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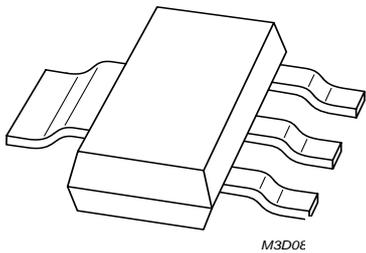
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If you have any questions related to the data sheet, please contact our nearest sales office via e-mail or telephone (details via salesaddresses@nexperia.com). Thank you for your cooperation and understanding,

Kind regards,

Team Nexperia

DATA SHEET



BSP41; BSP43 NPN medium power transistors

Product data sheet
Supersedes data of 1997 Sep 05

1999 Apr 26

NPN medium power transistors

BSP41; BSP43

FEATURES

- High current (max. 1 A)
- Low voltage (max. 80 V).

APPLICATIONS

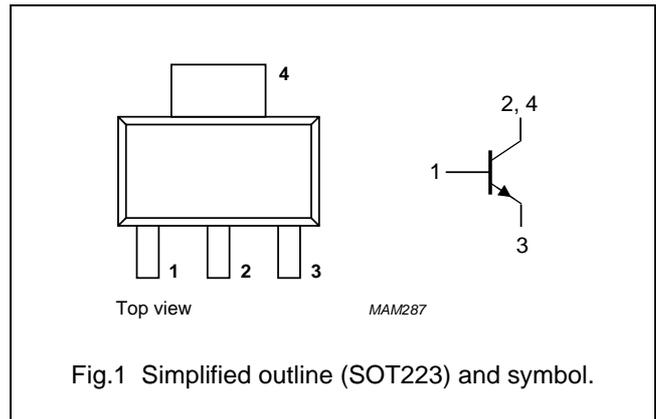
- Telephony and general industrial applications
- Thick and thin-film circuits.

DESCRIPTION

NPN medium power transistor in a SOT223 plastic package. PNP complements: BSP31; BSP32 and BSP33.

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 _{CB0} | collector-base voltage | open emitter | | | |
| | BSP41 | | – | 70 | V |
| | BSP43 | | – | 90 | V |
| V _{CEO} | collector-emitter voltage | open base | | | |
| | BSP41 | | – | 60 | V |
| | BSP43 | | – | 80 | 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 | | – | 0.2 | A |
| P _{tot} | total power dissipation | T _{amb} ≤ 25 °C; note 1 | – | 1.3 | 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 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 | 93 | K/W |
| $R_{th\ j-s}$ | thermal resistance from junction to soldering point | | 12 | K/W |

Note

1. Device mounted on a 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

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

| SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | UNIT |
|-------------|--------------------------------------|--|------|------|---------------|
| I_{CBO} | collector cut-off current | $I_E = 0; V_{CB} = 60\text{ V}$ | – | 100 | nA |
| | | $I_E = 0; V_{CB} = 60\text{ V}; T_j = 150\text{ °C}$ | – | 50 | μA |
| I_{EBO} | emitter cut-off current | $I_C = 0; V_{EB} = 5\text{ V}$ | – | 100 | nA |
| h_{FE} | DC current gain | $I_C = 100\ \mu\text{A}; V_{CE} = 5\text{ V}; \text{note 1}$ | 30 | – | |
| | | $I_C = 100\text{ mA}; V_{CE} = 5\text{ V}; \text{note 1}$ | 100 | 300 | |
| | | $I_C = 500\text{ mA}; V_{CE} = 5\text{ V}; \text{note 1}$ | 50 | – | |
| V_{CEsat} | collector-emitter saturation voltage | $I_C = 150\text{ mA}; I_B = 15\text{ mA}; \text{note 1}$ | – | 0.25 | V |
| | | $I_C = 500\text{ mA}; I_B = 50\text{ mA}; \text{note 1}$ | – | 0.5 | V |
| V_{BEsat} | base-emitter saturation voltage | $I_C = 150\text{ mA}; I_B = 15\text{ mA}; \text{note 1}$ | – | 1 | V |
| | | $I_C = 500\text{ mA}; I_B = 50\text{ mA}; \text{note 1}$ | – | 1.2 | V |
| f_T | transition frequency | $I_C = 50\text{ mA}; V_{CE} = 10\text{ V}; f = 100\text{ MHz}$ | 100 | – | MHz |

Note

1. Pulse test: $t_p \leq 300\ \mu\text{s}; \delta \leq 0.01$.

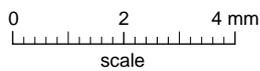
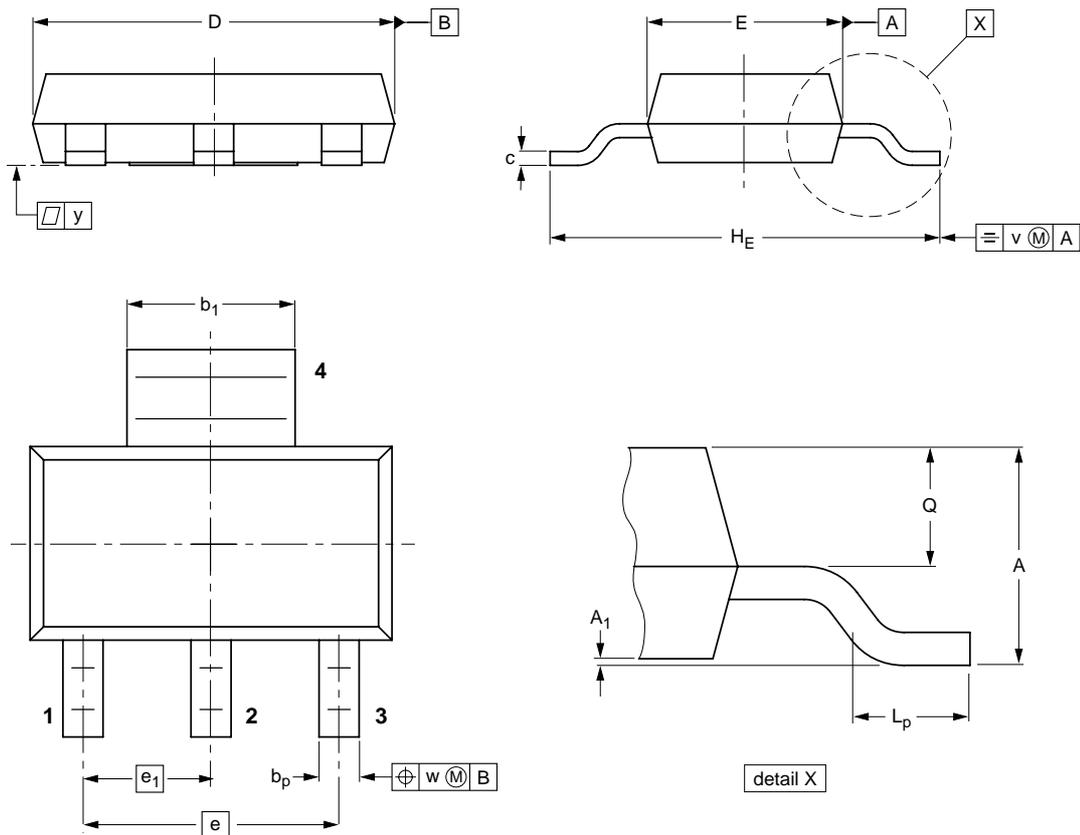
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PACKAGE OUTLINE

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

SOT223



DIMENSIONS (mm are the original dimensions)

| UNIT | A | A ₁ | b _p | b ₁ | c | D | E | e | e ₁ | H _E | L _p | Q | v | w | y |
|------|-----|----------------|----------------|----------------|------|-----|-----|-----|----------------|----------------|----------------|------|-----|-----|-----|
| mm | 1.8 | 0.10 | 0.80 | 3.1 | 0.32 | 6.7 | 3.7 | 4.6 | 2.3 | 7.3 | 1.1 | 0.95 | 0.2 | 0.1 | 0.1 |
| | 1.5 | 0.01 | 0.60 | 2.9 | 0.22 | 6.3 | 3.3 | | | 6.7 | 0.7 | 0.85 | | | |

| OUTLINE VERSION | REFERENCES | | | | EUROPEAN PROJECTION | ISSUE DATE |
|-----------------|------------|-------|-------|--|---------------------|----------------------|
| | IEC | JEDEC | EIAJ | | | |
| SOT223 | | | SC-73 | | | 97-02-28 99-09-13 |

NPN medium power transistors

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DATA SHEET STATUS

| DOCUMENT STATUS ⁽¹⁾ | PRODUCT STATUS ⁽²⁾ | 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

This data sheet was changed to reflect the new company name NXP Semiconductors, including new legal definitions and disclaimers. No changes were made to the technical content, except for package outline drawings which were updated to the latest version.

Contact information

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Printed in The Netherlands

115002/00/04/pp6

Date of release: 1999 Apr 26

Document order number: 9397 750 05771



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