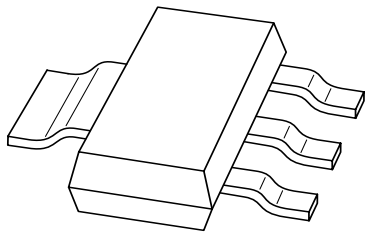


DATA SHEET



BSP19; BSP20 NPN high-voltage transistors

Product specification
Supersedes data of 1997 Mar 03

1999 Jun 01

NPN high-voltage transistors

BSP19; BSP20

FEATURES

- Low current (max. 100 mA)
- High voltage (max. 350 V).

APPLICATIONS

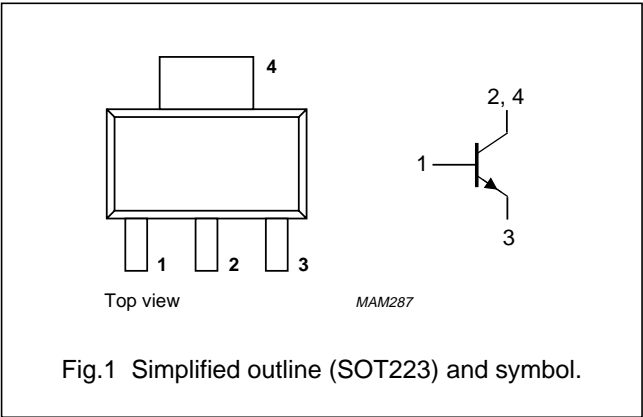
- Switching and amplification
- Especially used in telephony and automotive applications.

DESCRIPTION

NPN transistor in a SOT223 plastic package.
PNP complement: BSP16.

PINNING

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



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 | — | 400 | V |
| | BSP19 | | | 300 | V |
| V _{CEO} | collector-emitter voltage | open base | — | 350 | V |
| | BSP19 | | | 250 | V |
| V _{EBO} | emitter-base voltage | open collector | — | 5 | V |
| I _C | collector current (DC) | | — | 100 | mA |
| I _B | base current (DC) | | — | 100 | mA |
| P _{tot} | total power dissipation | T _{amb} ≤ 25 °C; note 1 | — | 1.2 | 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 printed-circuit board, single sided copper, tinplated, mounting pad for collector 1 cm².
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 | 104 | K/W |
| $R_{th\ j-s}$ | thermal resistance from junction to soldering point | | 23 | K/W |

Note

1. Device mounted on printed-circuit board, single sided copper, tinplated, mounting pad for collector 1 cm².
For other mounting conditions, see *"Thermal considerations for SOT223 in the General Part of associated Handbook"*.

CHARACTERISTICS

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

| SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | UNIT |
|-------------|--------------------------------------|--|------|------|------|
| I_{CBO} | collector cut-off current | $I_E = 0$; $V_{CE} = 300\text{ V}$ | – | 20 | nA |
| I_{EBO} | emitter cut-off current | $I_C = 0$; $V_{EB} = 5\text{ V}$ | – | 100 | nA |
| h_{FE} | DC current gain | $V_{CE} = 10\text{ V}$; $I_C = 20\text{ mA}$ | 40 | – | |
| V_{CEsat} | collector-emitter saturation voltage | $I_C = 50\text{ mA}$; $I_B = 4\text{ mA}$ | – | 0.5 | V |
| C_c | collector capacitance | $I_E = i_e = 0$; $V_{CB} = 10\text{ V}$; $f = 1\text{ MHz}$ | – | 2.5 | pF |
| f_T | transition frequency | $V_{CE} = 10\text{ V}$; $I_C = 10\text{ mA}$; $f = 100\text{ MHz}$ | 70 | – | MHz |

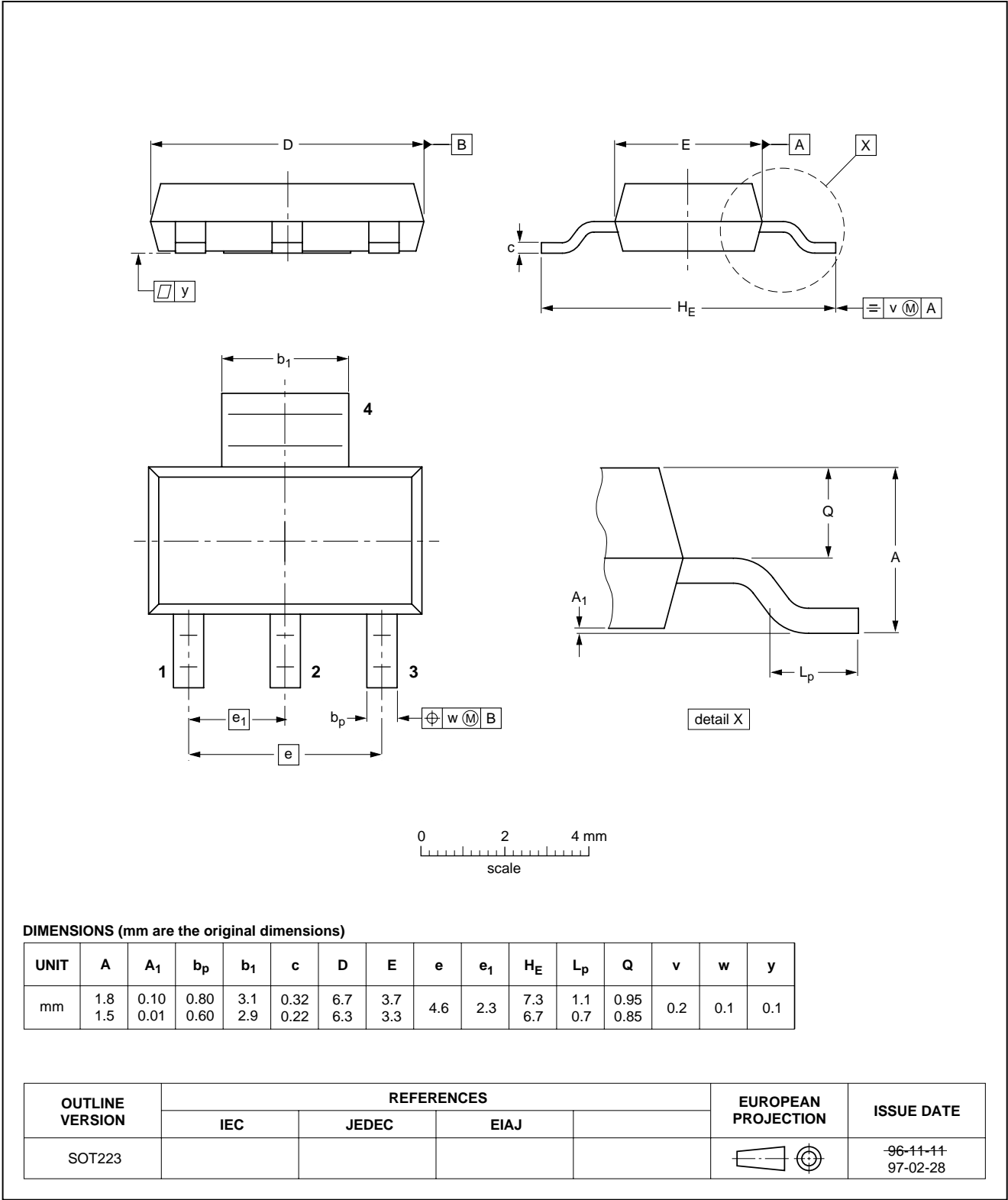
NPN high-voltage transistors

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PACKAGE OUTLINE

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

SOT223



NPN high-voltage transistors

BSP19; BSP20

DEFINITIONS

| Data sheet status | |
|---|---|
| Objective specification | This data sheet contains target or goal specifications for product development. |
| Preliminary specification | This data sheet contains preliminary data; supplementary data may be published later. |
| Product specification | This data sheet contains final product specifications. |
| Limiting values | |
| Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability. | |
| Application information | |
| Where application information is given, it is advisory and does not form part of the specification. | |

LIFE SUPPORT APPLICATIONS

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NPN high-voltage transistors

BSP19; BSP20

NOTES

NPN high-voltage transistors

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NOTES

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