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Should be replaced with:

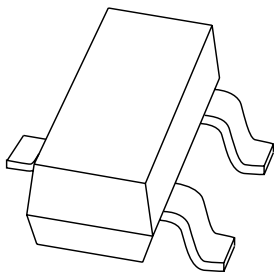
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Kind regards,

Team Nexperia

# DATA SHEET



## **BCW29; BCW30** PNP general purpose transistors

Product data sheet  
Supersedes data of 1999 Apr 13

2004 Jan 13

## PNP general purpose transistors

## BCW29; BCW30

## 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 complements: BCW31 and BCW32.

## MARKING

| TYPE NUMBER | MARKING CODE <sup>(1)</sup> |
|-------------|-----------------------------|
| BCW29       | C1*                         |
| BCW30       | C2*                         |

## Note

- \* = p : Made in Hong Kong.  
\* = t : Made in Malaysia.  
\* = W : Made in China.

## PINNING

| PIN | DESCRIPTION |
|-----|-------------|
| 1   | base        |
| 2   | emitter     |
| 3   | collector   |

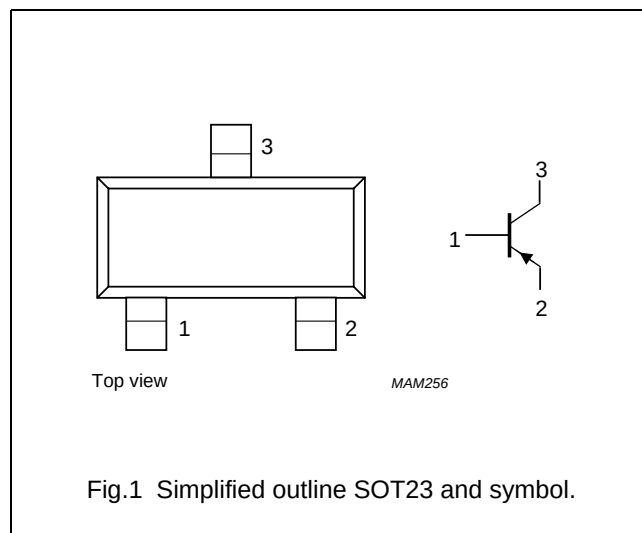


Fig.1 Simplified outline SOT23 and symbol.

## ORDERING INFORMATION

| TYPE NUMBER | PACKAGE |                                          |         |
|-------------|---------|------------------------------------------|---------|
|             | NAME    | DESCRIPTION                              | VERSION |
| BCW29       | —       | plastic surface mounted package; 3 leads | SOT23   |
| BCW30       |         |                                          |         |

## LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 60134).

| SYMBOL    | PARAMETER                     | CONDITIONS               | MIN. | MAX. | UNIT |
|-----------|-------------------------------|--------------------------|------|------|------|
| $V_{CBO}$ | collector-base voltage        | open emitter             | —    | –32  | V    |
| $V_{CEO}$ | collector-emitter voltage     | open base; $I_C = -2$ mA | —    | –32  | V    |
| $V_{EBO}$ | emitter-base voltage          | open collector           | —    | –5   | V    |
| $I_C$     | collector current (DC)        |                          | —    | –100 | mA   |
| $I_{CM}$  | peak collector current        |                          | —    | –200 | mA   |
| $I_{BM}$  | peak base current             |                          | —    | –200 | mA   |
| $P_{tot}$ | total power dissipation       | $T_{amb} \leq 25$ °C     | —    | 250  | mW   |
| $T_{stg}$ | storage temperature           |                          | –65  | +150 | °C   |
| $T_j$     | junction temperature          |                          | —    | 150  | °C   |
| $T_{amb}$ | operating ambient temperature |                          | –65  | +150 | °C   |

## PNP general purpose transistors

## BCW29; BCW30

## 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

$T_j = 25\text{ }^{\circ}\text{C}$  unless otherwise specified.

| SYMBOL      | PARAMETER                            | CONDITIONS                                                                                                         | MIN. | TYP. | MAX. | UNIT          |
|-------------|--------------------------------------|--------------------------------------------------------------------------------------------------------------------|------|------|------|---------------|
| $I_{CBO}$   | collector cut-off current            | $I_E = 0; V_{CB} = -32\text{ V}$                                                                                   | –    | –    | –100 | nA            |
|             |                                      | $I_E = 0; V_{CB} = -32\text{ V}; T_j = 100\text{ }^{\circ}\text{C}$                                                | –    | –    | –10  | $\mu\text{A}$ |
| $I_{EBO}$   | emitter cut-off current              | $I_C = 0; V_{EB} = -5\text{ V}$                                                                                    | –    | –    | –100 | nA            |
| $h_{FE}$    | DC current gain<br>BCW29<br>BCW30    | $I_C = -10\text{ }\mu\text{A}; V_{CE} = -5\text{ V}$                                                               | –    | 90   | –    |               |
|             |                                      |                                                                                                                    | –    | 150  | –    |               |
|             | DC current gain<br>BCW29<br>BCW30    | $I_C = -2\text{ mA}; V_{CE} = -5\text{ V}$                                                                         | 120  | –    | 260  |               |
|             |                                      |                                                                                                                    | 215  | –    | 500  |               |
| $V_{CEsat}$ | collector-emitter saturation voltage | $I_C = -10\text{ mA}; I_B = -0.5\text{ mA}$                                                                        | –    | –80  | –300 | mV            |
|             |                                      | $I_C = -50\text{ mA}; I_B = -2.5\text{ mA}$                                                                        | –    | –150 | –    | mV            |
| $V_{BEsat}$ | base-emitter saturation voltage      | $I_C = -10\text{ mA}; I_B = -0.5\text{ mA}$                                                                        | –    | –720 | –    | mV            |
|             |                                      | $I_C = -50\text{ mA}; I_B = -2.5\text{ mA}$                                                                        | –    | –810 | –    | mV            |
| $V_{BE}$    | base-emitter voltage                 | $I_C = -2\text{ mA}; V_{CE} = -5\text{ V}$                                                                         | –600 | –    | –750 | mV            |
| $C_c$       | collector capacitance                | $I_E = I_e = 0; V_{CB} = -10\text{ V}; f = 1\text{ MHz}$                                                           | –    | 4.5  | –    | pF            |
| $f_T$       | transition frequency                 | $I_C = -10\text{ mA}; V_{CE} = -5\text{ V}; f = 100\text{ MHz}$                                                    | 100  | –    | –    | MHz           |
| F           | noise figure                         | $I_C = -200\text{ }\mu\text{A}; V_{CE} = -5\text{ V}; R_S = 2\text{ k}\Omega; f = 1\text{ kHz}; B = 200\text{ Hz}$ | –    | –    | 10   | dB            |

PNP general purpose transistors

BCW29; BCW30

PACKAGE OUTLINE

Plastic surface-mounted package; 3 leads

SOT23

The diagrams illustrate the SOT23 package outline. The top view shows dimensions D (width) and B (lead width). The side view shows dimensions E (body width), A (body height), HE (lead height), and a detail X of the lead profile. The bottom view shows dimensions 1, 2, 3 (lead positions), e1 (lead pitch), bp (lead width), e (lead spacing), and a detail X of the lead profile. A scale bar indicates 0 to 2 mm.

DIMENSIONS (mm are the original dimensions)

| UNIT | A          | A <sub>1</sub><br>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<br>0.9 | 0.1                    | 0.48<br>0.38   | 0.15<br>0.09 | 3.0<br>2.8 | 1.4<br>1.2 | 1.9 | 0.95           | 2.5<br>2.1     | 0.45<br>0.15   | 0.55<br>0.45 | 0.2 | 0.1 |

| OUTLINE<br>VERSION | REFERENCES |          |       |  | EUROPEAN<br>PROJECTION | ISSUE DATE           |
|--------------------|------------|----------|-------|--|------------------------|----------------------|
|                    | IEC        | JEDEC    | JEITA |  |                        |                      |
| SOT23              |            | TO-236AB |       |  |                        | 04-11-04<br>06-03-16 |

## PNP general purpose transistors

## BCW29; BCW30

## 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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# ***NXP Semiconductors***

## **Customer notification**

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## **Contact information**

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

For sales offices addresses send e-mail to: [salesaddresses@nxp.com](mailto:salesaddresses@nxp.com)

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