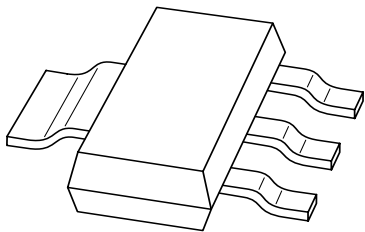


# DATA SHEET



## **PZTA44** NPN high-voltage transistor

Product data sheet  
Supersedes data of 1998 Nov 26

1999 May 21

## NPN high-voltage transistor

PZTA44

## FEATURES

- Low current (max. 300 mA)
- High voltage (max. 400 V).

## APPLICATIONS

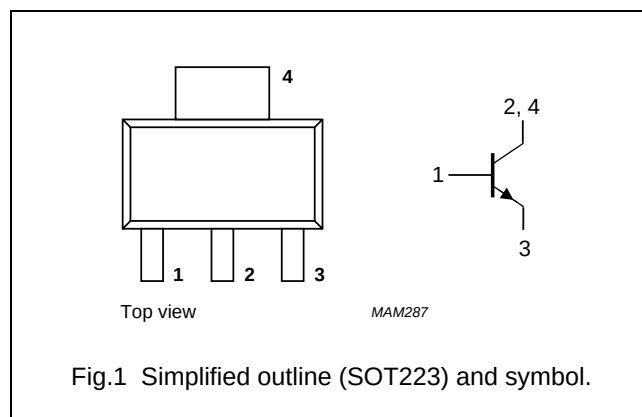
- Telecommunication.

## DESCRIPTION

NPN high-voltage transistor in a SOT223 plastic package.

## 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                         | –    | 500  | V    |
| $V_{CEO}$ | collector-emitter voltage     | open base                            | –    | 400  | V    |
| $V_{EBO}$ | emitter-base voltage          | open collector                       | –    | 6    | V    |
| $I_C$     | collector current (DC)        |                                      | –    | 300  | mA   |
| $I_{CM}$  | peak collector current        |                                      | –    | 300  | mA   |
| $I_{BM}$  | peak base current             |                                      | –    | 100  | 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*”.

## NPN high-voltage transistor

PZTA44

## 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

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

| SYMBOL      | PARAMETER                            | CONDITIONS                                                     | MIN. | MAX. | UNIT |
|-------------|--------------------------------------|----------------------------------------------------------------|------|------|------|
| $I_{CBO}$   | collector cut-off current            | $I_E = 0; V_{CB} = 400\text{ V}$                               | –    | 100  | nA   |
|             |                                      | $I_E = 0; V_{CB} = 400\text{ V}; T_j = 150\text{ °C}$          | –    | 10   | μA   |
| $I_{EBO}$   | emitter cut-off current              | $I_C = 0; V_{EB} = 4\text{ V}$                                 | –    | 100  | nA   |
| $h_{FE}$    | DC current gain                      | $V_{CE} = 10\text{ V}$<br>$I_C = 1\text{ mA}$                  | 40   | –    |      |
|             |                                      | $I_C = 10\text{ mA}$                                           | 50   | 200  |      |
|             |                                      | $I_C = 50\text{ mA}; \text{note 1}$                            | 45   | –    |      |
|             |                                      | $I_C = 100\text{ mA}; \text{note 1}$                           | 40   | –    |      |
| $V_{CEsat}$ | collector-emitter saturation voltage | $I_C = 1\text{ mA}; I_B = 0.1\text{ mA}$                       | –    | 400  | mV   |
|             |                                      | $I_C = 10\text{ mA}; I_B = 1\text{ mA}$                        | –    | 500  | mV   |
|             |                                      | $I_C = 50\text{ mA}; I_B = 5\text{ mA}; \text{note 1}$         | –    | 750  | mV   |
| $V_{BEsat}$ | base-emitter saturation voltage      | $I_C = 10\text{ mA}; I_B = 1\text{ mA}; \text{note 1}$         | –    | 850  | mV   |
| $C_c$       | collector capacitance                | $I_E = i_e = 0; V_{CB} = 20\text{ V}; f = 1\text{ MHz}$        | –    | 7    | pF   |
| $C_e$       | emitter capacitance                  | $I_C = i_c = 0; V_{EB} = 500\text{ mV}; f = 1\text{ MHz}$      | –    | 180  | pF   |
| $f_T$       | transition frequency                 | $I_C = 10\text{ mA}; V_{CE} = 10\text{ V}; f = 100\text{ MHz}$ | 20   | –    | MHz  |

## Note

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

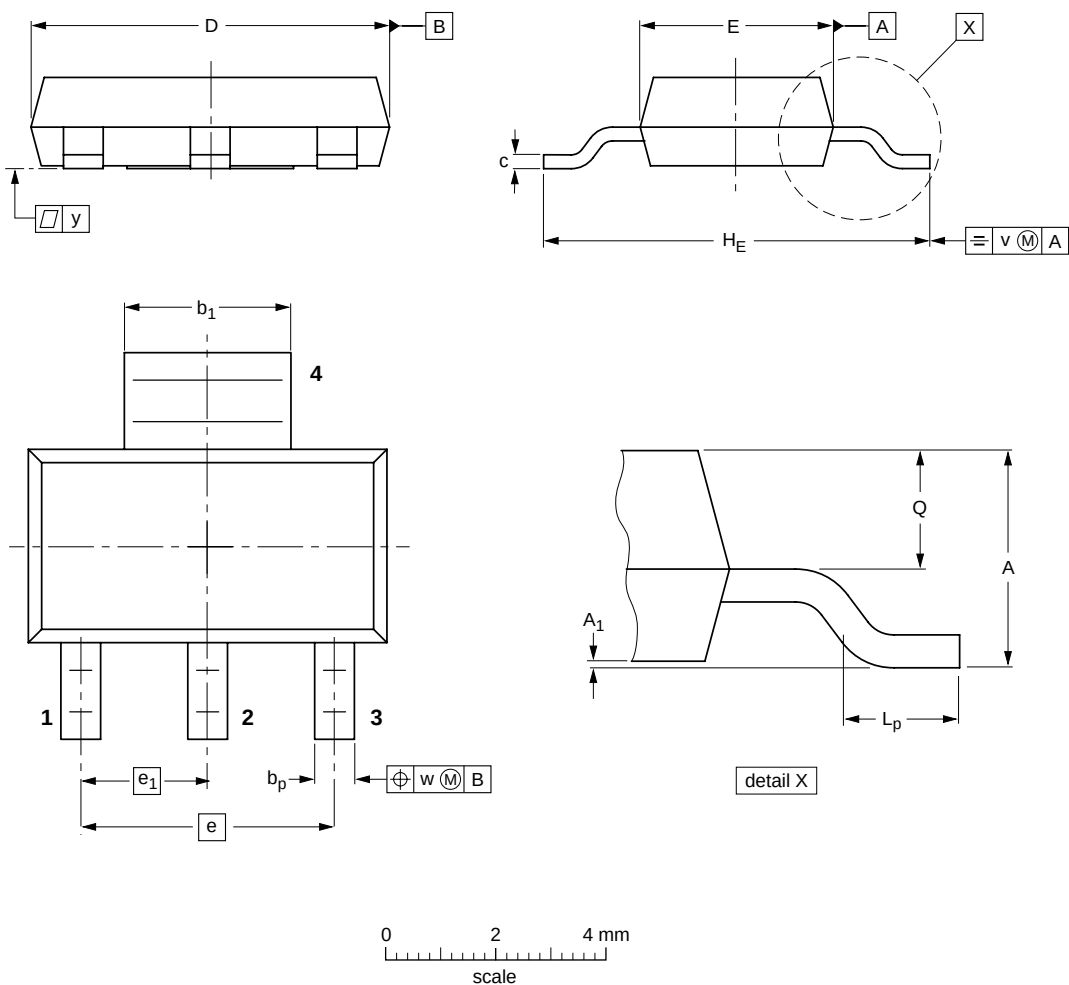
NPN high-voltage transistor

PZTA44

PACKAGE OUTLINE

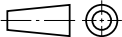
Plastic surface mounted package; collector pad for good heat transfer; 4 leads

SOT223



DIMENSIONS (mm are the original dimensions)

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

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