DISCRETE SEMICONDUCTORS

DATA SHEET

BFS17WNPN 1 GHz wideband transistor

Product specification Supersedes data of November 1992 1995 Sep 04



NPN 1 GHz wideband transistor

BFS17W

APPLICATIONS

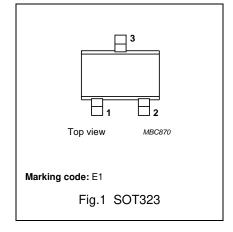
Primarily intended as a mixer, oscillator and IF amplifier in UHF and VHF tuners.

DESCRIPTION

Silicon NPN transistor in a plastic SOT323 (S-mini) package. The BFS17W uses the same crystal as the SOT23 version, BFS17.

PINNING

PIN	DESCRIPTION	
1	base	
2	emitter	
3	collector	



QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V _{CBO}	collector-base voltage		_	_	25	V
V_{CEO}	collector-emitter voltage		_	_	15	V
Ic	DC collector current		_	_	50	mA
P _{tot}	total power dissipation	up to T _s = 118 °C; note 1	_	_	300	mW
h _{FE}	DC current gain	I _C = 2 mA; V _{CE} = 1 V	25	90	_	
f _T	transition frequency	I _C = 25 mA; V _{CE} = 5 V	_	1.6	_	GHz
C _c	collector capacitance	I _E = 0; V _{CB} = 10 V; f = 1 MHz	_	0.8	1.5	pF
C _{re}	feedback capacitance	I _C = 1 mA; V _{CE} = 5 V; f = 1 MHz	_	0.75	_	pF
Ti	junction temperature		_	_	175	°C

Note

1. T_s is the temperature at the soldering point of the collector pin.

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	_	25	V
V_{CEO}	collector-emitter voltage	open base	_	15	V
V_{EBO}	emitter-base voltage	open collector	_	2.5	V
I _C	collector current (DC)		_	50	mA
P _{tot}	total power dissipation	T _s = 118 °C; note 1	_	300	mW
T _{stg}	storage temperature		-65	+150	°C
T _j	junction temperature		_	175	°C

Note

1. T_s is the temperature at the soldering point of the collector pin.

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THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
R _{th j-s}	thermal resistance from junction to soldering point	up to T _s = 118 °C; note 1	190	K/W

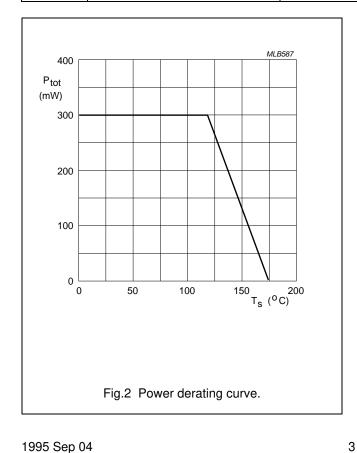
Note

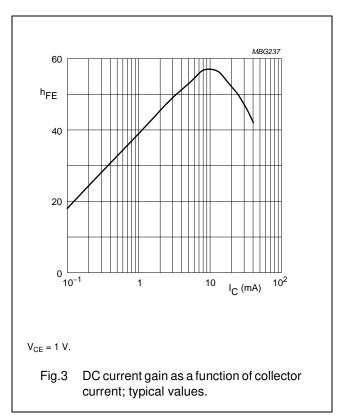
1. T_s is the temperature at the soldering point of the collector pin.

CHARACTERISTICS

 $T_i = 25$ °C (unless otherwise specified).

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I _{CBO}	collector cut-off current	I _E = 0; V _{CB} = 10 V	_	_	10	nA
h _{FE}	DC current gain	$I_C = 2 \text{ mA}; V_{CE} = 1 \text{ V}$	25	90	_	
f⊤	transition frequency	I _C = 25 mA; V _{CE} = 5 V; f = 500 MHz	_	1.6	_	GHz
C _c	collector capacitance	I _E = i _e = 0; V _{CB} = 10 V; f = 1 MHz	_	0.8	1.5	pF
C _e	emitter capacitance	$I_C = I_c = 0$; $V_{EB} = 0.5 \text{ V}$; $f = 1 \text{ MHz}$	_	2	_	pF
C _{re}	feedback capacitance	$I_B = I_b = 0$; $V_{CE} = 5 \text{ V}$; $f = 1 \text{ MHz}$; $T_{amb} = 25 \text{ °C}$	_	0.75	_	pF
F	noise figure	I_C = 2 mA; V_{CE} = 5 V; f = 500 MHz; Γ_S = Γ_{opt}	_	4.5	_	dB

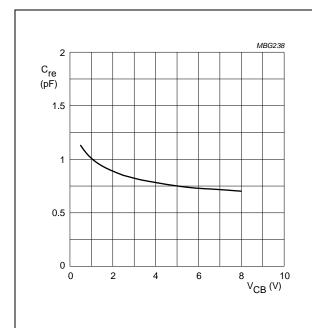




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 $I_B=i_b=0;\,f=1\,\,MHz.$

Fig.4 Feedback capacitance as a function of collector-base voltage; typical values.

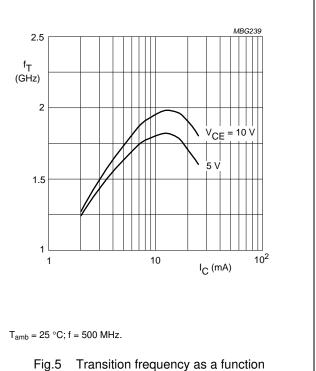
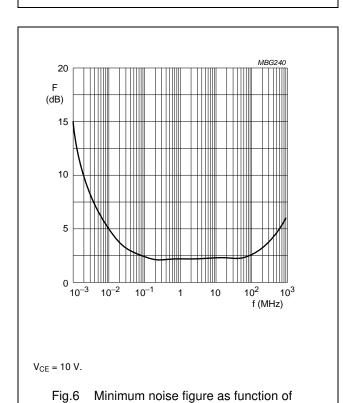


Fig.5 Transition frequency as a function of collector current; typical values.



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frequency; typical values.

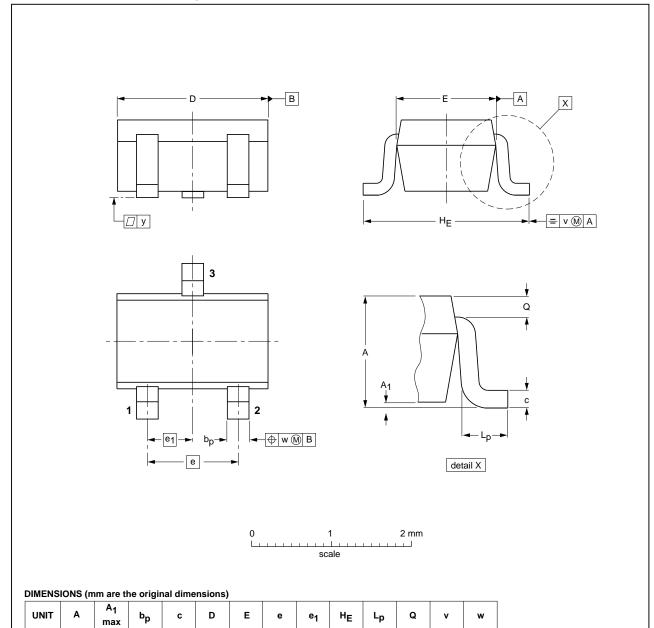
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PACKAGE OUTLINE

Plastic surface-mounted package; 3 leads

SOT323



OUTLINE	<u> </u>	REFERENCES		REFERENCES EUROPEAN ISSUE DATE		
VERSION	IEC IEC	JEDEC	JEITA		PROJECTION 1550E DA	
SOT323			SC-70			-04-11-04 06-03-16

2.2 2.0

0.65

0.45

0.23

0.2

0.2

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0.4 0.3

0.25

0.10

2.2

1.35

1.3

1.1 0.8

mm

0.1

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

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