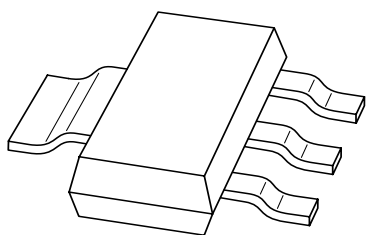


# DATA SHEET



**BCP69**

PNP medium power transistor

Product specification  
Supersedes data of 1999 Apr 08

2002 Nov 15

## PNP medium power transistor

## BCP69

## FEATURES

- High current (max. 1 A)
- Low voltage (max. 20 V).

## APPLICATIONS

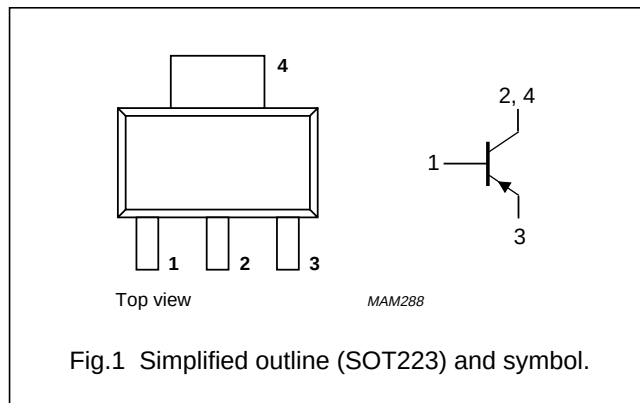
- General purpose switching and amplification
- Power applications such as audio output stages.

## DESCRIPTION

PNP medium power transistor in a SOT223 plastic package. NPN complement: BCP68.

## PINNING

| PIN  | DESCRIPTION |
|------|-------------|
| 1    | base        |
| 2, 4 | collector   |
| 3    | emitter     |



## 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                            | –    | –20  | V    |
| $V_{EBO}$ | emitter-base voltage          | open collector                       | –    | –5   | V    |
| $I_C$     | collector current (DC)        |                                      | –    | –1   | A    |
| $I_{CM}$  | peak collector current        |                                      | –    | –2   | A    |
| $I_{BM}$  | peak base current             |                                      | –    | –200 | mA   |
| $P_{tot}$ | total power dissipation       | $T_{amb} \leq 25\text{ °C}$ ; note 1 | –    | 1.35 | W    |
| $T_{stg}$ | storage temperature           |                                      | –65  | +150 | °C   |
| $T_j$     | junction temperature          |                                      | –    | 150  | °C   |
| $T_{amb}$ | operating ambient temperature |                                      | –65  | +150 | °C   |

## Note

1. Device mounted on a printed-circuit board, single-sided copper, tinplated, mounting pad for collector 1 cm<sup>2</sup>. For other mounting conditions, see “*Thermal considerations for SOT223 in the General Part of associated Handbook*”.

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## THERMAL CHARACTERISTICS

| SYMBOL        | PARAMETER                                           | CONDITIONS | VALUE | UNIT |
|---------------|-----------------------------------------------------|------------|-------|------|
| $R_{th\ j-a}$ | thermal resistance from junction to ambient         | note 1     | 91    | K/W  |
| $R_{th\ j-s}$ | thermal resistance from junction to soldering point |            | 10    | K/W  |

## Note

1. Device mounted on a printed-circuit board, single-sided copper, tinplated, mounting pad for collector 1 cm<sup>2</sup>. For other mounting conditions, see "Thermal considerations for SOT223 in the General Part of associated Handbook".

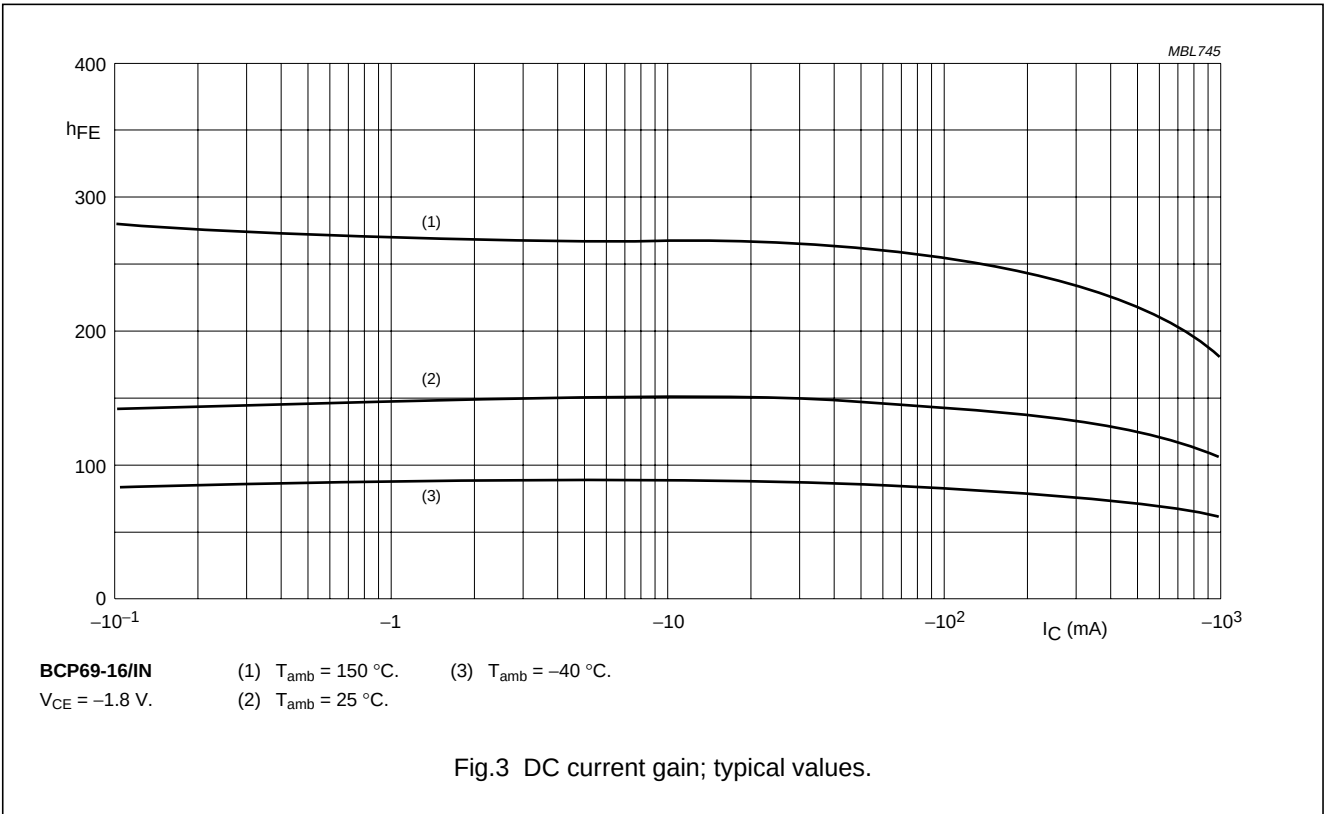
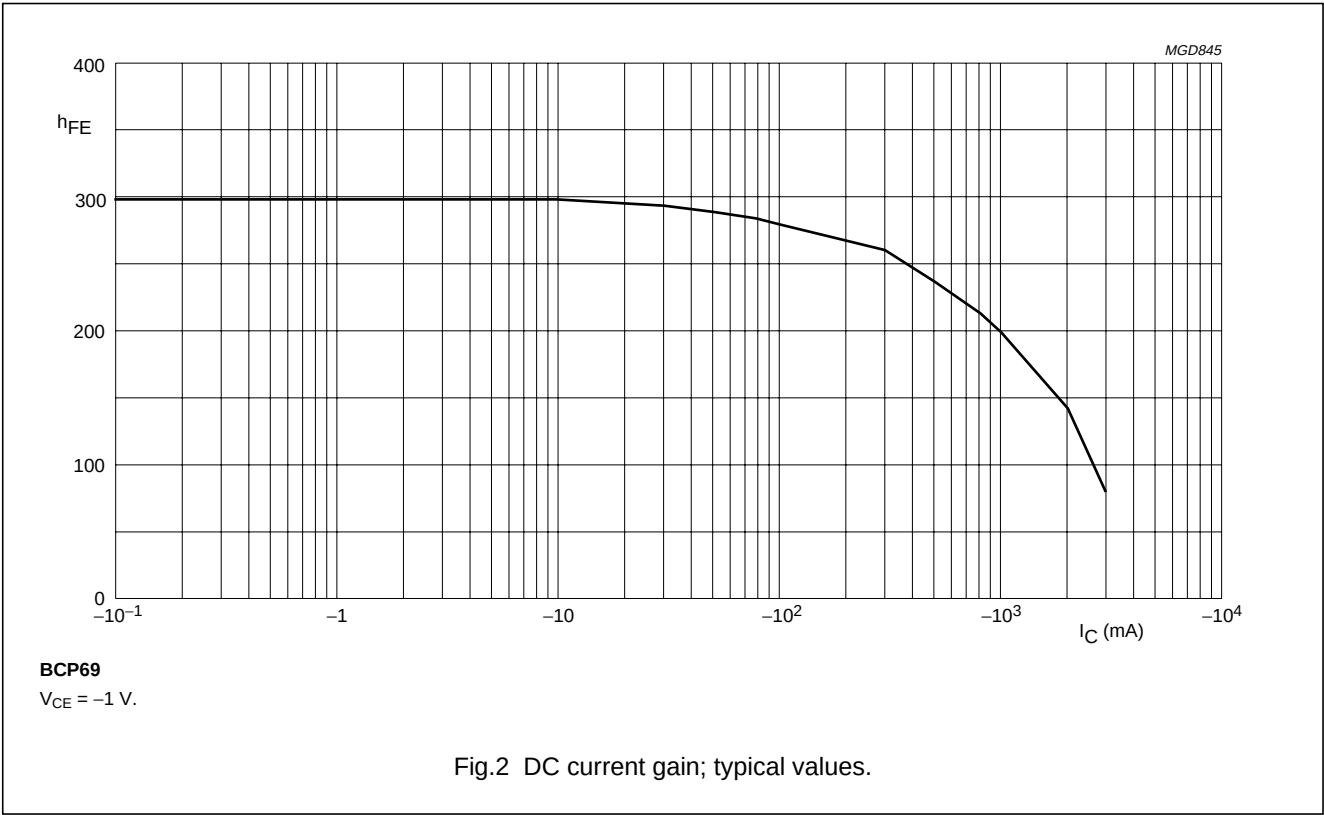
## CHARACTERISTICS

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

| SYMBOL                    | PARAMETER                                        | CONDITIONS                                                       | MIN. | TYP. | MAX. | UNIT |
|---------------------------|--------------------------------------------------|------------------------------------------------------------------|------|------|------|------|
| $I_{CBO}$                 | collector cut-off current                        | $I_E = 0; V_{CB} = -25\text{ V}$                                 | –    | –    | –100 | nA   |
|                           |                                                  | $I_E = 0; V_{CB} = -25\text{ V}; T_j = 150\text{ °C}$            | –    | –    | –10  | μA   |
| $I_{EBO}$                 | emitter cut-off current                          | $I_C = 0; V_{EB} = -5\text{ V}$                                  | –    | –    | –100 | nA   |
| $h_{FE}$                  | DC current gain                                  | $I_C = -5\text{ mA}; V_{CE} = -10\text{ V}$                      | 50   | –    | –    |      |
|                           |                                                  | $I_C = -500\text{ mA}; V_{CE} = -1\text{ V}; \text{ see Fig.2}$  | 85   | –    | 375  |      |
|                           |                                                  | $I_C = -1\text{ A}; V_{CE} = -1\text{ V}; \text{ see Fig.2}$     | 60   | –    | –    |      |
|                           | DC current gain<br>BCP69-16<br>BCP69-25          | $I_C = -500\text{ mA}; V_{CE} = -1\text{ V}; \text{ see Fig.2}$  | 100  | –    | 250  |      |
|                           |                                                  |                                                                  | 160  | –    | 375  |      |
|                           | DC current gain<br>BCP69-16/IN                   | $I_C = -10\text{ mA}; V_{CE} = -1.8\text{ V}; \text{ see Fig.3}$ | 140  | –    | 230  |      |
| $V_{CEsat}$               | collector-emitter saturation voltage             | $I_C = -1\text{ A}; I_B = -100\text{ mA}$                        | –    | –    | –500 | mV   |
| $V_{BE}$                  | base-emitter voltage                             | $I_C = -5\text{ mA}; V_{CE} = -10\text{ V}$                      | –    | –620 | –    | mV   |
|                           |                                                  | $I_C = -1\text{ A}; V_{CE} = -1\text{ V}$                        | –    | –    | –1   | V    |
| $C_c$                     | collector capacitance                            | $I_E = i_e = 0; V_{CB} = -5\text{ V}; f = 1\text{ MHz}$          | –    | 48   | –    | pF   |
| $f_T$                     | transition frequency                             | $I_C = -10\text{ mA}; V_{CE} = -5\text{ V}; f = 100\text{ MHz}$  | 40   | –    | –    | MHz  |
| $\frac{h_{FE1}}{h_{FE2}}$ | DC current gain ratio of the complementary pairs | $ I_C  = 0.5\text{ A};  V_{CE}  = 1\text{ V}$                    | –    | –    | 1.6  |      |

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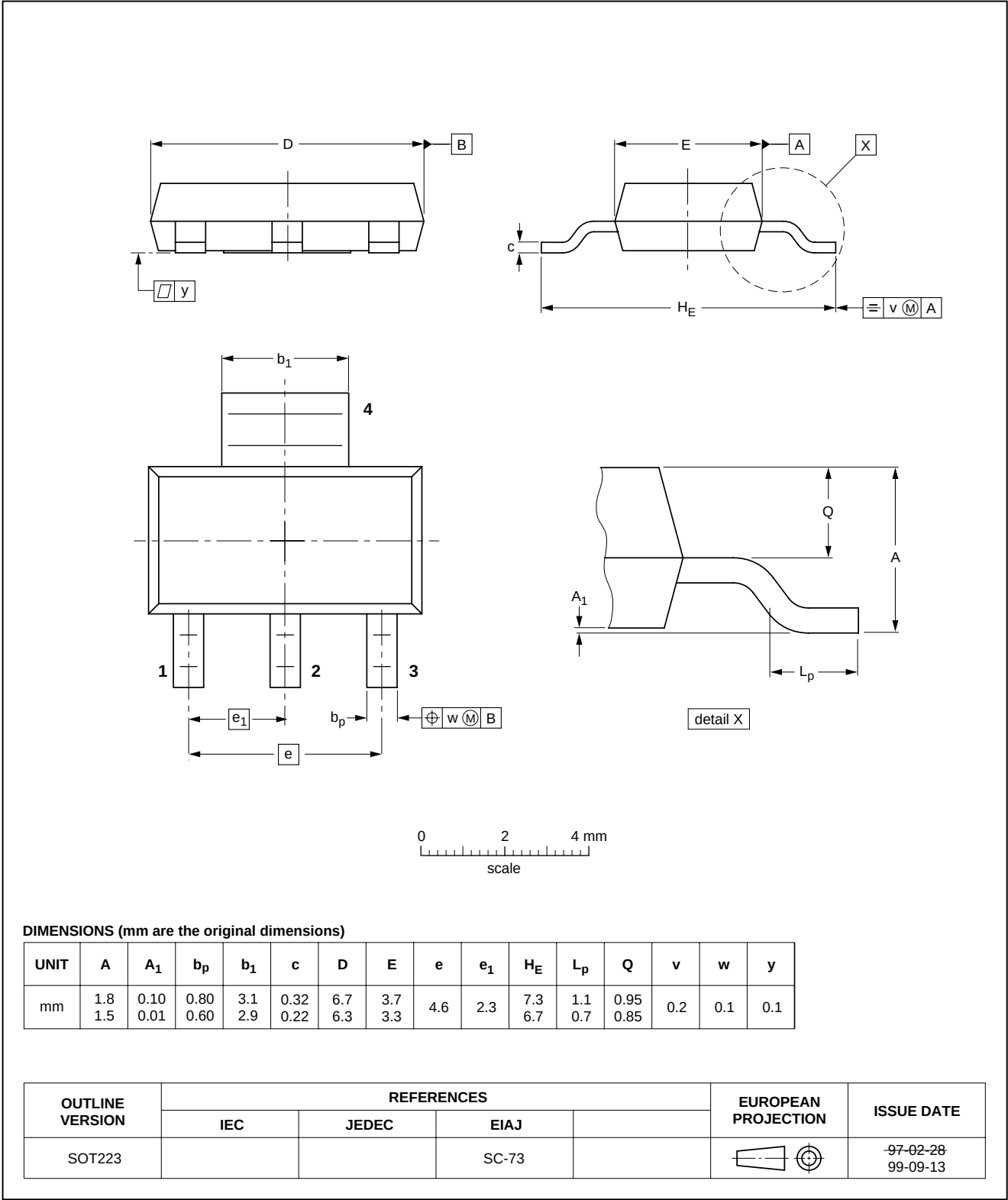
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PACKAGE OUTLINE

Plastic surface mounted package; collector pad for good heat transfer; 4 leads

SOT223



## PNP medium power transistor

## BCP69

## DATA SHEET STATUS

| LEVEL | DATA SHEET STATUS <sup>(1)</sup> | PRODUCT STATUS <sup>(2)(3)</sup> | DEFINITION                                                                                                                                                                                                                                                                                     |
|-------|----------------------------------|----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
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**NOTES**

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Printed in The Netherlands

613514/04/pp8

Date of release: 2002 Nov 15

Document order number: 9397 750 10588

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