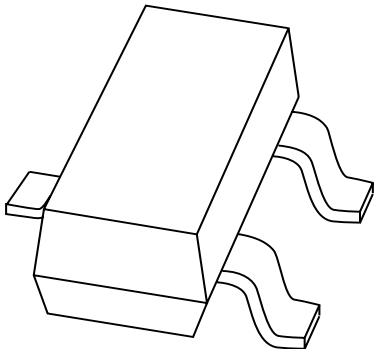


# DATA SHEET



## **BF820; BF822** NPN high-voltage transistors

Product data sheet  
Supersedes data of 1999 Apr 15

2004 Jan 16

# NPN high-voltage transistors

# BF820; BF822

### FEATURES

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

### APPLICATIONS

- Telephony and professional communication equipment.

### DESCRIPTION

NPN high-voltage transistor in a SOT23 plastic package.  
PNP complements: BF821; BF823.

### MARKING

| TYPE NUMBER | MARKING CODE <sup>(1)</sup> |
|-------------|-----------------------------|
| BF820       | 1V*                         |
| BF822       | 1X*                         |

### Note

- \* = p : Made in Hong Kong.  
\* = t : Made in Malaysia.  
\* = W : Made in China.

### PINNING

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

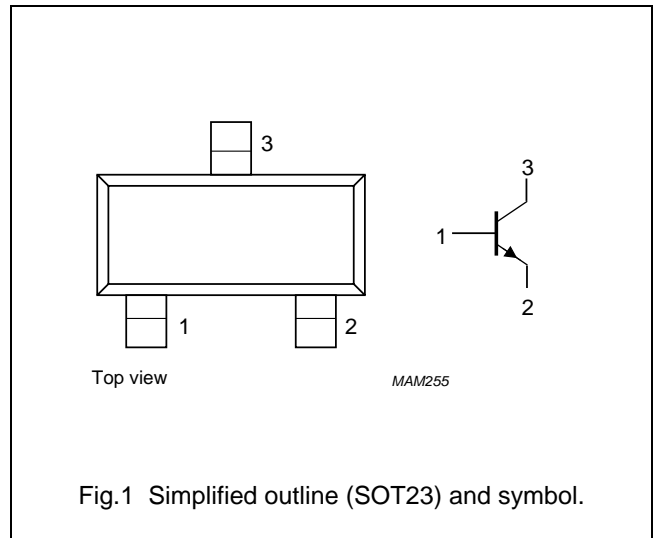


Fig.1 Simplified outline (SOT23) and symbol.

### ORDERING INFORMATION

| TYPENUMBER | PACKAGE |  |         |
|------------|---------|--|---------|
|            | NAME    | DESCRIPTION                              | VERSION |
| BF820      | –       | plastic surface mounted package; 3 leads | SOT23   |
| BF822      | –       | plastic surface mounted package; 3 leads | SOT23   |

## NPN high-voltage transistors

## BF820; BF822

**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    |
|                  | BF820                         |                                  |      |      |      |
| V <sub>CEO</sub> | collector-emitter voltage     | open base                        | –    | 300  | V    |
|                  | BF822                         |                                  |      |      |      |
| V <sub>EBO</sub> | emitter-base voltage          | open collector                   | –    | 5    | V    |
| I <sub>C</sub>   | collector current (DC)        |                                  | –    | 50   | mA   |
| I <sub>CM</sub>  | peak collector current        |                                  | –    | 100  | mA   |
| I <sub>BM</sub>  | peak base current             |                                  | –    | 50   | mA   |
| P <sub>tot</sub> | total power dissipation       | T <sub>amb</sub> ≤ 25 °C; note 1 | –    | 250  | mW   |
| T <sub>stg</sub> | storage temperature           |                                  | –65  | +150 | °C   |
| T <sub>j</sub>   | junction temperature          |                                  | –    | 150  | °C   |
| T <sub>amb</sub> | operating ambient temperature |                                  | –65  | +150 | °C   |

**Note**

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

**THERMAL CHARACTERISTICS**

| SYMBOL               | PARAMETER                                   | CONDITIONS | VALUE | UNIT |
|----------------------|---|------------|-------|------|
| R <sub>th(j-a)</sub> | thermal resistance from junction to ambient | note 1     | 500   | K/W  |

**Note**

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

**CHARACTERISTICS**

T<sub>j</sub> = 25 °C unless otherwise specified.

| SYMBOL             | PARAMETER                            | CONDITIONS   | MIN. | MAX. | UNIT |
|--------------------|--------------------------------------|--|------|------|------|
| I <sub>CBO</sub>   | collector-base cut-off current       | I <sub>E</sub> = 0; V <sub>CB</sub> = 200 V                            | –    | 10   | nA   |
|                    |                                      | I <sub>E</sub> = 0; V <sub>CB</sub> = 200 V; T <sub>j</sub> = 150 °C   | –    | 10   | μA   |
| I <sub>EBO</sub>   | emitter-base cut-off current         | I <sub>C</sub> = 0; V <sub>EB</sub> = 5 V                              | –    | 50   | nA   |
| h <sub>FE</sub>    | DC current gain                      | I <sub>C</sub> = 25 mA; V <sub>CE</sub> = 20 V                         | 50   | –    |      |
| V <sub>CEsat</sub> | collector-emitter saturation voltage | I <sub>C</sub> = 30 mA; I <sub>B</sub> = 5 mA                          | –    | 600  | mV   |
| C <sub>re</sub>    | feedback capacitance                 | I <sub>C</sub> = I <sub>c</sub> = 0; V <sub>CB</sub> = 30 V; f = 1 MHz | –    | 1.6  | pF   |
| f <sub>T</sub>     | transition frequency                 | I <sub>C</sub> = 10 mA; V <sub>CE</sub> = 10 V; f = 100 MHz            | 60   | –    | MHz  |

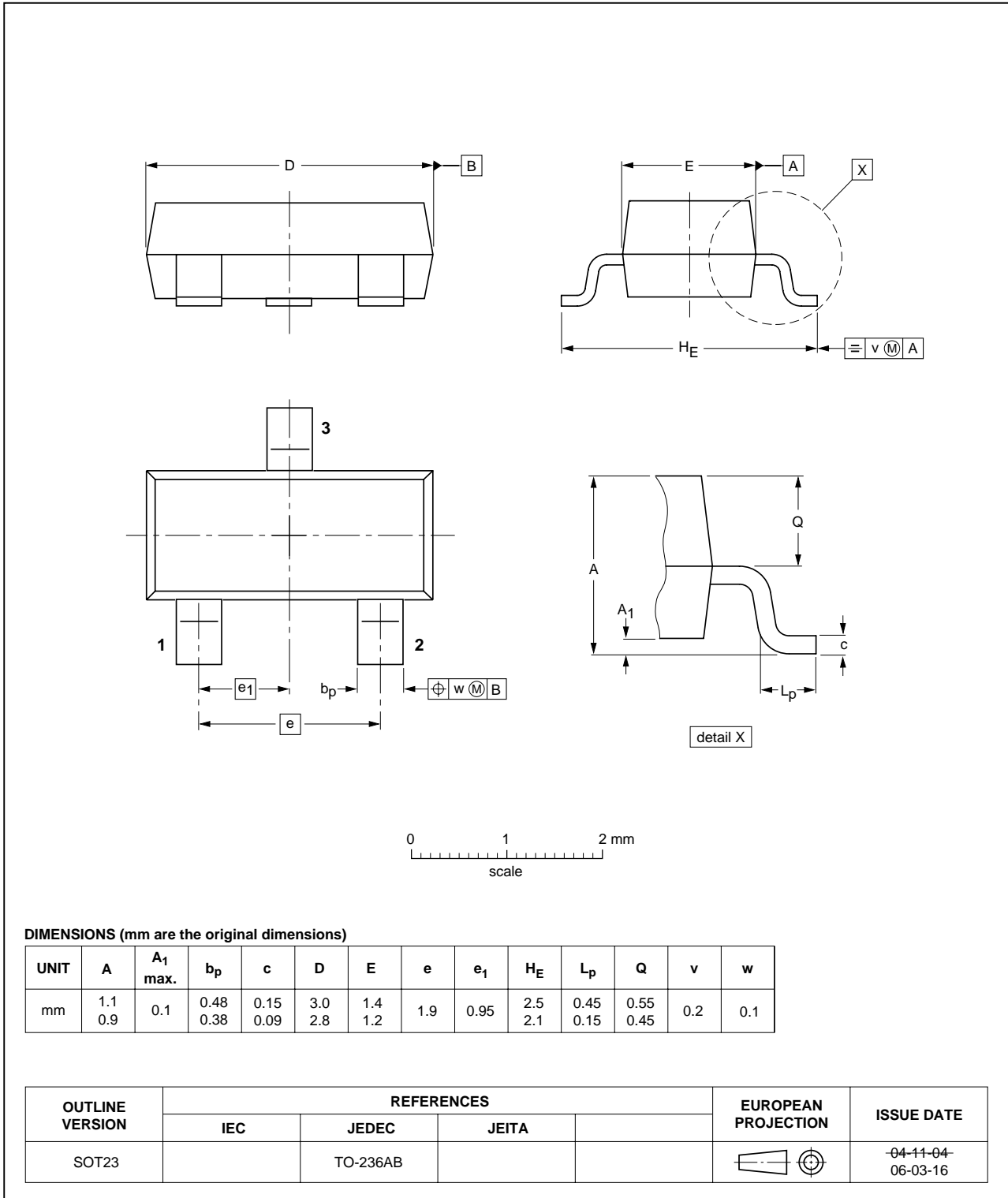
NPN high-voltage transistors

BF820; BF822

PACKAGE OUTLINE

Plastic surface-mounted package; 3 leads

SOT23



## NPN high-voltage transistors

BF820; BF822

## DATA SHEET STATUS

| DOCUMENT STATUS <sup>(1)</sup> | PRODUCT STATUS <sup>(2)</sup> | DEFINITION  |
|--------------------------------|-------------------------------|---|
| Objective data sheet           | Development                   | This document contains data from the objective specification for product development. |
| Preliminary data sheet         | Qualification                 | This document contains data from the preliminary specification.                       |
| Product data sheet             | Production                    | This document contains the product specification.                                     |

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## **Customer notification**

This data sheet was changed to reflect the new company name NXP Semiconductors, including new legal definitions and disclaimers. No changes were made to the technical content, except for package outline drawings which were updated to the latest version.

## **Contact information**

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