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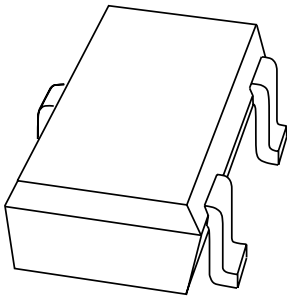
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Kind regards,

Team Nexperia

# DATA SHEET



## **BC849W; BC850W** NPN general purpose transistors

Product data sheet  
Supersedes data of 1997 Jun 20

1999 Apr 12

## NPN general purpose transistors

## BC849W; BC850W

## FEATURES

- Low current (max. 100 mA)
- Low voltage (max. 45 V).

## APPLICATIONS

- Low noise stages in tape recorders, hi-fi amplifiers and other audio-frequency equipment.

## DESCRIPTION

NPN transistor in a SOT323 plastic package.  
PNP complements: BC859W and BC860W.

## MARKING

| TYPE NUMBER | MARKING CODE <sup>(1)</sup> | TYPE NUMBER | MARKING CODE <sup>(1)</sup> |
|-------------|-----------------------------|-------------|-----------------------------|
| BC849BW     | 2B*                         | BC850BW     | 2F*                         |
| BC849CW     | 2C*                         | BC850CW     | 2G*                         |

## Note

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

## PINNING

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

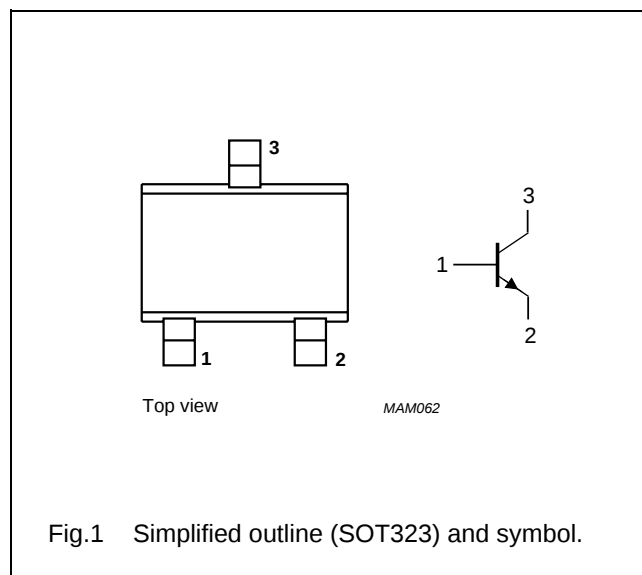


Fig.1 Simplified outline (SOT323) and symbol.

## LIMITING VALUES

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

| SYMBOL    | PARAMETER                     | CONDITIONS                           | MIN. | MAX. | UNIT |
|-----------|-------------------------------|--------------------------------------|------|------|------|
| $V_{CBO}$ | collector-base voltage        | open emitter                         |      |      |      |
|           | BC849W                        |                                      | —    | 30   | V    |
|           | BC850W                        |                                      | —    | 50   | V    |
| $V_{CEO}$ | collector-emitter voltage     | open base                            |      |      |      |
|           | BC849W                        |                                      | —    | 30   | V    |
|           | BC850W                        |                                      | —    | 45   | 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       | $T_{amb} \leq 25\text{ °C}$ ; note 1 | —    | 200  | mW   |
| $T_{stg}$ | storage temperature           |                                      | −65  | +150 | °C   |
| $T_j$     | junction temperature          |                                      | —    | 150  | °C   |
| $T_{amb}$ | operating ambient temperature |                                      | −65  | +150 | °C   |

## Note

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

## NPN 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     | 625   | K/W  |

## Note

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

## CHARACTERISTICS

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

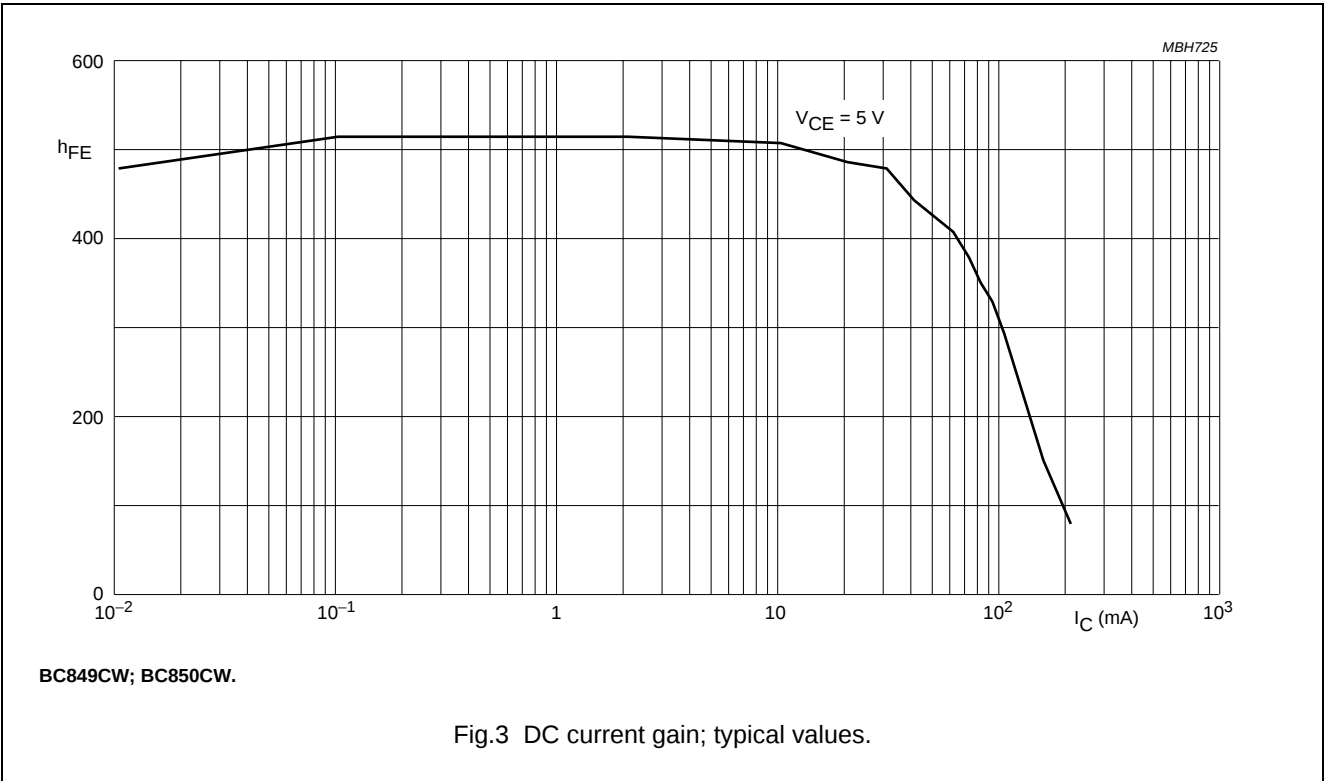
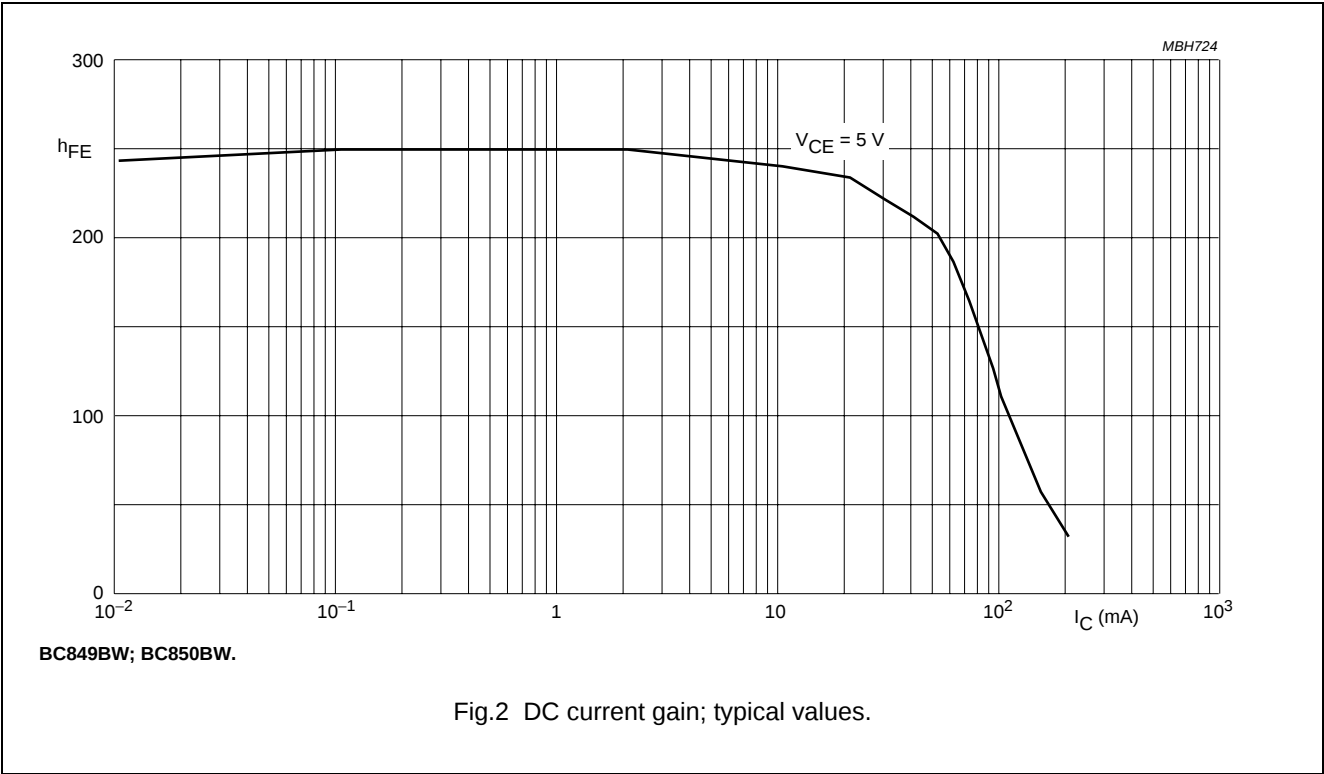
| SYMBOL      | PARAMETER                                               | CONDITIONS                                                                                                            | MIN. | TYP. | MAX. | UNIT          |
|-------------|---------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|------|------|------|---------------|
| $I_{CBO}$   | collector cut-off current                               | $I_E = 0; V_{CB} = 30\text{ V}$                                                                                       | –    | –    | 15   | nA            |
|             |                                                         | $I_E = 0; V_{CB} = 30\text{ V}; T_j = 150\text{ °C}$                                                                  | –    | –    | 5    | $\mu\text{A}$ |
| $I_{EBO}$   | emitter cut-off current                                 | $I_C = 0; V_{EB} = 5\text{ V}$                                                                                        | –    | –    | 100  | nA            |
| $h_{FE}$    | DC current gain<br>BC849BW; BC850BW<br>BC849CW; BC850CW | $I_C = 2\text{ mA}; V_{CE} = 5\text{ V};$ see Figs 2 and 3                                                            | 200  | –    | 450  |               |
|             |                                                         |                                                                                                                       | 420  | –    | 800  |               |
| $V_{CEsat}$ | collector-emitter saturation voltage                    | $I_C = 10\text{ mA}; I_B = 0.5\text{ mA}$                                                                             | –    | –    | 250  | mV            |
|             |                                                         | $I_C = 100\text{ mA}; I_B = 5\text{ mA};$ note 1                                                                      | –    | –    | 600  | mV            |
| $V_{BE}$    | base-emitter voltage                                    | $I_C = 2\text{ mA}; V_{CE} = 5\text{ V}$                                                                              | 580  | –    | 700  | mV            |
|             |                                                         | $I_C = 10\text{ mA}; V_{CE} = 5\text{ V}$                                                                             | –    | –    | 770  | mV            |
| $C_c$       | collector capacitance                                   | $I_E = i_e = 0; V_{CB} = 10\text{ V}; f = 1\text{ MHz}$                                                               | –    | –    | 3    | pF            |
| $C_e$       | emitter capacitance                                     | $I_C = i_c = 0; V_{EB} = 500\text{ mV}; f = 1\text{ MHz}$                                                             | –    | 11   | –    | pF            |
| $f_T$       | transition frequency                                    | $I_C = 10\text{ mA}; V_{CE} = 5\text{ V}; f = 100\text{ MHz}$                                                         | 100  | –    | –    | MHz           |
| F           | noise figure                                            | $I_C = 200\text{ }\mu\text{A}; V_{CE} = 5\text{ V}; R_S = 2\text{ k}\Omega;$<br>$f = 10\text{ Hz to }15.7\text{ kHz}$ | –    | –    | 4    | dB            |
|             |                                                         | $I_C = 200\text{ }\mu\text{A}; V_{CE} = 5\text{ V}; R_S = 2\text{ k}\Omega;$<br>$f = 1\text{ kHz}; B = 200\text{ Hz}$ | –    | –    | 4    | dB            |

## Note

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

NPN general purpose transistors

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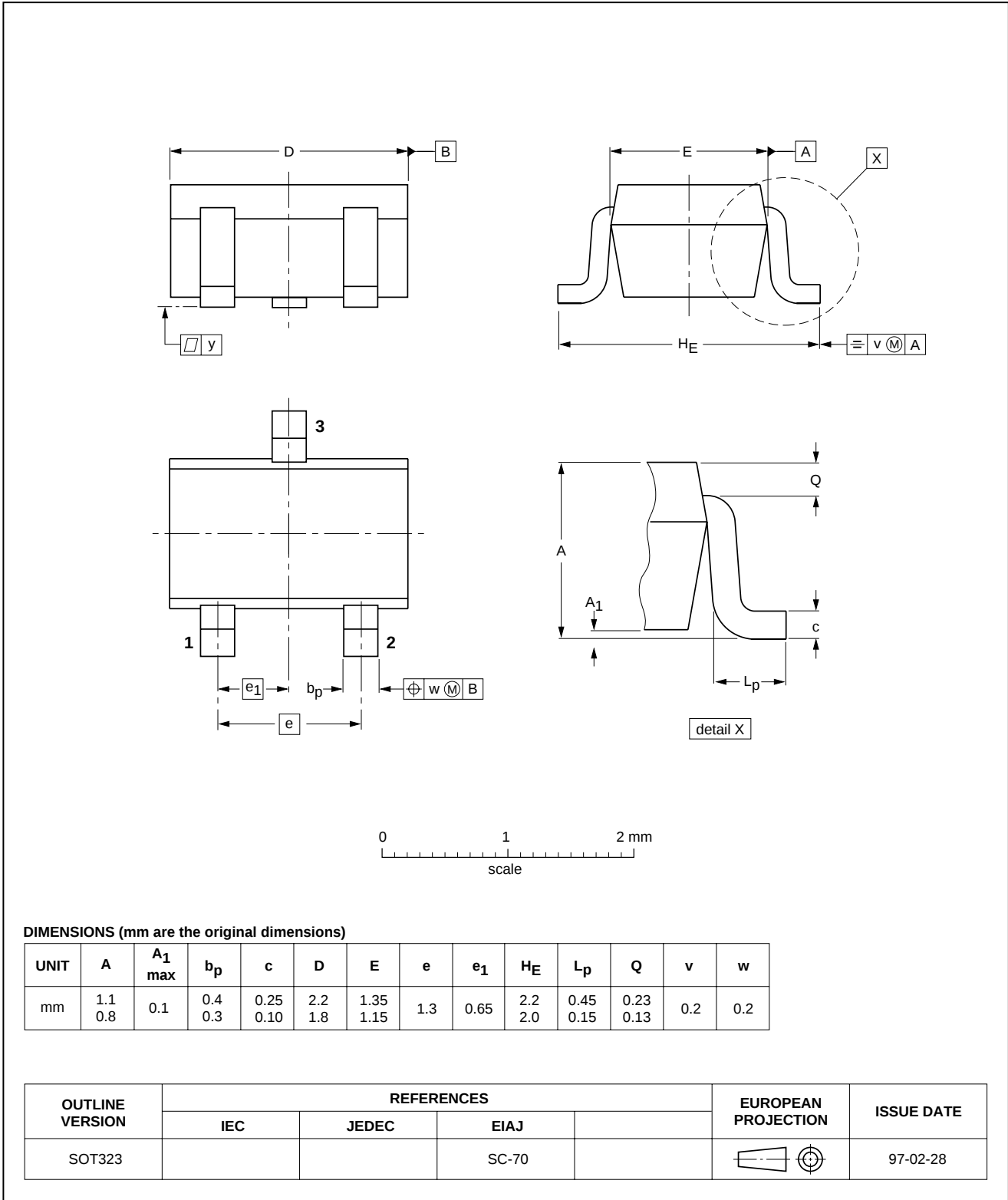
NPN general purpose transistors

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PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT323



## NPN general purpose transistors

## BC849W; BC850W

## 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***

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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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