

DATA SHEET

BF820W; BF822W NPN high-voltage transistors

Product specification
Supersedes data of 1997 Jun 19
File under Discrete Semiconductors, SC04

1997 Sep 03

NPN high-voltage transistors

BF820W; BF822W

FEATURES

- Low current (max. 50 mA)
- High voltage (max. 300 V).

APPLICATIONS

- Telephony and professional communication equipment.

DESCRIPTION

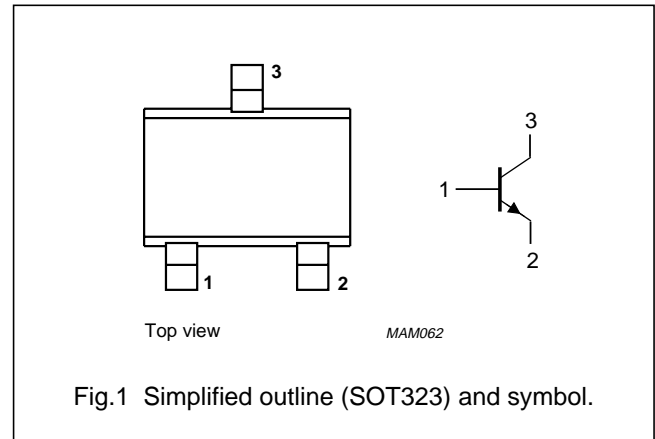
NPN high-voltage transistor in a SOT323 plastic package.

MARKING

| TYPE NUMBER | MARKING CODE |
|-------------|--------------|
| BF820W | 1Vt |
| BF822W | 1Wt |

PINNING

| PIN | DESCRIPTION |
|-----|-------------|
| 1 | base |
| 2 | emitter |
| 3 | collector |



QUICK REFERENCE DATA

| SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | UNIT |
|------------------|---------------------------|--|------|------|------|
| V _{CB0} | collector-base voltage | open emitter | | | |
| | BF820W | | – | 300 | V |
| | BF822W | | – | 250 | V |
| V _{CEO} | collector-emitter voltage | open base | | | |
| | BF820W | | – | 300 | V |
| | BF822W | | – | 250 | V |
| I _{CM} | peak collector current | | – | 100 | mA |
| P _{tot} | total power dissipation | T _{amb} ≤ 25 °C | – | 200 | mW |
| h _{FE} | DC current gain | I _C = 25 mA; V _{CE} = 20 V | 50 | – | |
| C _{re} | feedback capacitance | I _C = i _c = 0; V _{CB} = 30 V; f = 1 MHz | – | 1.6 | pF |
| f _T | transition frequency | I _C = 10 mA; V _{CE} = 10 V; f = 100 MHz | 60 | – | MHz |

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LIMITING VALUES

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

| SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | UNIT |
|------------------|-------------------------------|----------------------------------|------|------|------|
| V _{CBO} | collector-base voltage | open emitter | | | |
| | BF820W | | – | 300 | V |
| | BF822W | | – | 250 | V |
| V _{CEO} | collector-emitter voltage | open base | | | |
| | BF820W | | – | 300 | V |
| | BF822W | | – | 250 | V |
| V _{EBO} | emitter-base voltage | open collector | – | 5 | V |
| I _C | collector current (DC) | | – | 50 | mA |
| I _{CM} | peak collector current | | – | 100 | mA |
| I _{BM} | peak base current | | – | 50 | mA |
| P _{tot} | total power dissipation | T _{amb} ≤ 25 °C; note 1 | – | 200 | mW |
| T _{stg} | storage temperature | | –65 | +150 | °C |
| T _j | junction temperature | | – | 150 | °C |
| T _{amb} | operating ambient temperature | | –65 | +150 | °C |

Note

1. Transistor mounted on an FR4 printed-circuit board.

THERMAL CHARACTERISTICS

| SYMBOL | PARAMETER | CONDITIONS | VALUE | UNIT |
|---------------------|---|------------|-------|------|
| R _{th j-a} | thermal resistance from junction to ambient | note 1 | 625 | K/W |

Note

1. Transistor mounted on an FR4 printed-circuit board.

CHARACTERISTICS

T_j = 25 °C unless otherwise specified.

| SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | UNIT |
|--------------------|--------------------------------------|--|------|------|------|
| I _{CBO} | collector cut-off current | I _E = 0; V _{CB} = 200 V | – | 10 | nA |
| | | I _E = 0; V _{CB} = 200 V; T _j = 150 °C | – | 10 | μA |
| I _{EBO} | emitter cut-off current | I _C = 0; V _{EB} = 5 V | – | 50 | nA |
| h _{FE} | DC current gain | I _C = 25 mA; V _{CE} = 20 V | 50 | – | |
| V _{CEsat} | collector-emitter saturation voltage | I _C = 30 mA; I _B = 5mA; note 1 | – | 600 | mV |
| C _{re} | feedback capacitance | I _C = I _c = 0; V _{CB} = 30 V; f = 1 MHz | – | 1.6 | pF |
| f _T | transition frequency | I _C = 10 mA; V _{CE} = 10 V; f = 100 MHz | 60 | – | MHz |

Note

1. Pulse test: t_p ≤ 300 μs; δ ≤ 0.02.

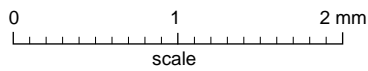
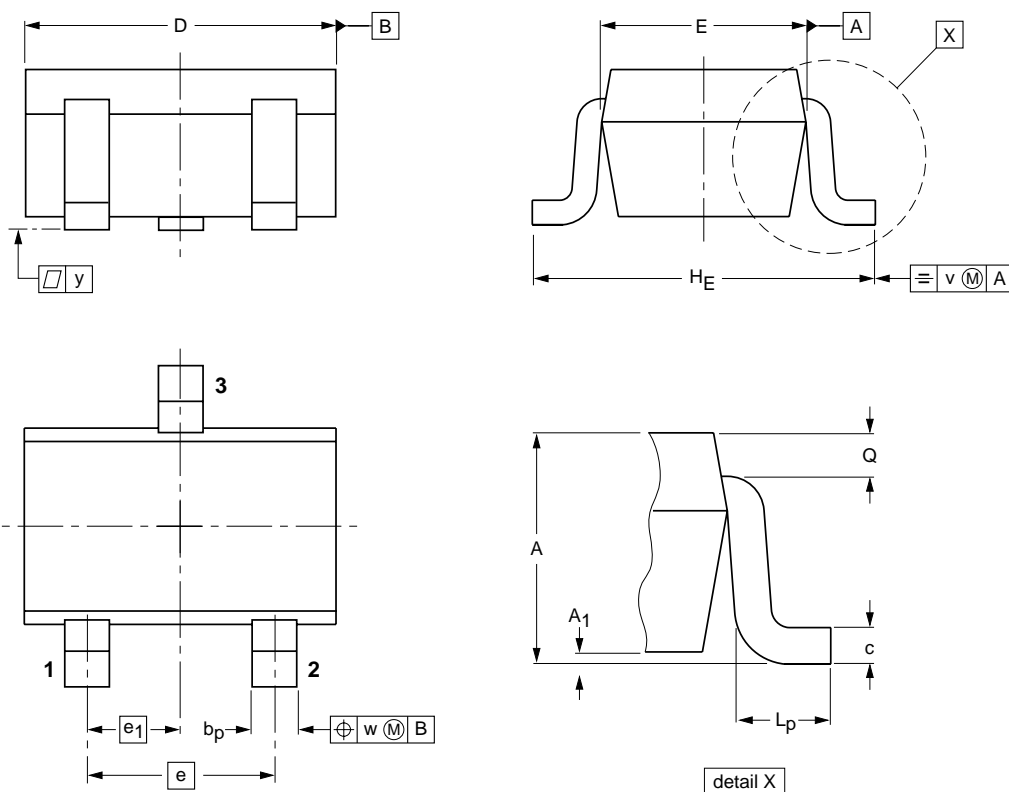
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PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT323



DIMENSIONS (mm are the original dimensions)

| UNIT | A | A ₁ max | b _p | c | D | E | e | e ₁ | H _E | L _p | Q | v | w |
|------|------------|-----------------------|----------------|--------------|------------|--------------|-----|----------------|----------------|----------------|--------------|-----|-----|
| mm | 1.1 0.8 | 0.1 | 0.4 0.3 | 0.25 0.10 | 2.2 1.8 | 1.35 1.15 | 1.3 | 0.65 | 2.2 2.0 | 0.45 0.15 | 0.23 0.13 | 0.2 | 0.2 |

| OUTLINE VERSION | REFERENCES | | | | EUROPEAN PROJECTION | ISSUE DATE |
|--------------------|------------|-------|-------|--|------------------------|------------|
| | IEC | JEDEC | EIAJ | | | |
| SOT323 | | | SC-70 | | | 97-02-28 |

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DEFINITIONS

| | |
|---|---|
| Data sheet status | |
| Objective specification | This data sheet contains target or goal specifications for product development. |
| Preliminary specification | This data sheet contains preliminary data; supplementary data may be published later. |
| Product specification | This data sheet contains final product specifications. |
| Limiting values | |
| Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability. | |
| Application information | |
| Where application information is given, it is advisory and does not form part of the specification. | |

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NOTES

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