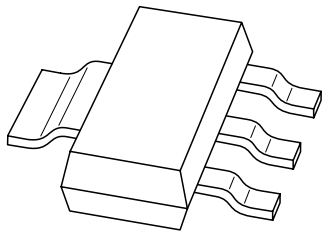


DATA SHEET



PZT2222A

NPN switching transistor

Product data sheet
Supersedes data of 1997 Jun 02

1999 Apr 14

NPN switching transistor

PZT2222A

FEATURES

- High current (max. 600 mA)
- Low voltage (max. 40 V).

APPLICATIONS

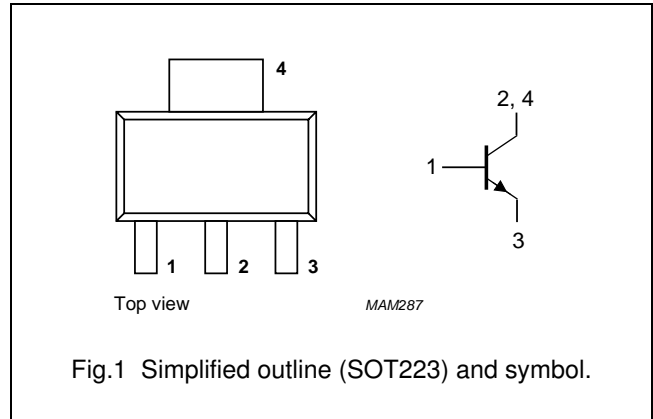
- Switching and linear amplification.

DESCRIPTION

NPN switching transistor in a SOT223 plastic package.
PNP complement: PZT2907A.

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 | – | 75 | V |
| V _{CEO} | collector-emitter voltage | open base | – | 40 | V |
| V _{EBO} | emitter-base voltage | open collector | – | 6 | V |
| I _C | collector current (DC) | | – | 600 | mA |
| I _{CM} | peak collector current | | – | 800 | mA |
| I _{BM} | peak base current | | – | 200 | mA |
| P _{tot} | total power dissipation | T _{amb} ≤ 25 °C; note 1 | – | 1.15 | 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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PZT2222A

THERMAL CHARACTERISTICS

| SYMBOL | PARAMETER | CONDITIONS | VALUE | UNIT |
|---------------|-----------------------------------------------------|------------|-------|------|
| $R_{th\ j-a}$ | thermal resistance from junction to ambient | note 1 | 109 | K/W |
| $R_{th\ j-s}$ | thermal resistance from junction to soldering point | | 28 | 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

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

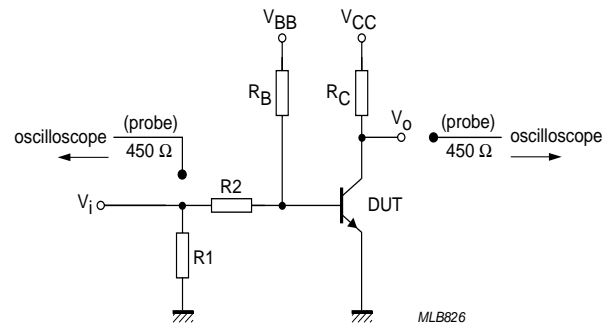
| SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | UNIT |
|------------------------------------------------------------------|--------------------------------------|-----------------------------------------------------------------------------------------------------|------|------|---------------|
| I_{CBO} | collector cut-off current | $I_E = 0; V_{CB} = 60\text{ V}$ | – | 10 | nA |
| | | $I_E = 0; V_{CB} = 60\text{ V}; T_{amb} = 125\text{ °C}$ | – | 10 | μA |
| I_{EBO} | emitter cut-off current | $I_C = 0; V_{EB} = 5\text{ V}$ | – | 10 | nA |
| h_{FE} | DC current gain | $I_C = 0.1\text{ mA}; V_{CE} = 10\text{ V}$ | 35 | – | |
| | | $I_C = 1\text{ mA}; V_{CE} = 10\text{ V}$ | 50 | – | |
| | | $I_C = 10\text{ mA}; V_{CE} = 10\text{ V}$ | 75 | – | |
| | | $I_C = 10\text{ mA}; V_{CE} = 10\text{ V}; T_{amb} = -55\text{ °C}$ | 35 | – | |
| | | $I_C = 150\text{ mA}; V_{CE} = 1\text{ V}; \text{note 1}$ | 50 | – | |
| | | $I_C = 150\text{ mA}; V_{CE} = 10\text{ V}; \text{note 1}$ | 100 | 300 | |
| | | $I_C = 500\text{ mA}; V_{CE} = 10\text{ V}; \text{note 1}$ | 40 | – | |
| V_{CEsat} | collector-emitter saturation voltage | $I_C = 150\text{ mA}; I_B = 15\text{ mA}$ | – | 300 | mV |
| | | $I_C = 500\text{ mA}; I_B = 50\text{ mA}$ | – | 1 | V |
| V_{BEsat} | base-emitter saturation voltage | $I_C = 150\text{ mA}; I_B = 15\text{ mA}$ | 0.6 | 1.2 | V |
| | | $I_C = 500\text{ mA}; I_B = 50\text{ mA}$ | – | 2 | V |
| C_c | collector capacitance | $I_E = i_e = 0; V_{CB} = 10\text{ V}; f = 1\text{ MHz}$ | – | 8 | pF |
| C_e | emitter capacitance | $I_C = i_c = 0; V_{EB} = 500\text{ mV}; f = 1\text{ MHz}$ | – | 25 | pF |
| f_T | transition frequency | $I_C = 20\text{ mA}; V_{CE} = 20\text{ V}; f = 100\text{ MHz}$ | 300 | – | MHz |
| Switching times (between 10% and 90% levels); (see Fig.2) | | | | | |
| t_{on} | turn-on time | $I_{Con} = 150\text{ mA}; I_{Bon} = 15\text{ mA}; I_{Boff} = -15\text{ mA}; T_{amb} = 25\text{ °C}$ | – | 35 | ns |
| t_d | delay time | | – | 10 | ns |
| t_r | rise time | | – | 25 | ns |
| t_{off} | turn-off time | | – | 250 | ns |
| t_s | storage time | | – | 200 | ns |
| t_f | fall time | | – | 60 | ns |

Note

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

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PZT2222A



$V_i = 9.5 \text{ V}$; $T = 500 \text{ } \mu\text{s}$; $t_p = 10 \text{ } \mu\text{s}$; $t_r = t_f \leq 3 \text{ ns}$.
 $R_1 = 68 \text{ } \Omega$; $R_2 = 325 \text{ } \Omega$; $R_B = 325 \text{ } \Omega$; $R_C = 160 \text{ } \Omega$.
 $V_{BB} = -3.5 \text{ V}$; $V_{CC} = 29.5 \text{ V}$.
Oscilloscope input impedance $Z_i = 50 \text{ } \Omega$.

Fig.2 Test circuit for switching times.

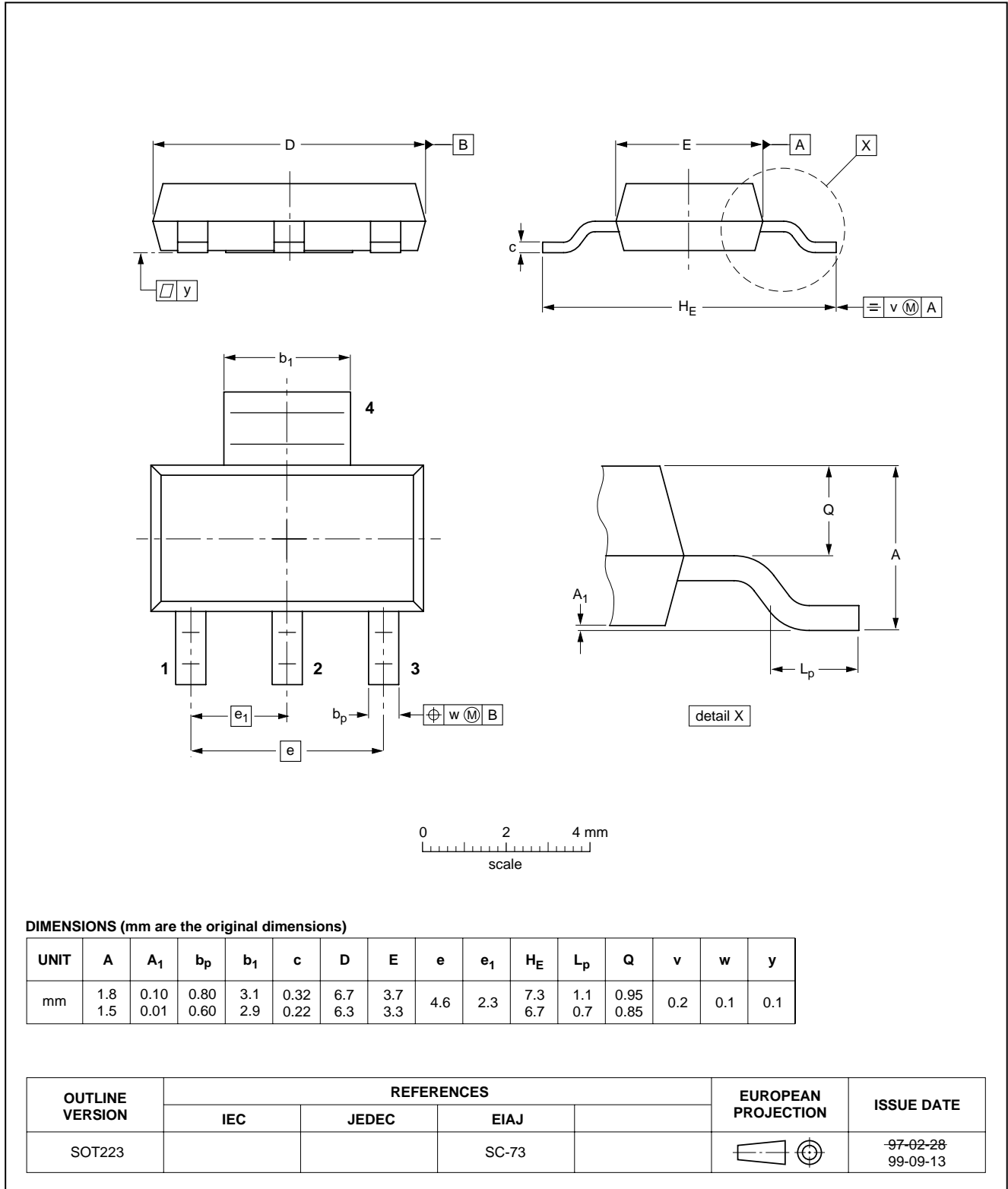
NPN switching transistor

PZT2222A

PACKAGE OUTLINE

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

SOT223



NPN switching transistor

PZT2222A

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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Contact information

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