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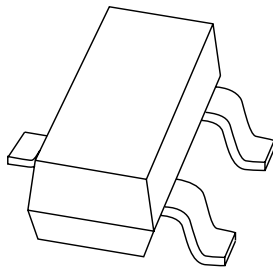
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Kind regards,

Team Nexperia

# DATA SHEET



**BFS19**

**NPN medium frequency transistor**

Product data sheet  
Supersedes data of 1999 Apr 15

2004 Jan 05

## NPN medium frequency transistor

BFS19

## FEATURES

- $I_{C(max)} = 25\text{ mA}$
- $V_{CEO(max)} = 20\text{ V}$ .

## APPLICATIONS

- Medium frequency applications in thick and thin-film circuits.

## DESCRIPTION

NPN medium frequency transistor in a SOT23 plastic package.

## MARKING

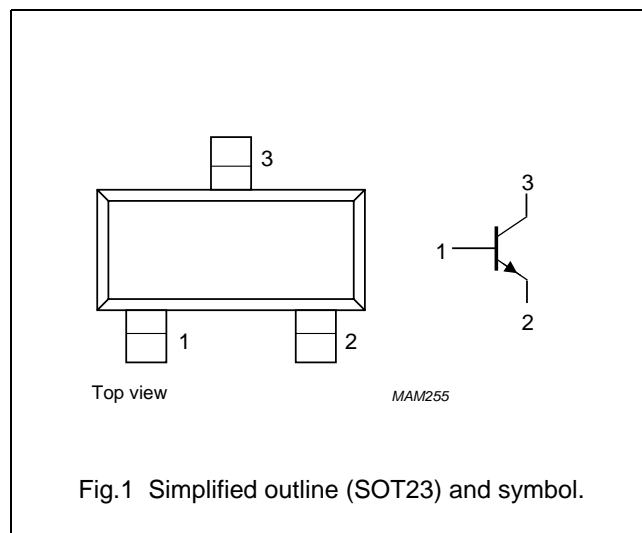
| TYPE NUMBER | MARKING CODE <sup>(1)</sup> |
|-------------|-----------------------------|
| BFS19       | F2*                         |

## Note

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

## PINNING

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



## ORDERING INFORMATION

| TYPE NUMBER | PACKAGE |  |         |
|-------------|---------|--|---------|
|             | NAME    | DESCRIPTION                              | VERSION |
| BFS19       | —       | plastic surface mounted package; 3 leads | SOT23   |

**NPN medium frequency transistor****BFS19****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                         | –    | 30   | V    |
| $V_{CEO}$ | collector-emitter voltage     | open base                            | –    | 20   | V    |
| $V_{EBO}$ | emitter-base voltage          | open collector                       | –    | 5    | V    |
| $I_C$     | collector current (DC)        |                                      | –    | 30   | mA   |
| $I_{CM}$  | peak collector current        |                                      | –    | 30   | mA   |
| $P_{tot}$ | total power dissipation       | $T_{amb} \leq 25\text{ °C}$ ; note 1 | –    | 250  | 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.

## NPN medium frequency transistor

BFS19

## THERMAL CHARACTERISTICS

| SYMBOL        | PARAMETER                                   | CONDITIONS | VALUE | UNIT |
|---------------|---|------------|-------|------|
| $R_{th(j-a)}$ | thermal resistance from junction to ambient | note 1     | 500   | K/W  |

## Note

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

## CHARACTERISTICS

$T_j = 25\text{ }^{\circ}\text{C}$  unless otherwise specified.

| SYMBOL    | PARAMETER                 | CONDITIONS   | MIN. | TYP. | MAX. | UNIT          |
|-----------|---------------------------|--|------|------|------|---------------|
| $I_{CBO}$ | collector cut-off current | $I_E = 0; V_{CB} = 20\text{ V}$                                    | –    | –    | 100  | nA            |
|           |                           | $I_E = 0; V_{CB} = 20\text{ V}; T_j = 100\text{ }^{\circ}\text{C}$ | –    | –    | 10   | $\mu\text{A}$ |
| $I_{EBO}$ | emitter cut-off current   | $I_C = 0; V_{EB} = 5\text{ V}$                                     | –    | –    | 100  | nA            |
| $h_{FE}$  | DC current gain           | $I_C = 1\text{ mA}; V_{CE} = 10\text{ V}$                          | 65   | –    | 225  |               |
| $V_{BE}$  | base-emitter voltage      | $I_C = 1\text{ mA}; V_{CE} = 10\text{ V}$                          | 650  | –    | 740  | mV            |
| $C_c$     | collector capacitance     | $I_E = 0; V_{CB} = 10\text{ V}; f = 1\text{ MHz}$                  | –    | 1    | –    | pF            |
| $C_{re}$  | feedback capacitance      | $I_C = 0\text{ mA}; V_{CB} = 10\text{ V}; f = 1\text{ MHz}$        | –    | 0.85 | –    | pF            |
| $f_T$     | transition frequency      | $I_C = 1\text{ mA}; V_{CE} = 10\text{ V}; f = 100\text{ MHz}$      | –    | 260  | –    | MHz           |

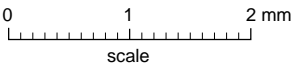
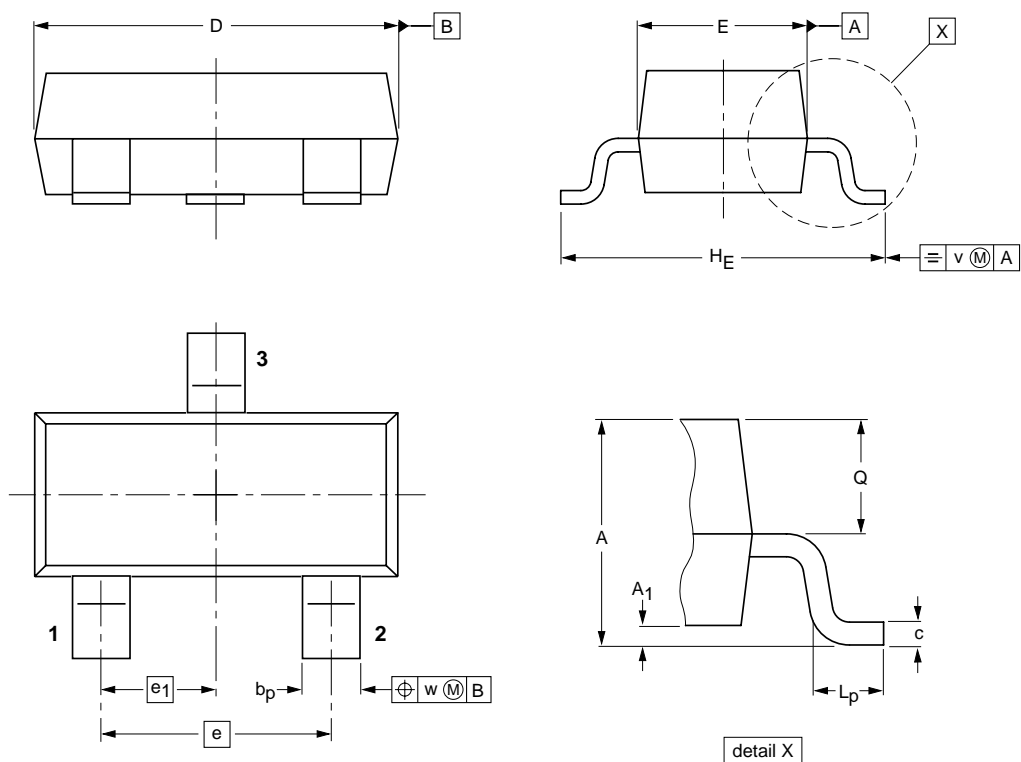
NPN medium frequency transistor

BFS19

PACKAGE OUTLINE

Plastic surface-mounted package; 3 leads

SOT23



DIMENSIONS (mm are the original dimensions)

| UNIT | A          | A <sub>1</sub><br>max. | b <sub>p</sub> | c            | D          | E          | e   | e <sub>1</sub> | H <sub>E</sub> | L <sub>p</sub> | Q            | v   | w   |
|------|------------|------------------------|----------------|--------------|------------|------------|-----|----------------|----------------|----------------|--------------|-----|-----|
| mm   | 1.1<br>0.9 | 0.1                    | 0.48<br>0.38   | 0.15<br>0.09 | 3.0<br>2.8 | 1.4<br>1.2 | 1.9 | 0.95           | 2.5<br>2.1     | 0.45<br>0.15   | 0.55<br>0.45 | 0.2 | 0.1 |

| OUTLINE<br>VERSION | REFERENCES |          |       |  | EUROPEAN<br>PROJECTION | ISSUE DATE           |
|--------------------|------------|----------|-------|--|------------------------|----------------------|
|                    | IEC        | JEDEC    | JEITA |  |                        |                      |
| SOT23              |            | TO-236AB |       |  |                        | 04-11-04<br>06-03-16 |

## NPN medium frequency transistor

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## 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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# ***NXP Semiconductors***

## **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**

For additional information please visit: **<http://www.nxp.com>**

For sales offices addresses send e-mail to: **[salesaddresses@nxp.com](mailto:salesaddresses@nxp.com)**

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