



# PZTA42

NPN high-voltage transistor

08 October 2024

Product data sheet

## 1. General description

NPN high-voltage transistor in a SOT223 Surface-Mounted Device (SMD) plastic package.

PNP complement: PZTA92

## 2. Features and benefits

- Low current (max. 100 mA)
- High voltage (max. 300 V)

## 3. Applications

- Telephony and professional communication equipment

## 4. Quick reference data

Table 1. Quick reference data

| Symbol    | Parameter                 | Conditions                                                              | Min | Typ | Max | Unit |
|-----------|---------------------------|-------------------------------------------------------------------------|-----|-----|-----|------|
| $V_{CE0}$ | collector-emitter voltage | open base                                                               | -   | -   | 300 | V    |
| $I_C$     | collector current         |                                                                         | -   | -   | 100 | mA   |
| $h_{FE}$  | DC current gain           | $V_{CE} = 10\text{ V}$ ; $I_C = 1\text{ mA}$ ; $T_{amb} = 25\text{ °C}$ | 25  | -   | -   |      |

## 5. Pinning information

Table 2. Pinning information

| Pin | Symbol | Description | Simplified outline | Graphic symbol |
|-----|--------|-------------|--------------------|----------------|
| 1   | B      | base        | <br>SC-73 (SOT223) | <br>sym123     |
| 2   | C      | collector   |                    |                |
| 3   | E      | emitter     |                    |                |
| 4   | C      | collector   |                    |                |

## 6. Ordering information

Table 3. Ordering information

| Type number            | Package |                                                                                                                 |                        |
|------------------------|---------|-----------------------------------------------------------------------------------------------------------------|------------------------|
|                        | Name    | Description                                                                                                     | Version                |
| <a href="#">PZTA42</a> | SC-73   | plastic, surface-mounted package with increased heatsink; 4 leads; 2.3 mm pitch; 6.5 mm x 3.5 mm x 1.65 mm body | <a href="#">SOT223</a> |

7. Marking

Table 4. Marking codes

| Type number | Marking code |
|-------------|--------------|
| PZTA42      | ZTA42        |

8. Limiting values

Table 5. Limiting values

In accordance with the Absolute Maximum Rating System (IEC 60134).

| Symbol           | Parameter                 | Conditions               |     | Min | Max | Unit |
|------------------|---------------------------|--------------------------|-----|-----|-----|------|
| V <sub>CBO</sub> | collector-base voltage    | open emitter             |     | -   | 300 | V    |
| V <sub>CEO</sub> | collector-emitter voltage | open base                |     | -   | 300 | V    |
| V <sub>EBO</sub> | emitter-base voltage      | open collector           |     | -   | 6   | V    |
| I <sub>C</sub>   | collector current         |                          |     | -   | 100 | mA   |
| I <sub>CM</sub>  | peak collector current    |                          |     | -   | 200 | mA   |
| I <sub>BM</sub>  | peak base current         |                          |     | -   | 100 | mA   |
| P <sub>tot</sub> | total power dissipation   | T <sub>amb</sub> ≤ 25 °C | [1] | -   | 1.2 | W    |
| T <sub>j</sub>   | junction temperature      |                          |     | -   | 150 | °C   |
| T <sub>amb</sub> | ambient temperature       |                          |     | -65 | 150 | °C   |
| T <sub>stg</sub> | storage temperature       |                          |     | -65 | 150 | °C   |

[1] Device mounted on a printed-circuit board, single-sided copper, tinplated, mounting pad for collector 1 cm<sup>2</sup>.

9. Thermal characteristics

Table 6. Thermal characteristics

| Symbol                | Parameter                                        | Conditions |     | Min | Typ | Max | Unit |
|-----------------------|--------------------------------------------------|------------|-----|-----|-----|-----|------|
| R <sub>th(j-a)</sub>  | thermal resistance from junction to ambient      |            | [1] | -   | -   | 104 | K/W  |
| R <sub>th(j-sp)</sub> | thermal resistance from junction to solder point |            |     | -   | -   | 23  | K/W  |

[1] Device mounted on a printed-circuit board, single-sided copper, tinplated, mounting pad for collector 1 cm<sup>2</sup>.

10. Characteristics

Table 7. Characteristics

| Symbol      | Parameter                            | Conditions                                                                                                                     | Min | Typ | Max | Unit |
|-------------|--------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|-----|-----|-----|------|
| $I_{CBO}$   | collector-base cut-off current       | $V_{CB} = 200\text{ V}$ ; $I_E = 0\text{ A}$ ; $T_{amb} = 25\text{ }^{\circ}\text{C}$                                          | -   | -   | 20  | nA   |
| $I_{EBO}$   | emitter-base cut-off current         | $V_{EB} = 6\text{ V}$ ; $I_C = 0\text{ A}$ ; $T_{amb} = 25\text{ }^{\circ}\text{C}$                                            | -   | -   | 100 | nA   |
| $h_{FE}$    | DC current gain                      | $V_{CE} = 10\text{ V}$ ; $I_C = 1\text{ mA}$ ; $T_{amb} = 25\text{ }^{\circ}\text{C}$                                          | 25  | -   | -   |      |
|             |                                      | $V_{CE} = 10\text{ V}$ ; $I_C = 10\text{ mA}$ ; $T_{amb} = 25\text{ }^{\circ}\text{C}$                                         | 40  | -   | -   |      |
|             |                                      | $V_{CE} = 10\text{ V}$ ; $I_C = 30\text{ mA}$ ; $T_{amb} = 25\text{ }^{\circ}\text{C}$                                         | 40  | -   | -   |      |
| $V_{CEsat}$ | collector-emitter saturation voltage | $I_C = 20\text{ mA}$ ; $I_B = 2\text{ mA}$ ; $T_{amb} = 25\text{ }^{\circ}\text{C}$                                            | -   | -   | 500 | mV   |
| $V_{BEsat}$ | base-emitter saturation voltage      |                                                                                                                                | -   | -   | 900 | mV   |
| $C_{re}$    | feedback capacitance                 | $V_{CB} = 20\text{ V}$ ; $I_C = 0\text{ A}$ ; $i_c = 0\text{ A}$ ; $f = 1\text{ MHz}$ ; $T_{amb} = 25\text{ }^{\circ}\text{C}$ | -   | -   | 3   | pF   |
| $f_T$       | transition frequency                 | $V_{CE} = 20\text{ V}$ ; $I_C = 10\text{ mA}$ ; $f = 100\text{ MHz}$ ; $T_{amb} = 25\text{ }^{\circ}\text{C}$                  | 50  | -   | -   | MHz  |

11. Package outline

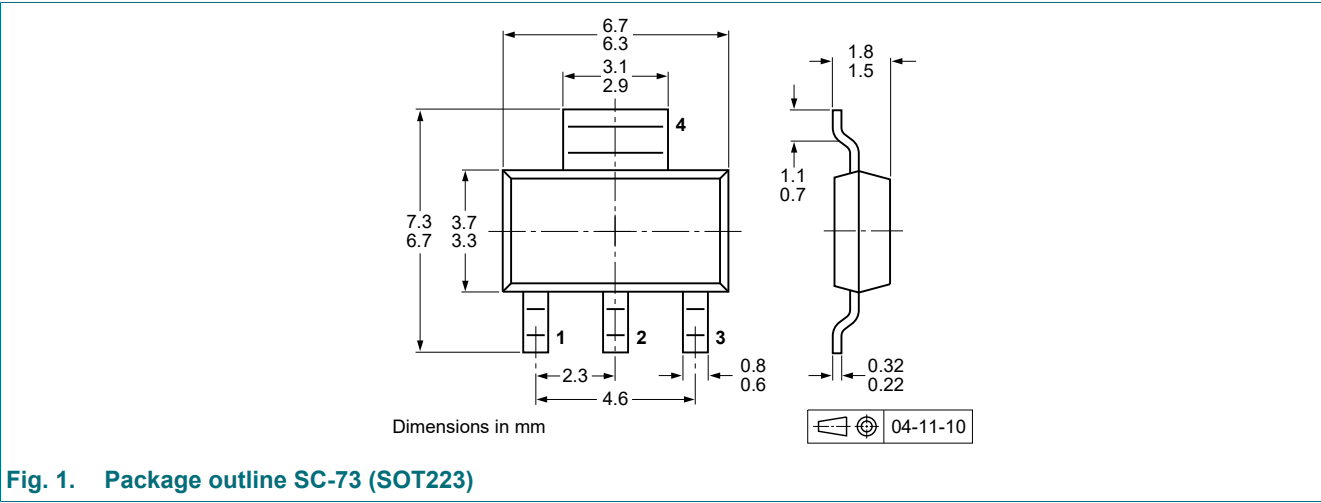


Fig. 1. Package outline SC-73 (SOT223)

12. Soldering

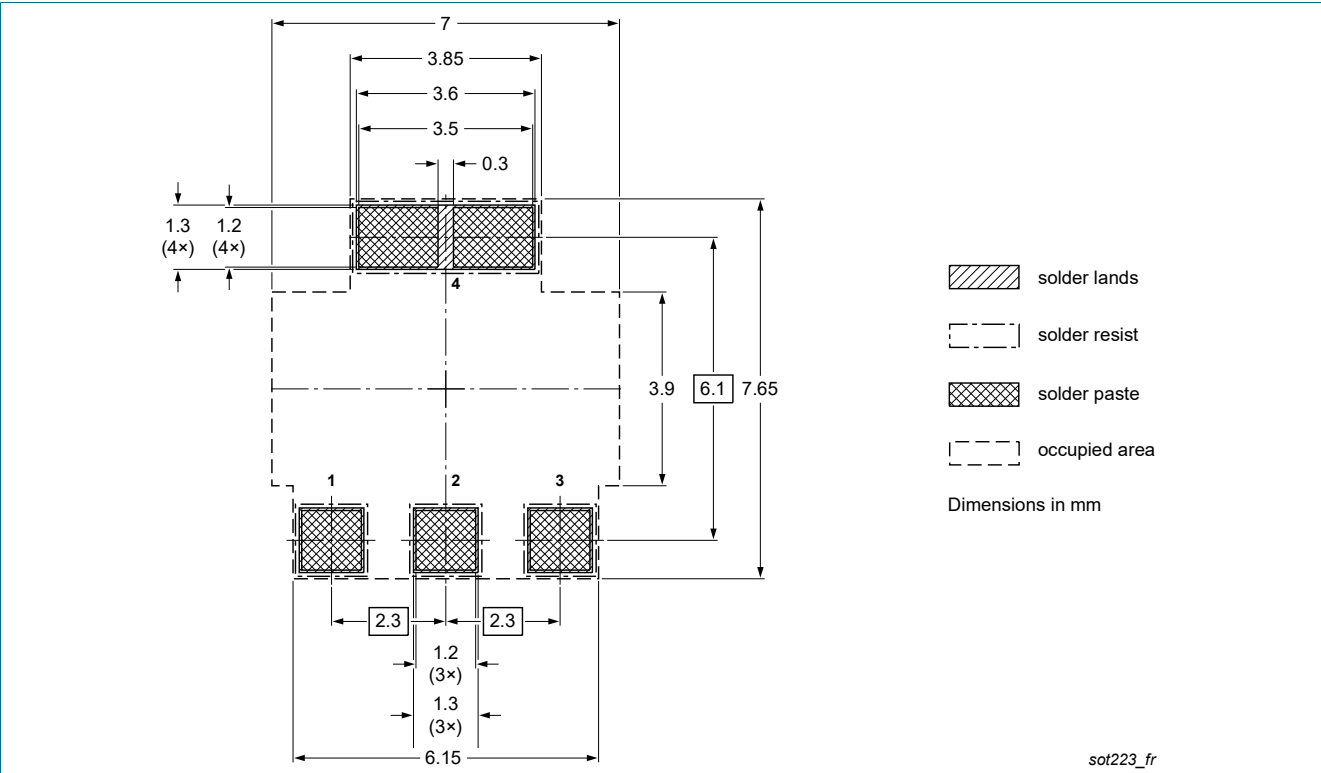


Fig. 2. Reflow soldering footprint for SC-73 (SOT223)

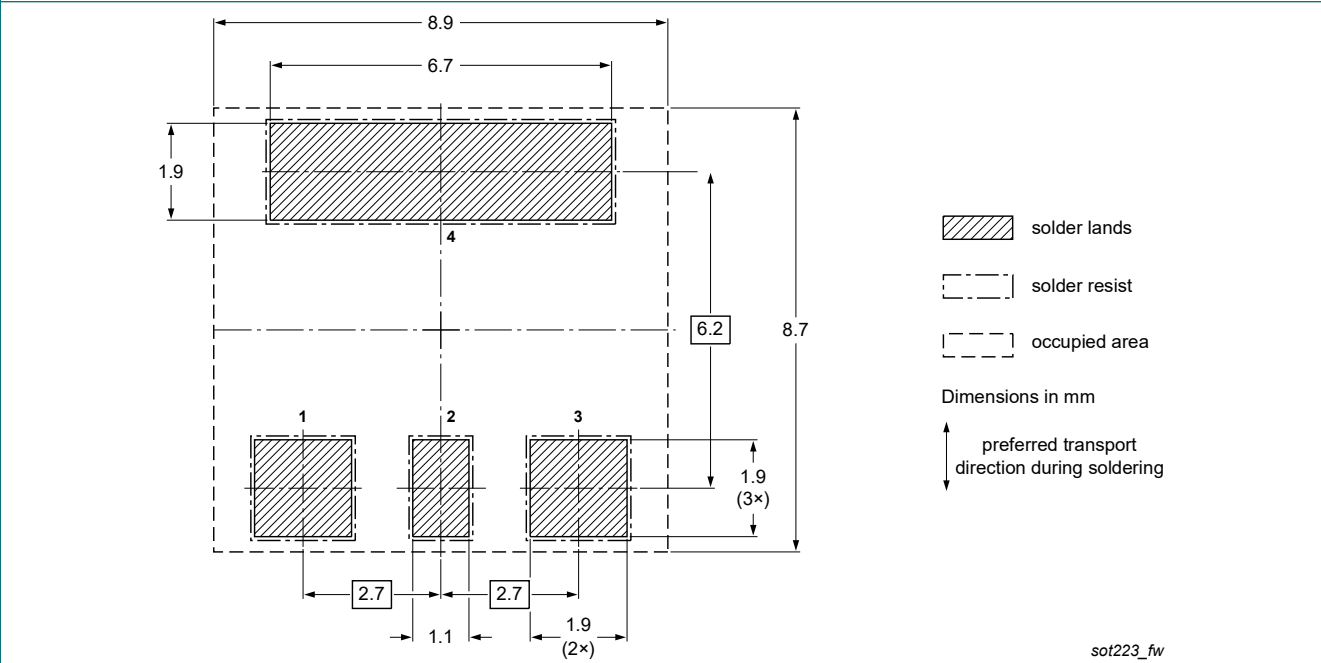


Fig. 3. Wave soldering footprint for SC-73 (SOT223)

13. Revision history

Table 8. Revision history

| Data sheet ID  | Release date                                                                                                                                                                                                                                                                                                                         | Data sheet status     | Change notice | Supersedes |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|---------------|------------|
| PZTA42 v.3     | 20241008                                                                                                                                                                                                                                                                                                                             | Product data sheet    | -             | PZTA42 v.2 |
| Modifications: | <ul style="list-style-type: none"><li>The format of this data sheet has been redesigned to comply with the identity guidelines of Nexperia.</li><li>Legal texts have been adapted to the new company name where appropriate.</li><li>Product changed to non automotive. Please refer to the automotive product(s) with -Q.</li></ul> |                       |               |            |
| PZTA42 v.2     | 19990521                                                                                                                                                                                                                                                                                                                             | Product data sheet    | -             | PZTA42 v.1 |
| PZTA42 v.1     | 19970616                                                                                                                                                                                                                                                                                                                             | Product specification | -             | -          |

14. Legal information

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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