

PZT4403

40 V, 600 mA PNP switching transistor

Rev. 03 — 2 March 2010

Product data sheet

1. Product profile

1.1 General description

PNP switching transistor in a medium power SOT223 (SC-73) small Surface-Mounted Device (SMD) plastic package.

NPN complement: PZT4401.

1.2 Features and benefits

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

1.3 Applications

- Switching and linear amplification

1.4 Quick reference data

Table 1. Quick reference data

| Symbol | Parameter | Conditions | Min | Max | Unit |
|-----------|---------------------------|-------------------------------------|---------|------|------|
| V_{CE0} | collector-emitter voltage | open base | - | -40 | V |
| I_C | collector current | | - | -600 | mA |
| h_{FE} | DC current gain | $V_{CE} = -1$ V; $I_C = -150$ mA | [1] 100 | - | 300 |

[1] Pulse test: $t_p \leq 300$ μ s; $\delta \leq 0.02$.

2. Pinning information

Table 2. Pinning

| Pin | Description | Simplified outline | Graphic symbol |
|------|-------------|--------------------|----------------|
| 1 | base | | |
| 2, 4 | collector | | |
| 3 | emitter | | |

3. Ordering information

Table 3. Ordering information

| Type number | Package | | Version |
|-------------|---------|--|---------|
| | Name | Description | |
| PZT4403 | SC-73 | plastic surface-mounted package with increased heatsink; 4 leads | SOT223 |

4. Marking

Table 4. Marking codes

| Type number | Marking code |
|-------------|--------------|
| PZT4403 | ZT4403 |

5. Limiting values

Table 5. 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 | - | -40 | V |
| V_{CEO} | collector-emitter voltage | open base | - | -40 | V |
| V_{EBO} | emitter-base voltage | open collector | - | -6 | V |
| I_C | collector current | | - | -600 | mA |
| I_{CM} | peak collector current | | - | -800 | mA |
| I_{BM} | peak base current | | - | -200 | mA |
| P_{tot} | total power dissipation | $T_{amb} \leq 25\text{ °C}$ | [1] - | 1150 | mW |
| T_j | junction temperature | | - | 150 | °C |
| T_{amb} | ambient temperature | | -65 | +150 | °C |
| T_{stg} | storage temperature | | -65 | +150 | °C |

[1] Device mounted on an FR4 Printed-Circuit Board (PCB), single-sided copper, tin-plated, mounting pad for collector 1 cm².

6. Thermal characteristics

Table 6. Thermal characteristics

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|----------------|--|-------------|-------|-----|-----|------|
| $R_{th(j-a)}$ | thermal resistance from junction to ambient | in free air | [1] - | - | 106 | K/W |
| $R_{th(j-sp)}$ | thermal resistance from junction to solder point | | - | - | 25 | K/W |

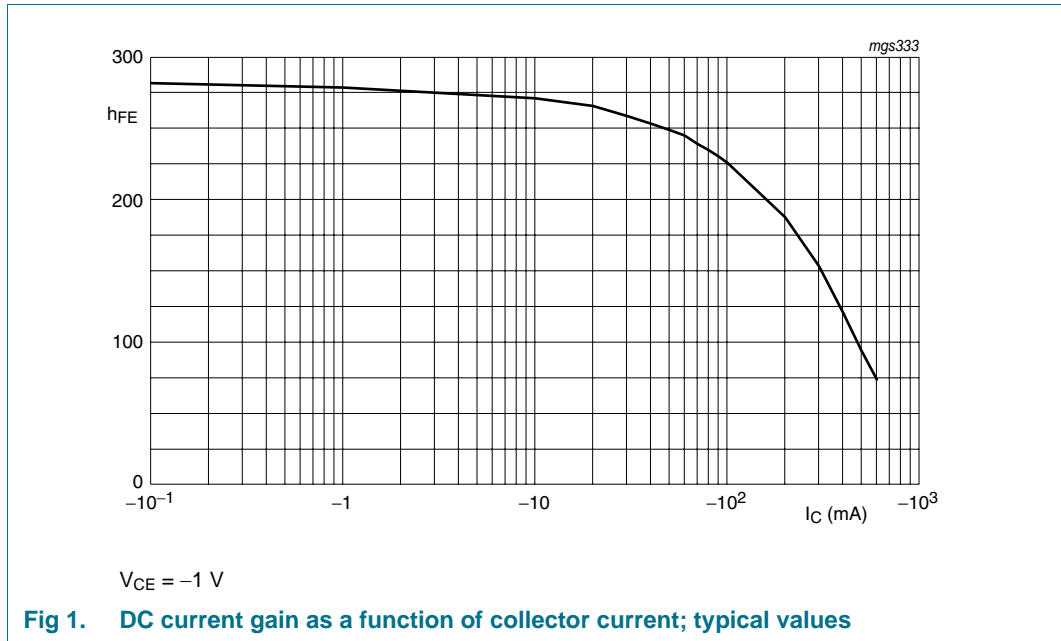
[1] Device mounted on an FR4 PCB, single-sided copper, tin-plated, mounting pad for collector 1 cm².

7. Characteristics

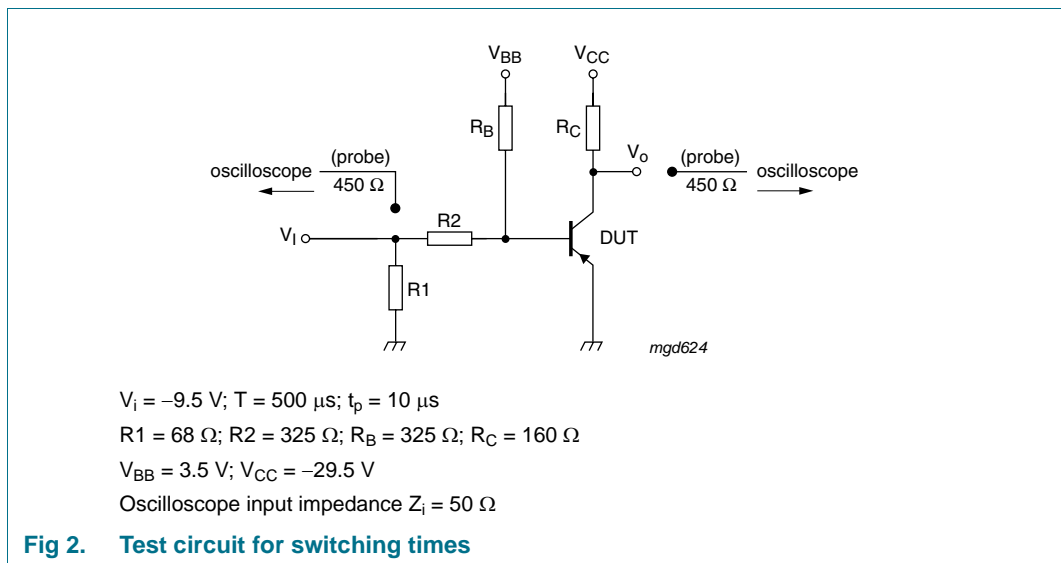
Table 7. Characteristics
 $T_{amb} = 25\text{ }^{\circ}\text{C}$ unless otherwise specified.

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|-------------|--------------------------------------|--|---------|-----|-------|------|
| I_{CBO} | collector-base cut-off current | $V_{CB} = -40\text{ V}; I_E = 0\text{ A}$ | - | - | -50 | nA |
| I_{EBO} | emitter-base cut-off current | $V_{EB} = -5\text{ V}; I_C = 0\text{ A}$ | - | - | -50 | nA |
| h_{FE} | DC current gain | $V_{CE} = -1\text{ V}; I_C = -0.1\text{ mA}$ | 30 | - | - | |
| | | $V_{CE} = -1\text{ V}; I_C = -1\text{ mA}$ | 60 | - | - | |
| | | $V_{CE} = -1\text{ V}; I_C = -10\text{ mA}$ | 100 | - | - | |
| | | $V_{CE} = -1\text{ V}; I_C = -150\text{ mA}$ | [1] 100 | - | 300 | |
| | | $V_{CE} = -2\text{ V}; I_C = -500\text{ mA}$ | [1] 20 | - | - | |
| V_{CEsat} | collector-emitter saturation voltage | $I_C = -150\text{ mA}; I_B = -15\text{ mA}$ | [1] - | - | -400 | mV |
| | | $I_C = -500\text{ mA}; I_B = -50\text{ mA}$ | [1] - | - | -750 | mV |
| V_{BEsat} | base-emitter saturation voltage | $I_C = -150\text{ mA}; I_B = -15\text{ mA}$ | [1] - | - | -950 | mV |
| | | $I_C = -500\text{ mA}; I_B = -50\text{ mA}$ | [1] - | - | -1300 | mV |
| t_d | delay time | $V_{CC} = -29.5\text{ V}; I_C = -150\text{ mA}; I_{Bon} = -15\text{ mA}; I_{Boff} = 15\text{ mA}; V_{BB} = 3.5\text{ V}$ | - | - | 15 | ns |
| t_r | rise time | | - | - | 30 | ns |
| t_{on} | turn-on time | | - | - | 40 | ns |
| t_s | storage time | | - | - | 300 | ns |
| t_f | fall time | | - | - | 50 | ns |
| t_{off} | turn-off time | | - | - | 350 | ns |
| f_T | transition frequency | $V_{CE} = -10\text{ V}; I_C = -20\text{ mA}; f = 100\text{ MHz}$ | 200 | - | - | MHz |
| C_c | collector capacitance | $V_{CB} = -5\text{ V}; I_E = i_e = 0\text{ A}; f = 1\text{ MHz}$ | - | - | 8.5 | pF |
| C_e | emitter capacitance | $V_{EB} = -500\text{ mV}; I_C = i_c = 0\text{ A}; f = 1\text{ MHz}$ | - | - | 35 | pF |

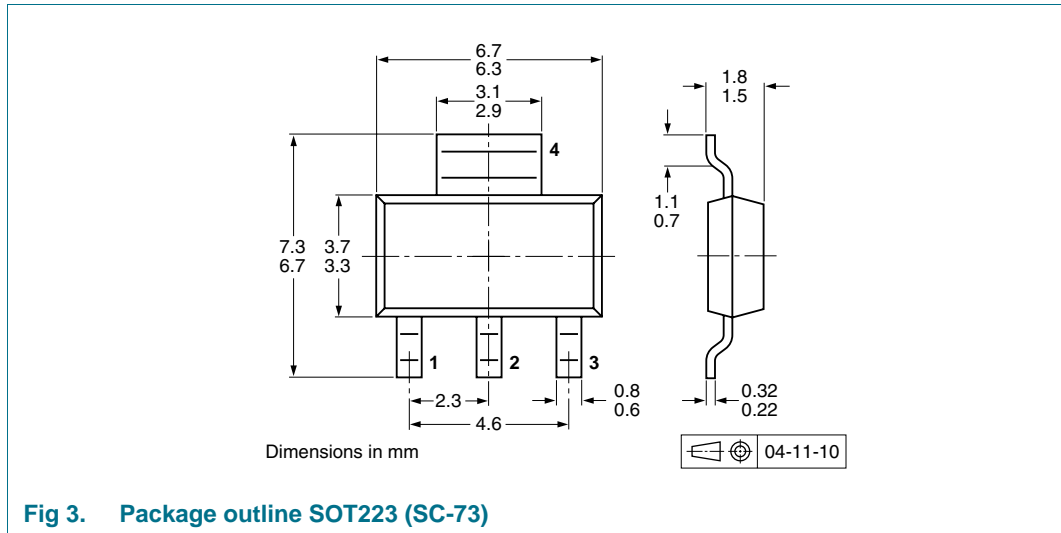
[1] Pulse test: $t_p \leq 300\text{ }\mu\text{s}; \delta \leq 0.02$.



8. Test information



9. Package outline



10. Packing information

Table 8. Packing methods

The indicated -xxx are the last three digits of the 12NC ordering code.^[1]

| Type number | Package | Description | Packing quantity | |
|-------------|---------|---------------------------------|------------------|------|
| | | | 1000 | 4000 |
| PZT4403 | SOT223 | 8 mm pitch, 12 mm tape and reel | -115 | -135 |

[1] For further information and the availability of packing methods, see [Section 13](#).

11. Revision history

Table 9. Revision history

| Document ID | Release date | Data sheet status | Change notice | Supersedes |
|----------------|---|-----------------------|---------------|-------------|
| PZT4403_3 | 20100302 | Product data sheet | - | PZT4403_N_2 |
| Modifications: | <ul style="list-style-type: none"> • The format of this data sheet has been redesigned to comply with the new identity guidelines of NXP Semiconductors. • Legal texts have been adapted to the new company name where appropriate. • Section 1.1 “General description”: amended • Section 1.4 “Quick reference data”: added • Section 3 “Ordering information”: added • Section 4 “Marking”: added • Section 7 “Characteristics”: amended • Section 8 “Test information”: added • Figure 3: superseded by minimized package outline drawing • Section 10 “Packing information”: added • Section 12 “Legal information”: updated | | | |
| PZT4403_N_2 | 20080117 | Product data sheet | - | PZT4403_1 |
| PZT4403_1 | 19990510 | Product specification | - | - |

12. Legal information

12.1 Data sheet status

| Document status ^{[1][2]} | Product status ^[3] | Definition |
|-----------------------------------|-------------------------------|---|
| Objective [short] data sheet | Development | This document contains data from the objective specification for product development. |
| Preliminary [short] data sheet | Qualification | This document contains data from the preliminary specification. |
| Product [short] data sheet | Production | This document contains the product specification. |

[1] Please consult the most recently issued document before initiating or completing a design.

[2] The term 'short data sheet' is explained in section "Definitions".

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