



Important notice

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Should be replaced with:

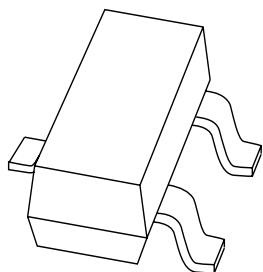
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If you have any questions related to the data sheet, please contact our nearest sales office via e-mail or telephone (details via salesaddresses@nexperia.com). Thank you for your cooperation and understanding,

Kind regards,

Team Nexperia

DATA SHEET



BFS20 NPN medium frequency transistor

Product data sheet
Supersedes data of 2004 Jan 5

2004 Feb 05

NPN medium frequency transistor

BFS20

FEATURES

- $I_{C(\max)} = 25 \text{ mA}$
- $V_{CEO(\max)} = 20 \text{ V}$
- Very low feedback capacitance (typ. 350 fF).

APPLICATIONS

- IF and VHF thick and thin-film circuit applications.

DESCRIPTION

NPN medium frequency transistor in a SOT23 plastic package.

MARKING

TYPE NUMBER	MARKING CODE ⁽¹⁾
BFS20	G1*

Note

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

PINNING

PIN	DESCRIPTION
1	base
2	emitter
3	collector

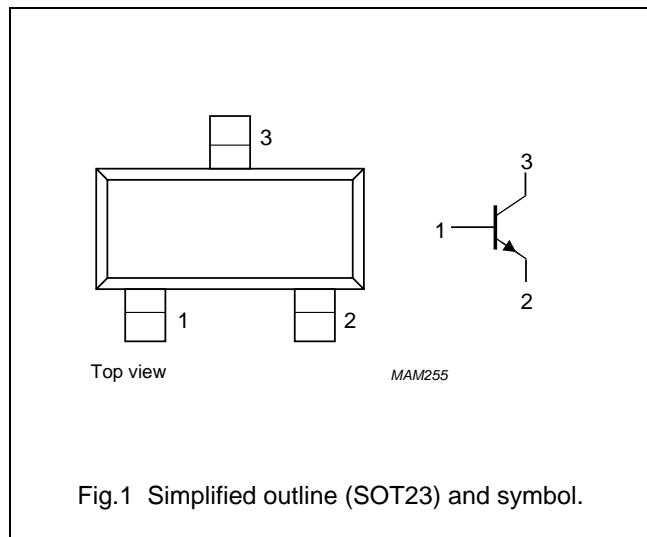


Fig.1 Simplified outline (SOT23) and symbol.

ORDERING INFORMATION

TYPE NUMBER	PACKAGE		
	NAME	DESCRIPTION	VERSION
BFS20	–	plastic surface mounted package; 3 leads	SOT23

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	–	4	V
I_C	collector current (DC)		–	25	mA
I_{CM}	peak collector current		–	25	mA
P_{tot}	total power dissipation	$T_{amb} \leq 25 \text{ }^{\circ}\text{C}$; note 1	–	250	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. Transistor mounted on an FR4 printed-circuit board.

NPN medium frequency transistor

BFS20

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

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I_{CBO}	collector-base cut-off current	$I_E = 0; V_{CB} = 20 \text{ V}$	—	—	100	nA
		$I_E = 0; V_{CB} = 20 \text{ V}; T_j = 100^\circ\text{C}$	—	—	10	μA
I_{EBO}	emitter-base 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	$I_E = I_e = 0; V_{CB} = 10 \text{ V}; f = 1 \text{ MHz}$	—	1	—	pF
C_{re}	feedback capacitance	$I_C = 0; V_{CB} = 10 \text{ V}; f = 1 \text{ MHz}$	—	350	—	fF
f_T	transition frequency	$I_C = 5 \text{ mA}; V_{CE} = 10 \text{ V}; f = 100 \text{ MHz}$	275	450	—	MHz

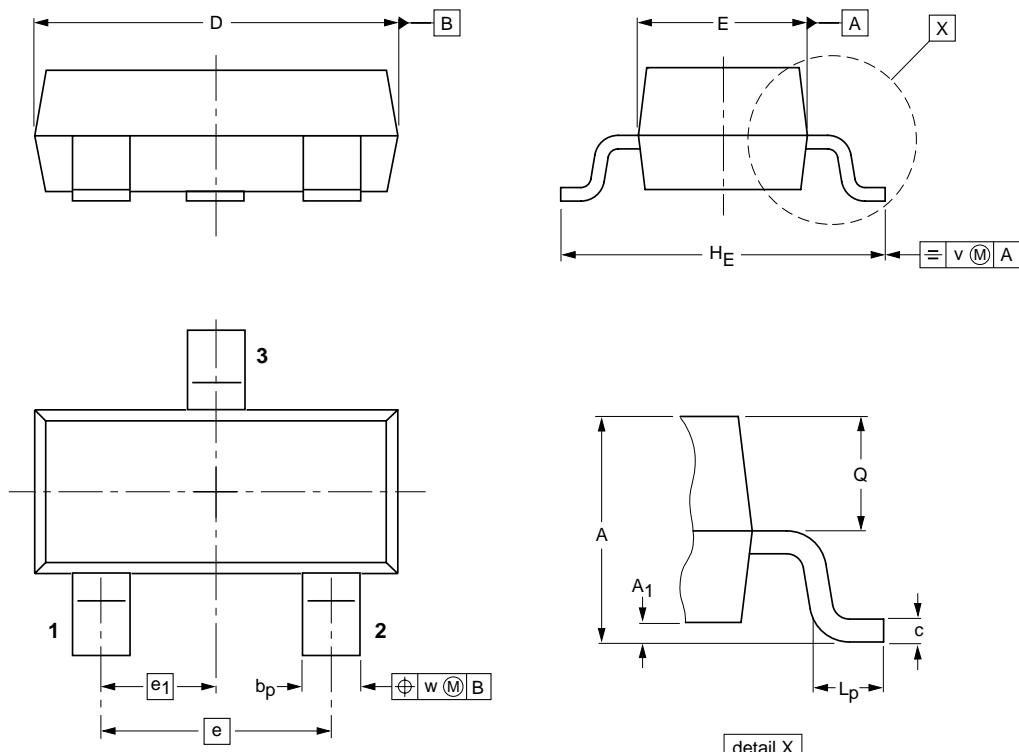
NPN medium frequency transistor

BFS20

PACKAGE OUTLINE

Plastic surface-mounted package; 3 leads

SOT23



0 1 2 mm
scale

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 0.9	0.1	0.48 0.38	0.15 0.09	3.0 2.8	1.4 1.2	1.9	0.95	2.5 2.1	0.45 0.15	0.55 0.45	0.2	0.1

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

NPN medium frequency transistor

BFS20

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.

Notes

1. Please consult the most recently issued document before initiating or completing a design.
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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>

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