
# PMSTA56

## 80V, 500 mA PNP general-purpose transistor

24 January 2025 Product data sheet

## 1. General description

PNP transistor in a very small SOT323 (SC-70) Surface-Mounted Device (SMD) plastic package.

NPN complement: PMSTA06

## 2. Features and benefits

- High current (max. 500 mA)
- Collector-emitter voltage: 80 V
- AEC-Q101 qualified

## 3. Applications

- Intended for telephony and professional communication equipment.

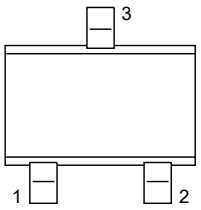
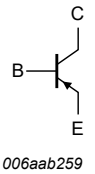
## 4. Quick reference data

**Table 1. Quick reference data**

| Symbol | Parameter | Conditions | | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|---|
| $V_{CEO}$ | collector-emitter voltage | open base | | - | - | -80 | V |
| $I_C$ | collector current | | | - | - | -500 | mA |
| $h_{FE}$ | DC current gain | $V_{CE}$ = -1 V; $I_C$ = -10 mA; $T_{amb}$ = 25 °C | | 100 | - | - | |

## 5. Pinning information

**Table 2. Pinning information**

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



**SC-70 (SOT323)**



*006aab259*

# 6. Ordering information

**Table 3. Ordering information**

| Type number | Package | | |
|---|---|---|---|
| | Name | Description | Version |
| PMSTA56 | SC-70 | plastic, surface-mounted package; 3 leads; 1.3 mm pitch; 2 mm x 1.25 mm x 0.95 mm body | SOT323 |

# 7. Marking

**Table 4. Marking codes**

| Type number | Marking code[1] |
|---|---|
| PMSTA56 | %2G |

[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 | | - | -80 | V |
| $V_{CEO}$ | collector-emitter voltage | open base | | - | -80 | V |
| $V_{EBO}$ | emitter-base voltage | open collector | | - | -4 | V |
| $I_C$ | collector current | | | - | -500 | mA |
| $I_{CM}$ | peak collector current | | | - | -500 | mA |
| $I_{BM}$ | peak base current | | | - | -500 | mA |
| $P_{tot}$ | total power dissipation | $T_{amb} \leq 25$ °C | [1] | - | 200 | 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 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] | - | - | 625 | K/W |

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

## 10. Characteristics

**Table 7. Characteristics**

| Symbol | Parameter | Conditions | | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|---|
| $I_{CBO}$ | collector-base cut-off current | $V_{CB}$ = -80 V; $I_E$ = 0 A; $T_{amb}$ = 25 °C | | - | - | -100 | nA |
| $I_{EBO}$ | emitter-base cut-off current | $V_{EB}$ = -4 V; $I_C$ = 0 A; $T_{amb}$ = 25 °C | | - | - | -500 | nA |
| $h_{FE}$ | DC current gain | $V_{CE}$ = -1 V; $I_C$ = -10 mA; $T_{amb}$ = 25 °C | | 100 | - | - | |
| | | $V_{CE}$ = -1 V; $I_C$ = -100 mA; $t_p \leq$ 300 µs; $\delta \leq$ 0.02; $T_{amb}$ = 25 °C | | 100 | - | - | |
| $V_{CEsat}$ | collector-emitter saturation voltage | $I_C$ = -100 mA; $I_B$ = -10 mA; $T_{amb}$ = 25 °C | | - | - | -250 | mV |
| $V_{BE}$ | base-emitter voltage | $V_{CE}$ = -1 V; $I_C$ = -100 mA; $T_{amb}$ = 25 °C | | - | - | -1.2 | V |
| $f_T$ | transition frequency | $V_{CE}$ = -1 V; $I_C$ = -100 mA; f = 100 MHz; $T_{amb}$ = 25 °C | | 50 | - | - | MHz |

## 11. Test information

### Quality information

This product has been qualified in accordance with the Automotive Electronics Council (AEC) standard *Q101 - Stress test qualification for discrete semiconductors*, and is suitable for use in automotive applications.

## 12. Package outline

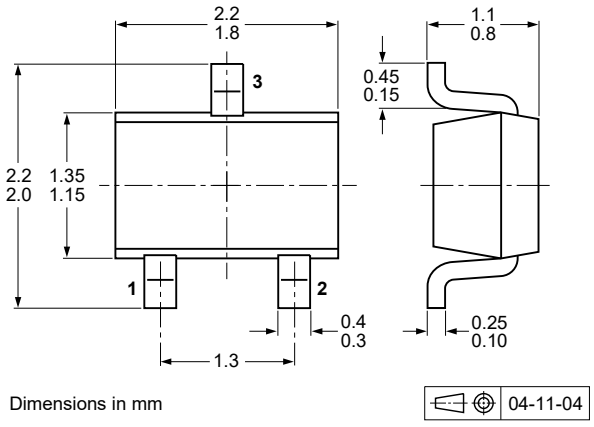



**Fig. 1. Package outline SC-70 (SOT323)**

## 13. Soldering

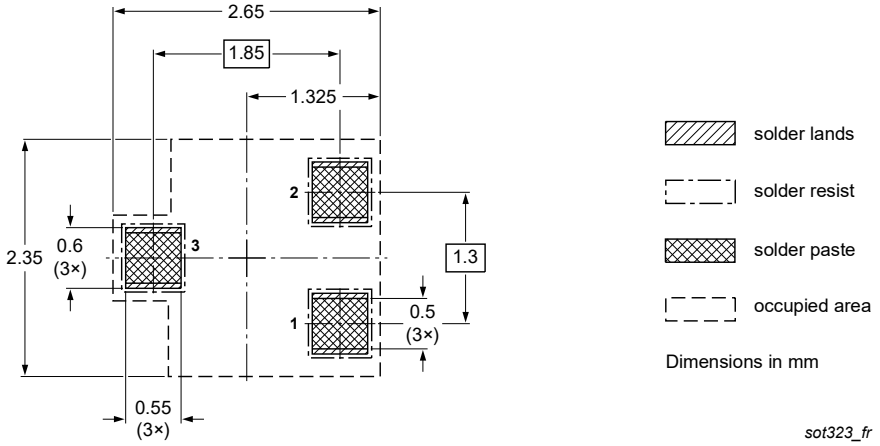



**Fig. 2. Reflow soldering footprint for SC-70 (SOT323)**

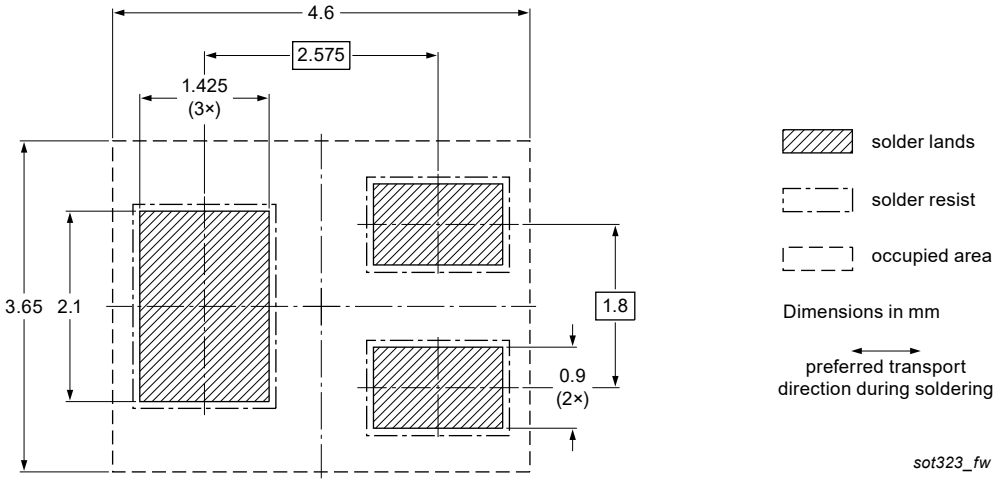



**Fig. 3. Wave soldering footprint for SC-70 (SOT323)**

## 14. Revision history

**Table 8. Revision history**

| Data sheet ID | Release date | Data sheet status | Change notice | Supersedes |
|---|---|---|---|---|
| PMSTA56 v.6 | 20250124 | Product data sheet | - | PMSTA55_56_5 |
| Modifications: | • The format of this data sheet has been redesigned to comply with the identity guidelines of Nexperia.<br>• Legal texts have been adapted to the new company name where appropriate.<br>• Packing information removed.<br>• Family data sheet reduced to single type data sheet.<br>• Section 10 "Characteristics" value $V_{BE}$ = -1.2 mV max, changed to -1.2 V max. | | | |
| PMSTA55_56_5 | 20100201 | Product data sheet | - | PMSTA55_56_N_4 |
| PMSTA55_56_N_4 | 20080117 | Product specification | - | PMSTA55_56_3 |
| PMSTA55_56_3 | 19990422 | Product specification | - | PMSTA55_56_2 |
| PMSTA55_56_2 | 19980721 | Product specification | - | PMSTA55_56_1 |
| PMSTA55_56_1 | 19970602 | Product specification | - | - |

# 15. 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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