



# 2PD1820AS

NPN general purpose transistor

15 September 2025

Product data sheet

## 1. General description

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

PNP complement: 2PB1219AS

## 2. Features and benefits

- High current (max. 500 mA)
- Low voltage (max. 50 V)
- Low collector-emitter saturation voltage (max. 600 mV)
- AEC-Q101 qualified

## 3. Applications

- General purpose switching and amplification, especially for portable equipment

## 4. Quick reference data

Table 1. Quick reference data

| Symbol    | Parameter                 | Conditions                                                                                                                                             | Min | Typ | Max | Unit |
|-----------|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-----|-----|------|
| $V_{CE0}$ | collector-emitter voltage | open base                                                                                                                                              | -   | -   | 50  | V    |
| $I_C$     | collector current         |                                                                                                                                                        | -   | -   | 500 | mA   |
| $h_{FE}$  | DC current gain           | $V_{CE} = 10\text{ V}$ ; $I_C = 150\text{ mA}$ ; pulsed; $t_p \leq 300\text{ }\mu\text{s}$ ; $\delta \leq 0.02$ ; $T_{amb} = 25\text{ }^\circ\text{C}$ | 170 | -   | 340 |      |

## 5. Pinning information

Table 2. Pinning information

| Pin | Symbol | Description | Simplified outline | Graphic symbol |
|-----|--------|-------------|--------------------|----------------|
| 1   | B      | base        | <br>SC-70 (SOT323) | <br>sym021     |
| 2   | E      | emitter     |                    |                |
| 3   | C      | collector   |                    |                |

6. Ordering information

Table 3. Ordering information

| Type number | Package |                                                                                        |         |
|-------------|---------|----------------------------------------------------------------------------------------|---------|
|             | Name    | Description                                                                            | Version |
| 2PD1820AS   | 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] |
|-------------|-----------------|
| 2PD1820AS   | A%S             |

[1] % = placeholder for manufacturing site code

8. Limiting values

Table 5. Limiting values

In accordance with the Absolute Maximum Rating System (IEC 134).

| Symbol           | Parameter                 | Conditions               |     | Min | Max | Unit |
|------------------|---------------------------|--------------------------|-----|-----|-----|------|
| V <sub>CBO</sub> | collector-base voltage    | open emitter             |     | -   | 60  | V    |
| V <sub>CEO</sub> | collector-emitter voltage | open base                |     | -   | 50  | V    |
| V <sub>EBO</sub> | emitter-base voltage      | open collector           |     | -   | 5   | V    |
| I <sub>C</sub>   | collector current         |                          |     | -   | 500 | mA   |
| I <sub>CM</sub>  | peak collector current    |                          |     | -   | 1   | A    |
| I <sub>BM</sub>  | peak base current         |                          |     | -   | 200 | mA   |
| P <sub>tot</sub> | total power dissipation   | T <sub>amb</sub> ≤ 25 °C | [1] | -   | 200 | mW   |
| 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 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 <sub>th(j-a)</sub> | 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       | $V_{CB} = 20\text{ V}; I_E = 0\text{ A}; T_{amb} = 25\text{ }^{\circ}\text{C}$                                                                                         | -   | -   | 10  | nA            |
|             |                                      | $V_{CB} = 20\text{ V}; I_E = 0\text{ A}; T_J = 150\text{ }^{\circ}\text{C}$                                                                                            | -   | -   | 5   | $\mu\text{A}$ |
| $I_{EBO}$   | emitter-base cut-off current         | $V_{EB} = 4\text{ V}; I_C = 0\text{ A}; T_{amb} = 25\text{ }^{\circ}\text{C}$                                                                                          | -   | -   | 10  | nA            |
| $h_{FE}$    | DC current gain                      | $V_{CE} = 10\text{ V}; I_C = 150\text{ mA}; \text{pulsed}; t_p \leq 300\text{ }\mu\text{s}; \delta \leq 0.02; T_{amb} = 25\text{ }^{\circ}\text{C}$                    | 170 | -   | 340 |               |
|             |                                      | $V_{CE} = 10\text{ V}; I_C = 500\text{ mA}; \text{pulsed}; t_p \leq 300\text{ }\mu\text{s}; \delta \leq 0.02; T_{amb} = 25\text{ }^{\circ}\text{C}$                    | 40  | -   | -   |               |
| $V_{CEsat}$ | collector-emitter saturation voltage | $I_C = 300\text{ mA}; I_B = 30\text{ mA}; \text{pulsed}; t_p \leq 300\text{ }\mu\text{s}; \delta \leq 0.02; T_{amb} = 25\text{ }^{\circ}\text{C}$                      | -   | -   | 600 | mV            |
| $C_c$       | collector capacitance                | $V_{CB} = 10\text{ V}; I_E = 0\text{ A}; i_e = 0\text{ A}; f = 1\text{ MHz}; T_{amb} = 25\text{ }^{\circ}\text{C}$                                                     | -   | -   | 15  | pF            |
| $f_T$       | transition frequency                 | $V_{CE} = 10\text{ V}; I_C = 50\text{ mA}; f = 100\text{ MHz}; \text{pulsed}; t_p \leq 300\text{ }\mu\text{s}; \delta \leq 0.02; T_{amb} = 25\text{ }^{\circ}\text{C}$ | 150 | -   | -   | 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

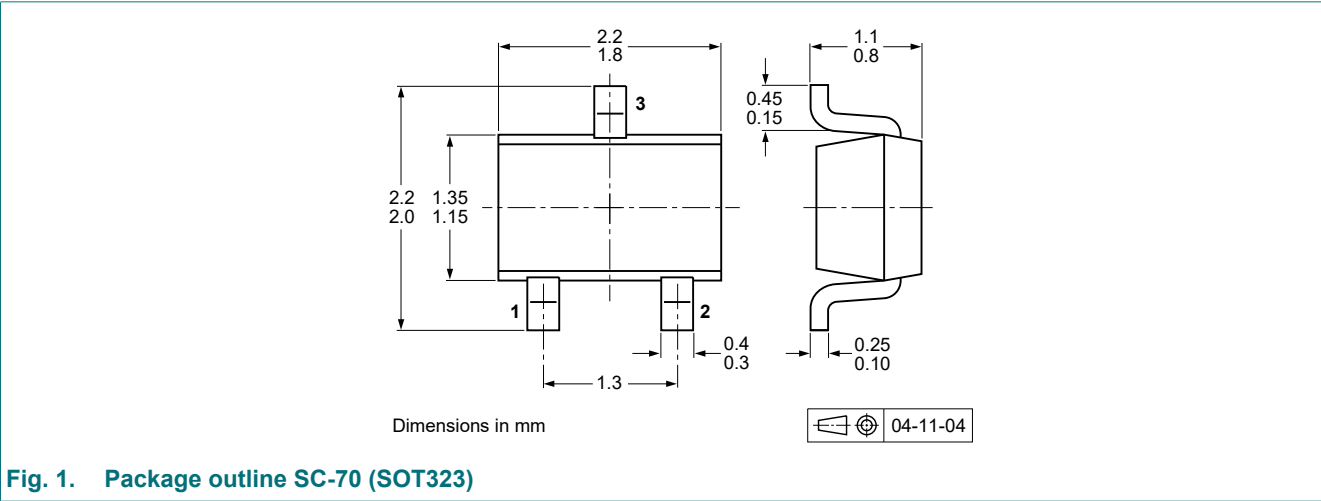
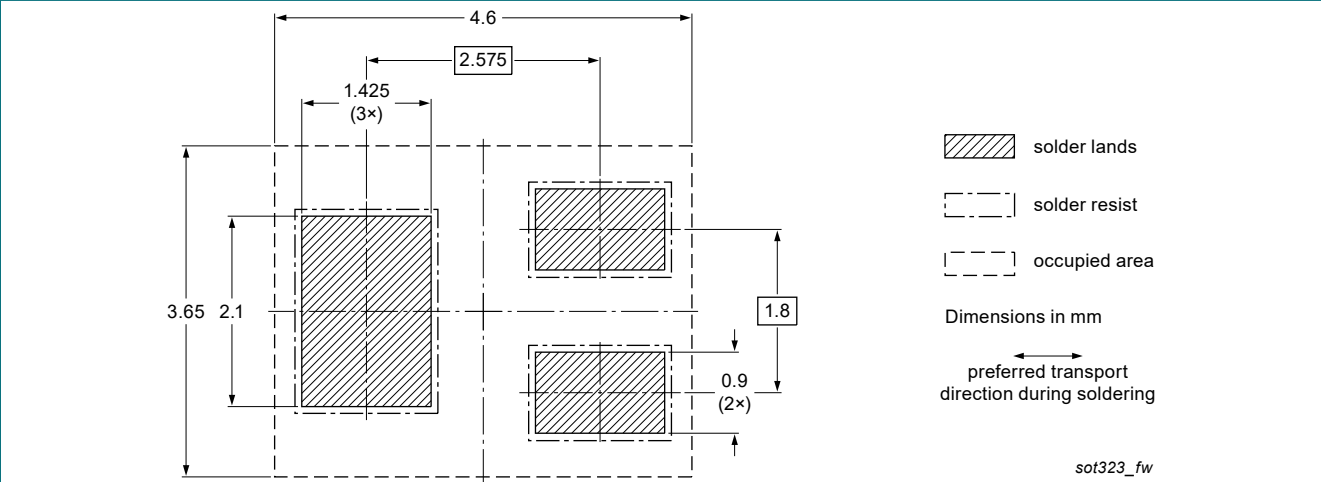
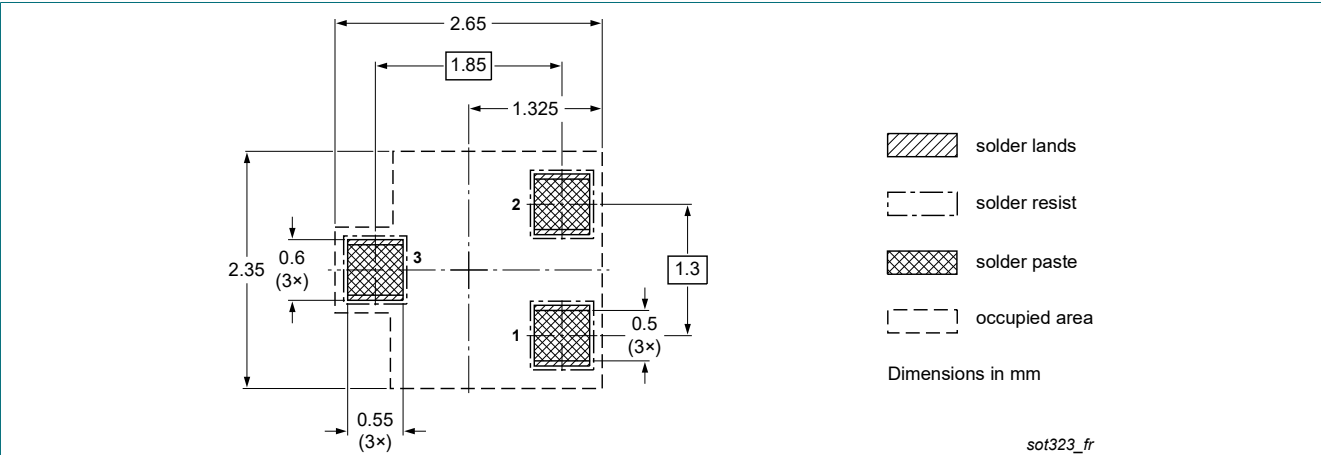


Fig. 1. Package outline SC-70 (SOT323)

13. Soldering



14. Revision history

Table 8. Revision history

| Data sheet ID  | Release date                                                                                                                                                                                                                                                                                       | Data sheet status  | Change notice | Supersedes   |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|---------------|--------------|
| 2PD1820AS v.3  | 20250915                                                                                                                                                                                                                                                                                           | Product data sheet | -             | 2PD1820A 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>Family data sheet split to single type data sheets.</li></ul> |                    |               |              |
| 2PD1820A v.2   | 19990412                                                                                                                                                                                                                                                                                           | Product data sheet | -             | 2PD1820A v.1 |
| 2PD1820A v.1   | 19970522                                                                                                                                                                                                                                                                                           | Product data sheet | -             | -            |

## 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".
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Date of release: 15 September 2025