



PMBTA92

PNP high-voltage transistor

1 January 2023

Product data sheet

1. General description

PNP high-voltage transistor in a small SOT23 Surface-Mounted Device (SMD) plastic package.

NPN complement: PMBTA42

2. Features and benefits

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

3. Applications

- Telephony
- Professional communication equipment

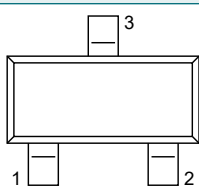
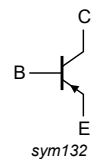
4. Quick reference data

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 | $V_{CE} = -10\text{ V}$; $I_C = -10\text{ mA}$; pulsed; $t_p \leq 300\text{ }\mu\text{s}$; $\delta \leq 0.02$ | 40 | - | - | |

5. Pinning information

Table 2. Pinning information

| Pin | Symbol | Description | Simplified outline | Graphic symbol |
|-----|--------|-------------|----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
| 1 | B | base |  SOT23 |  sym132 |
| 2 | E | emitter | | |
| 3 | C | collector | | |

6. Ordering information

Table 3. Ordering information

| Type number | Package | | |
|-------------------------|---------|------------------------------------------------------------------------------------------|-----------------------|
| | Name | Description | Version |
| PMBTA92 | SOT23 | plastic, surface-mounted package; 3 terminals; 1.9 mm pitch; 2.9 mm x 1.3 mm x 1 mm body | SOT23 |

7. Marking

Table 4. Marking codes

| Type number | Marking code[1] |
|-------------|-----------------|
| PMBTA92 | %2D |

[1] % = placeholder for manufacturing site code

8. 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 | - | -300 | V |
| V_{CEO} | collector-emitter voltage | open base | - | -300 | V |
| V_{EBO} | emitter-base voltage | open collector | - | -5 | V |
| I_C | collector current | | - | -100 | mA |
| I_{CM} | peak collector current | single pulse; $t_p \leq 1$ ms | - | -200 | mA |
| I_{BM} | peak base current | | - | -100 | mA |
| P_{tot} | total power dissipation | $T_{amb} \leq 25$ °C | [1] | 250 | 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 PCB, single-sided, 35 µm copper, tin-plated and standard footprint.

9. 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] | - | 500 | K/W |

[1] Device mounted on an FR4 PCB, single-sided, 35 µm copper, tin-plated and standard footprint.

10. Characteristics

Table 7. Characteristics

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

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|---------------|-------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|------|-----|------|------|
| $V_{(BR)CBO}$ | collector-base breakdown voltage | $I_C = -100\text{ }\mu\text{A}$; $I_E = 0\text{ A}$; $T_{amb} = 25\text{ °C}$ | -300 | - | - | V |
| $V_{(BR)CEO}$ | collector-emitter breakdown voltage | $I_C = -1\text{ mA}$; $I_B = 0\text{ A}$; $T_{amb} = 25\text{ °C}$ | -300 | - | - | V |
| $V_{(BR)EBO}$ | emitter-base breakdown voltage (collector open) | $I_E = -100\text{ }\mu\text{A}$; $I_C = 0\text{ A}$; $T_{amb} = 25\text{ °C}$ | -5 | - | - | V |
| I_{CBO} | collector-base cut-off current | $V_{CB} = -200\text{ V}$; $I_E = 0\text{ A}$; $T_{amb} = 25\text{ °C}$ | - | - | -250 | nA |
| I_{EBO} | emitter-base cut-off current | $V_{EB} = -3\text{ V}$; $I_C = 0\text{ A}$; $T_{amb} = 25\text{ °C}$ | - | - | -100 | nA |
| h_{FE} | DC current gain | $V_{CE} = -10\text{ V}$; $I_C = -1\text{ mA}$; pulsed; $t_p \leq 300\text{ }\mu\text{s}$; $\delta \leq 0.02$; $T_{amb} = 25\text{ °C}$ | 25 | - | - | |
| | | $V_{CE} = -10\text{ V}$; $I_C = -10\text{ mA}$; pulsed; $t_p \leq 300\text{ }\mu\text{s}$; $\delta \leq 0.02$ | 40 | - | - | |
| | | $V_{CE} = -10\text{ V}$; $I_C = -30\text{ mA}$; pulsed; $t_p \leq 300\text{ }\mu\text{s}$; $\delta \leq 0.02$ | 25 | - | - | |
| V_{CEsat} | collector-emitter saturation voltage | $I_C = -20\text{ mA}$; $I_B = -2\text{ mA}$; $T_{amb} = 25\text{ °C}$ | - | - | -500 | mV |
| V_{BEsat} | base-emitter saturation voltage | | - | - | -900 | mV |
| f_T | transition frequency | $V_{CE} = -20\text{ V}$; $I_C = -10\text{ mA}$; $f = 100\text{ MHz}$; $T_{amb} = 25\text{ °C}$ | 50 | - | - | MHz |
| C_c | collector capacitance | $V_{CB} = -20\text{ V}$; $I_E = 0\text{ A}$; $i_e = 0\text{ A}$; $f = 1\text{ MHz}$; $T_{amb} = 25\text{ °C}$ | - | - | 6 | pF |

11. Package outline

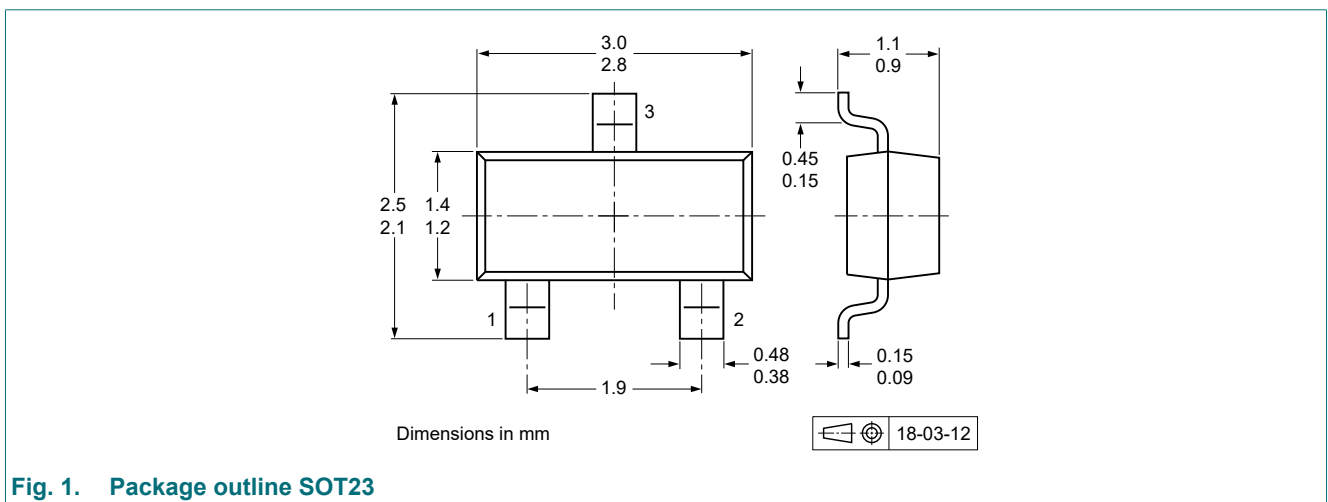


Fig. 1. Package outline SOT23

12. Soldering

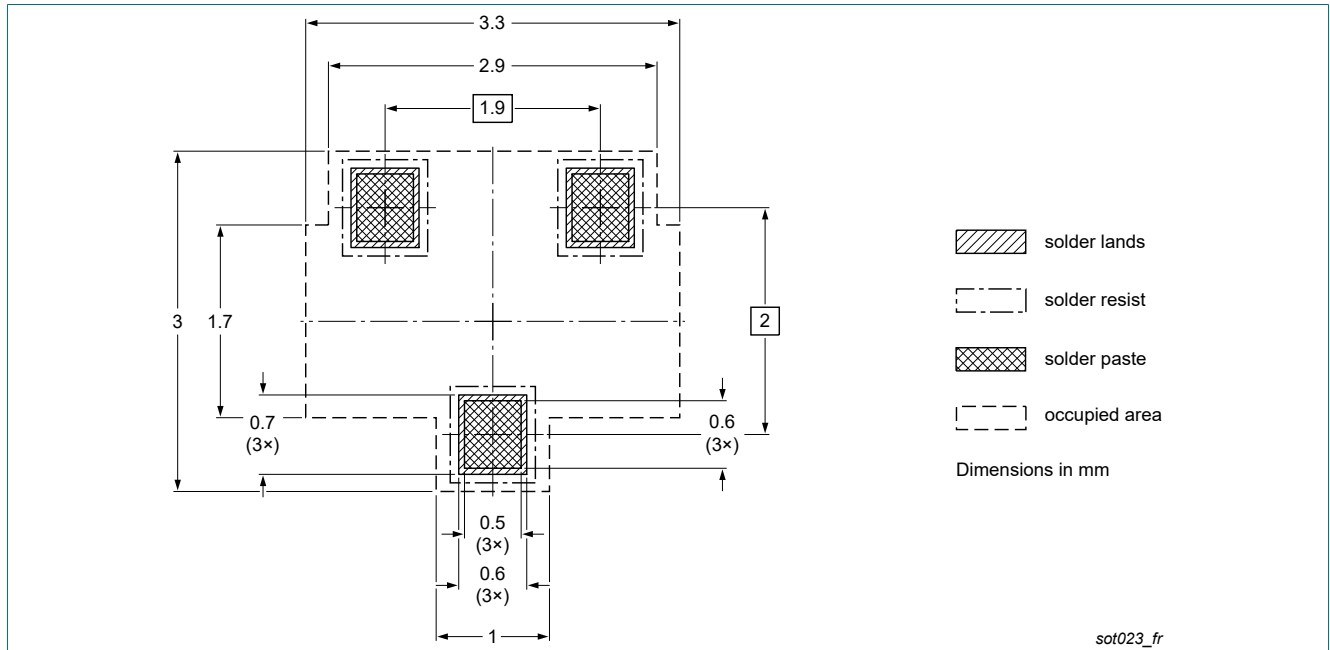


Fig. 2. Reflow soldering footprint for SOT23

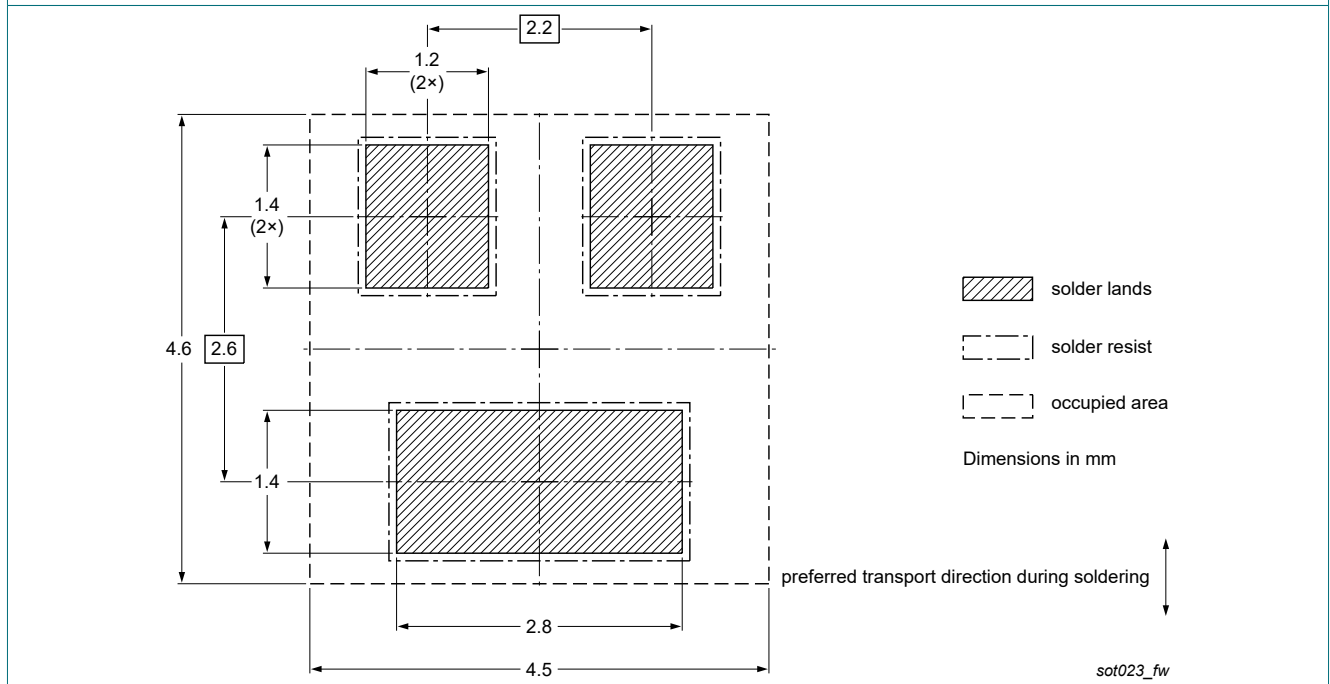


Fig. 3. Wave soldering footprint for SOT23

13. Revision history

Table 8. Revision history

| Data sheet ID | Release date | Data sheet status | Change notice | Supersedes |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|---------------|-------------|
| PMBTA92 v.4 | 20230101 | Product data sheet | - | PMBTA92 v.3 |
| Modifications: | <ul style="list-style-type: none">Product changed to non-automotive qualification. Please refer to nexperia.com for automotive (-Q) product alternative(s). | | | |
| PMBTA92 v.3 | 20220330 | Product data sheet | - | PMBTA92 v.2 |
| PMBTA92 v.2 | 20040122 | Product data sheet | - | PMBTA92 v.1 |
| PMBTA92 v.1 | 19990413 | Product data sheet | - | |

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".
- [3] The product status of device(s) described in this document may have changed since this document was published and may differ in case of multiple devices. The latest product status information is available on the internet at <https://www.nexperia.com>.

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Contents

| | |
|---------------------------------|---|
| 1. General description..... | 1 |
| 2. Features and benefits..... | 1 |
| 3. Applications..... | 1 |
| 4. Quick reference data..... | 1 |
| 5. Pinning information..... | 1 |
| 6. Ordering information..... | 2 |
| 7. Marking..... | 2 |
| 8. Limiting values..... | 2 |
| 9. Thermal characteristics..... | 2 |
| 10. Characteristics..... | 3 |
| 11. Package outline..... | 3 |
| 12. Soldering..... | 4 |
| 13. Revision history..... | 5 |
| 14. Legal information..... | 6 |

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