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Kind regards,

Team Nexperia

DATA SHEET



BFS20W

NPN medium frequency transistor

Product data sheet

1999 Apr 21

NPN medium frequency transistor

BFS20W

FEATURES

- Low current (max. 25 mA)
- Low voltage (max. 20 V).
- Very low feedback capacitance (typ. 350 fF).

APPLICATIONS

- IF and VHF applications in thick and thin-film circuits.

DESCRIPTION

NPN medium frequency transistor in a SOT323 (SC-70) plastic package.

MARKING

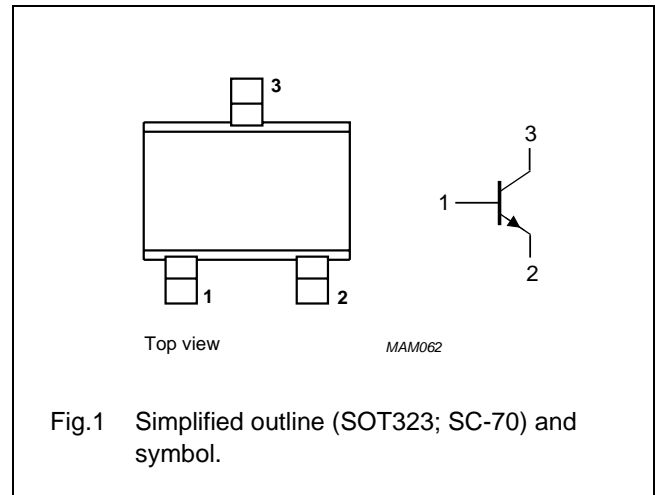
| TYPE NUMBER | MARKING CODE ⁽¹⁾ |
|-------------|-----------------------------|
| BFS20W | N1* |

Note

- * = -: Made in Hong Kong.
* = t: Made in Malaysia.

PINNING

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



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 | - | 30 | V |
| V_{CEO} | collector-emitter voltage | open base | - | 20 | V |
| V_{EBO} | emitter-base voltage | open collector | - | 4 | V |
| I_C | collector current (DC) | | - | 25 | mA |
| I_{CM} | peak collector current | | - | 25 | mA |
| I_{BM} | peak base current | | - | 200 | mA |
| P_{tot} | total power dissipation | $T_{amb} \leq 25\text{ }^\circ\text{C}$; note 1 | - | 200 | mW |
| T_{stg} | storage temperature | | -65 | +150 | $^\circ\text{C}$ |
| T_j | junction temperature | | - | 150 | $^\circ\text{C}$ |
| T_{amb} | operating ambient temperature | | -65 | +150 | $^\circ\text{C}$ |

Note

1. Refer to SOT323 (SC-70) standard mounting conditions.

NPN medium frequency transistor

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THERMAL CHARACTERISTICS

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

Note

1. Refer to SOT323 (SC-70) standard mounting conditions.

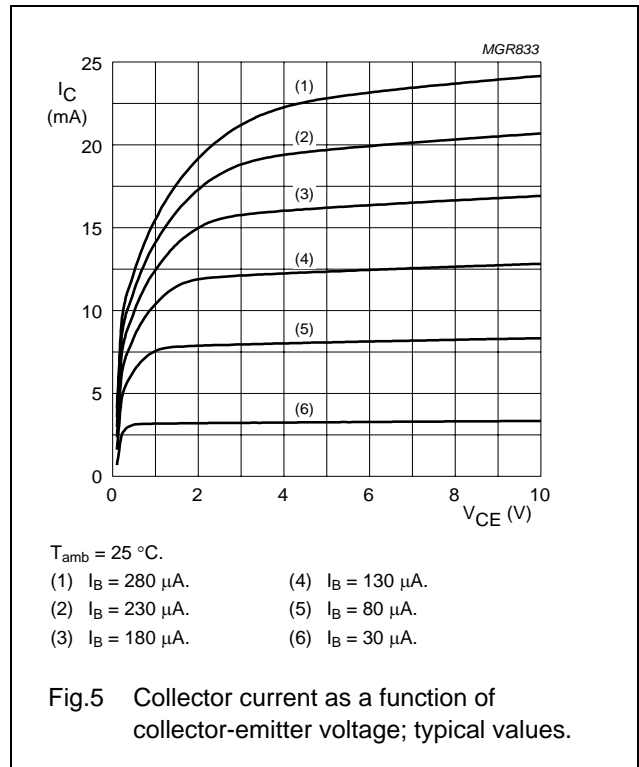
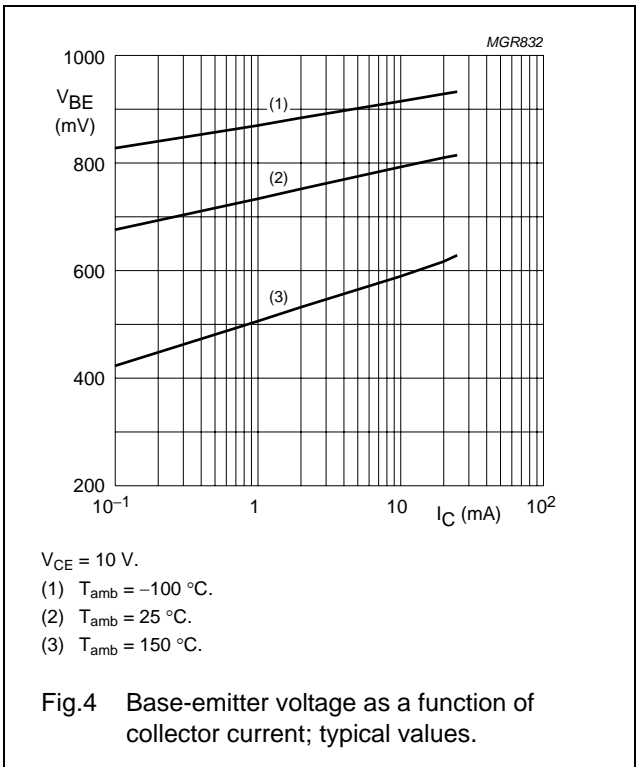
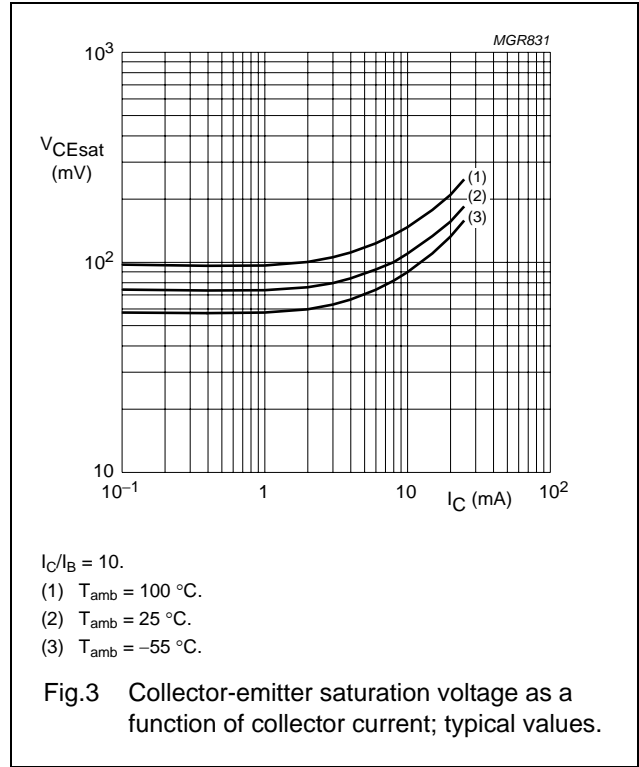
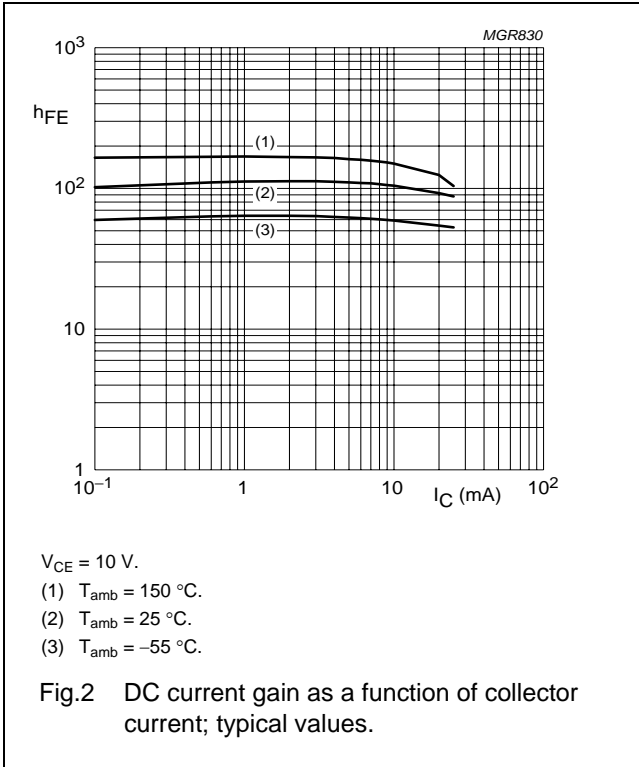
CHARACTERISTICS

$T_{amb} = 25\text{ °C}$ 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 |
| | | $I_E = 0; V_{CB} = 20\text{ V}; T_j = 100\text{ °C}$ | – | – | 10 | μA |
| I_{EBO} | emitter cut-off current | $I_C = 0; V_{EB} = 4\text{ V}$ | – | – | 100 | nA |
| h_{FE} | DC current gain | $I_C = 7\text{ mA}; V_{CE} = 10\text{ V}$ | 40 | 85 | – | |
| V_{BE} | base-emitter voltage | $I_C = 7\text{ mA}; V_{CE} = 10\text{ V}$ | – | 740 | 900 | mV |
| C_c | collector capacitance | $I_E = I_B = 0; V_{CB} = 10\text{ V}; f = 1\text{ MHz}$ | – | 1 | – | pF |
| C_{re} | feedback capacitance | $I_C = 0; V_{CE} = 10\text{ V}; f = 1\text{ MHz}$ | – | 350 | – | fF |
| f_T | transition frequency | $I_C = 5\text{ mA}; V_{CE} = 10\text{ V}; f = 100\text{ MHz}$ | 360 | 470 | – | MHz |

NPN medium frequency transistor

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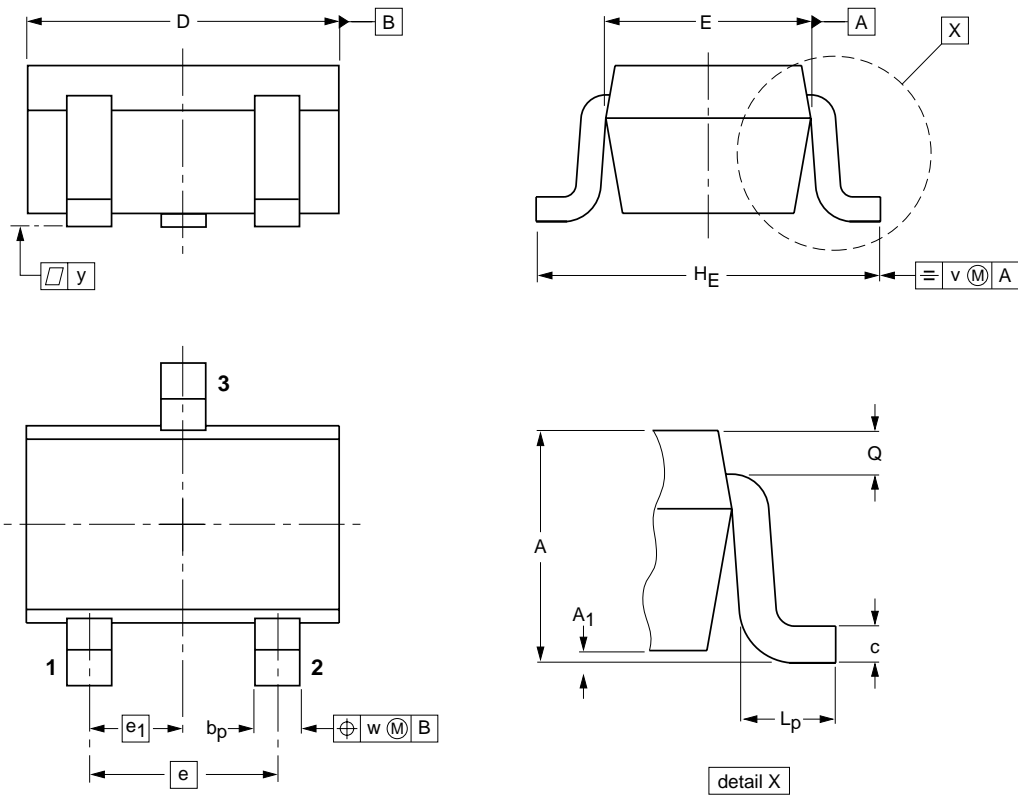
NPN medium frequency transistor

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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 |

NPN medium frequency transistor

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DATA SHEET STATUS

| DOCUMENT STATUS ⁽¹⁾ | PRODUCT STATUS ⁽²⁾ | 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

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Contact information

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

For sales offices addresses send e-mail to: **salesaddresses@nxp.com**

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Printed in The Netherlands

115002/00/01/pp7

Date of release: 1999 Apr 21

Document order number: 9397 750 05696

