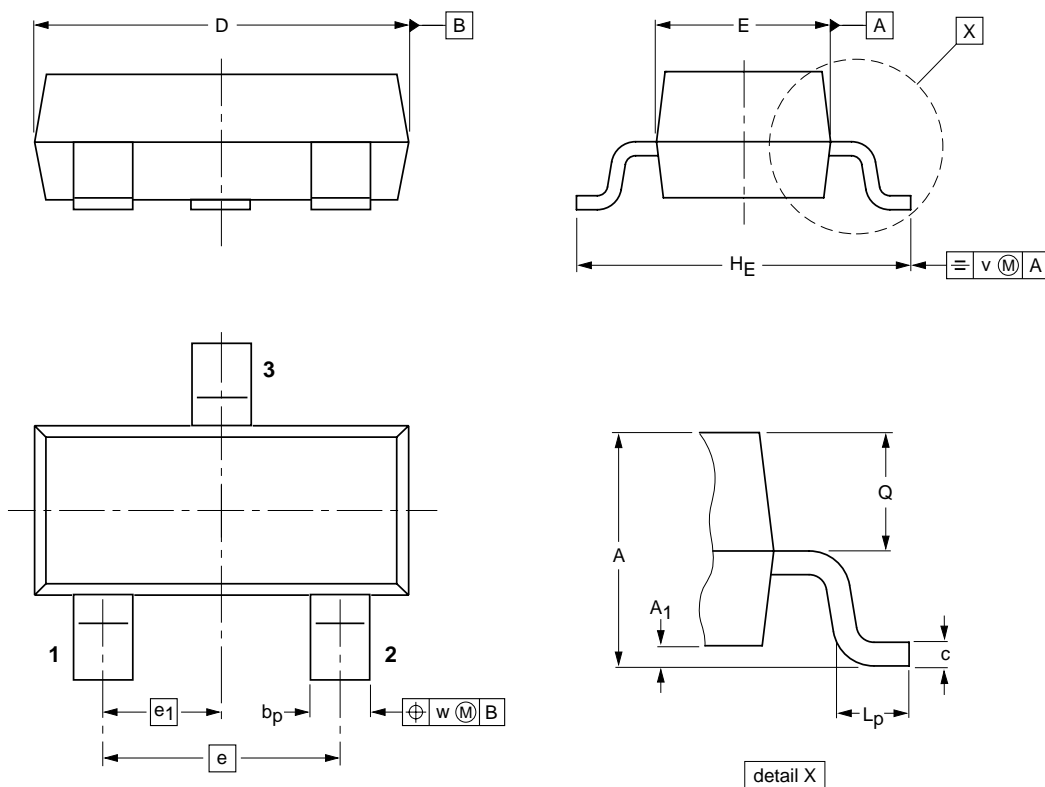
PNP general purpose transistors

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PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT23



DIMENSIONS (mm are the original dimensions)

UNIT	A	A <sub>1</sub> max.	b <sub>p</sub>	c	D	E	e	e <sub>1</sub>	H <sub>E</sub>	L <sub>p</sub>	Q	v	w
mm	1.1 0.9	0.1	0.48 0.38	0.15 0.09	3.0 2.8	1.4 1.2	1.9	0.95	2.5 2.1	0.45 0.15	0.55 0.45	0.2	0.1

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT23		TO-236AB				97-02-28 99-09-13

## PNP general purpose transistors

## BCW61 series

## DATA SHEET STATUS

DOCUMENT STATUS <sup>(1)</sup>	PRODUCT STATUS <sup>(2)</sup>	DEFINITION
Objective data sheet	Development	This document contains data from the objective specification for product development.
Preliminary data sheet	Qualification	This document contains data from the preliminary specification.
Product data sheet	Production	This document contains the product specification.

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## **Customer notification**

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## **Contact information**

For additional information please visit: <http://www.nxp.com>

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