

DATA SHEET

BFS17W

NPN 1 GHz wideband transistor

Product specification
Supersedes data of November 1992

1995 Sep 04



NPN 1 GHz wideband transistor

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APPLICATIONS

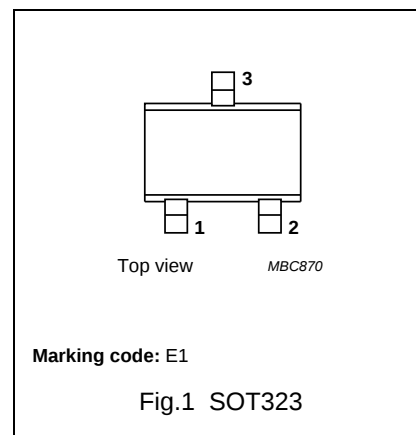
Primarily intended as a mixer, oscillator and IF amplifier in UHF and VHF tuners.

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
I_C	DC collector current		—	—	50	mA
P_{tot}	total power dissipation	up to $T_s = 118\text{ }^{\circ}\text{C}$; note 1	—	—	300	mW
h_{FE}	DC current gain	$I_C = 2\text{ mA}$; $V_{CE} = 1\text{ V}$	25	90	—	
f_T	transition frequency	$I_C = 25\text{ mA}$; $V_{CE} = 5\text{ V}$	—	1.6	—	GHz
C_c	collector capacitance	$I_E = 0$; $V_{CB} = 10\text{ V}$; $f = 1\text{ MHz}$	—	0.8	1.5	pF
C_{re}	feedback capacitance	$I_C = 1\text{ mA}$; $V_{CE} = 5\text{ V}$; $f = 1\text{ MHz}$	—	0.75	—	pF
T_j	junction temperature		—	—	175	$^{\circ}\text{C}$

Note

- 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	$T_s = 118\text{ }^{\circ}\text{C}$; note 1	—	300	mW
T_{stg}	storage temperature		−65	+150	$^{\circ}\text{C}$
T_j	junction temperature		—	175	$^{\circ}\text{C}$

Note

- 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 $T_s = 118\text{ }^{\circ}\text{C}$; note 1	190	K/W

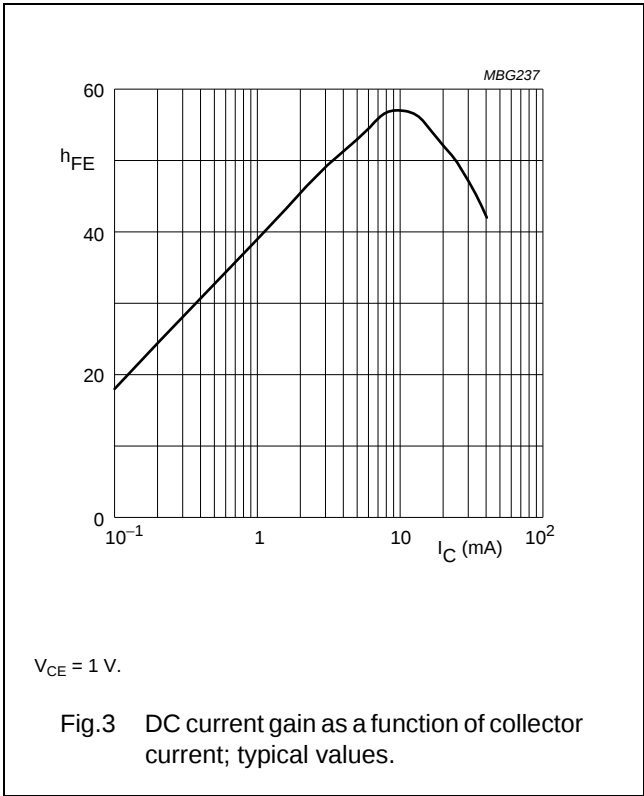
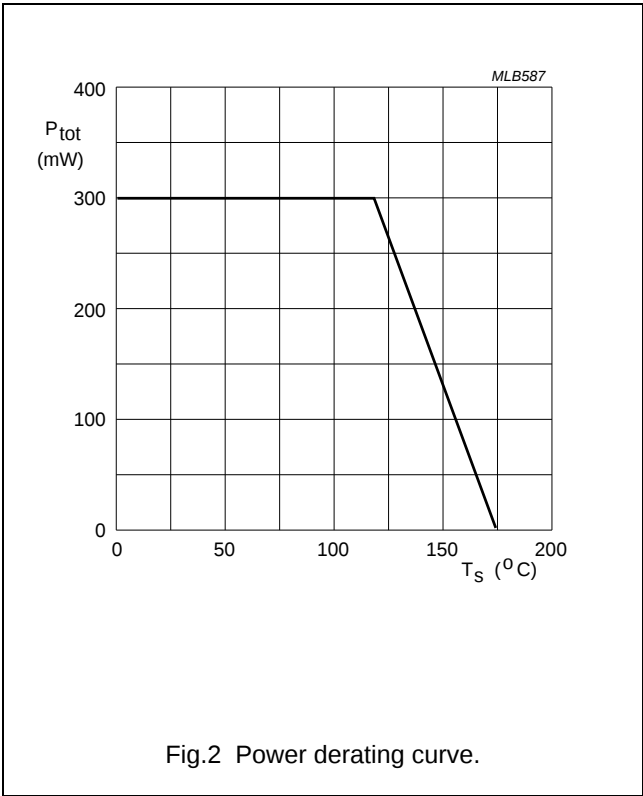
Note

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

CHARACTERISTICS

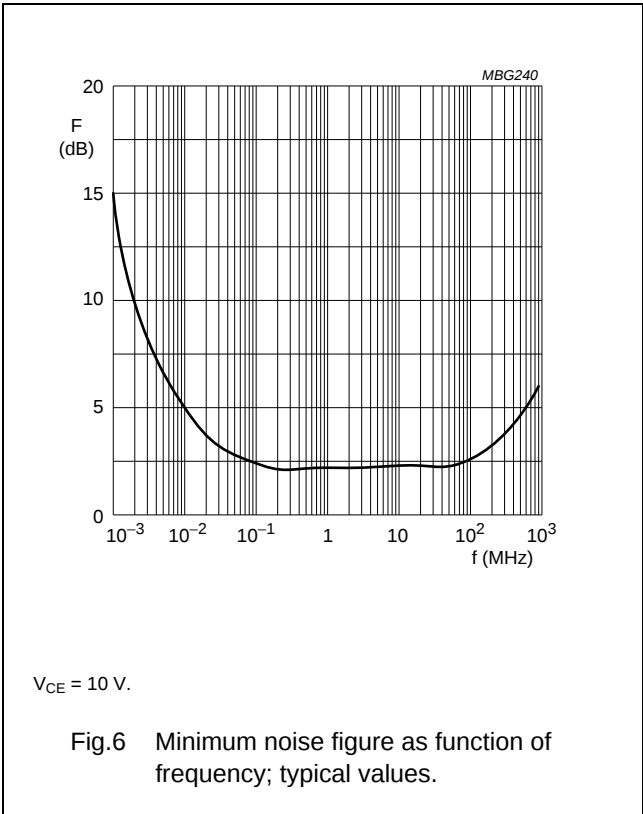
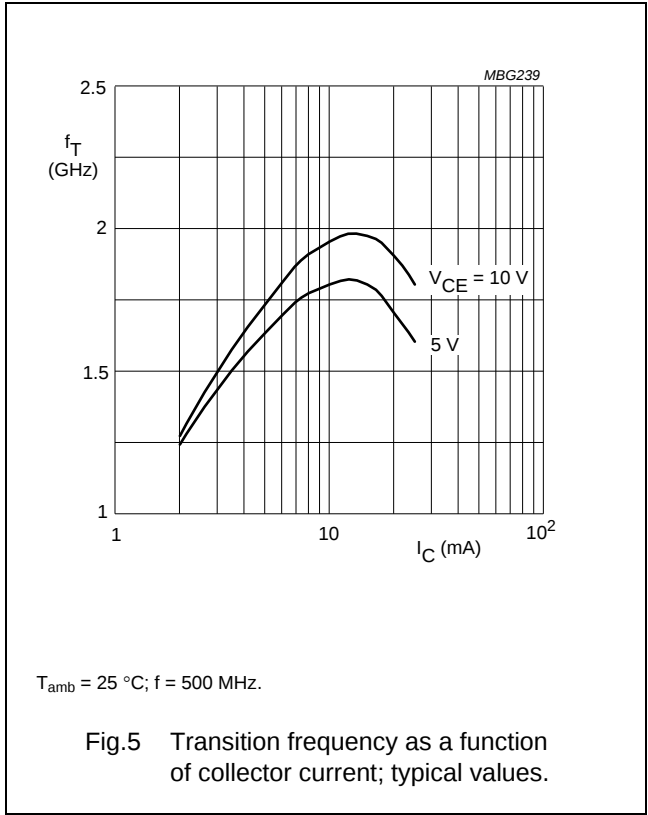
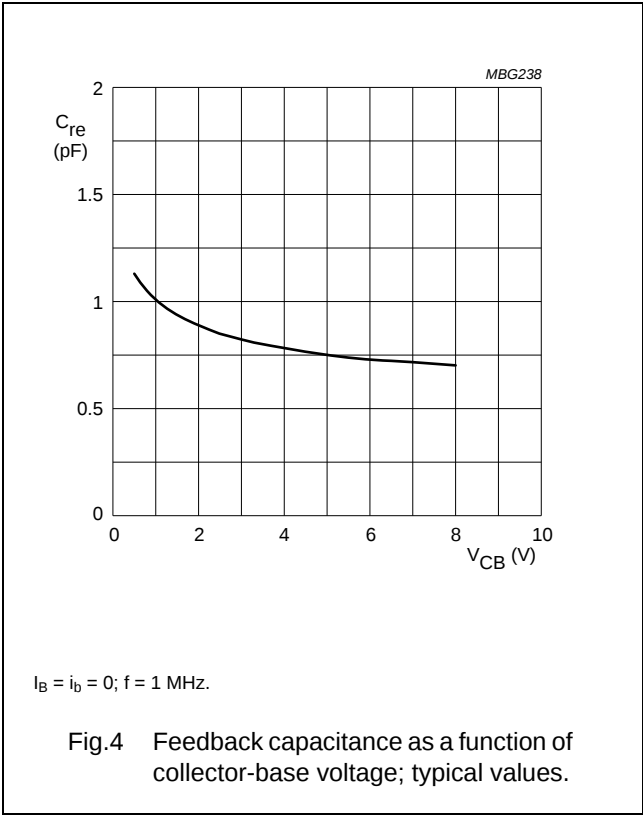
$T_j = 25\text{ }^{\circ}\text{C}$ (unless otherwise specified).

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I_{CBO}	collector cut-off current	$I_E = 0$; $V_{CB} = 10\text{ V}$	–	–	10	nA
h_{FE}	DC current gain	$I_C = 2\text{ mA}$; $V_{CE} = 1\text{ V}$	25	90	–	
f_T	transition frequency	$I_C = 25\text{ mA}$; $V_{CE} = 5\text{ V}$; $f = 500\text{ MHz}$	–	1.6	–	GHz
C_c	collector capacitance	$I_E = i_e = 0$; $V_{CB} = 10\text{ V}$; $f = 1\text{ MHz}$	–	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	$I_B = i_b = 0$; $V_{CE} = 5\text{ V}$; $f = 1\text{ MHz}$; $T_{amb} = 25\text{ }^{\circ}\text{C}$	–	0.75	–	pF
F	noise figure	$I_C = 2\text{ mA}$; $V_{CE} = 5\text{ V}$; $f = 500\text{ MHz}$; $\Gamma_S = \Gamma_{opt}$	–	4.5	–	dB



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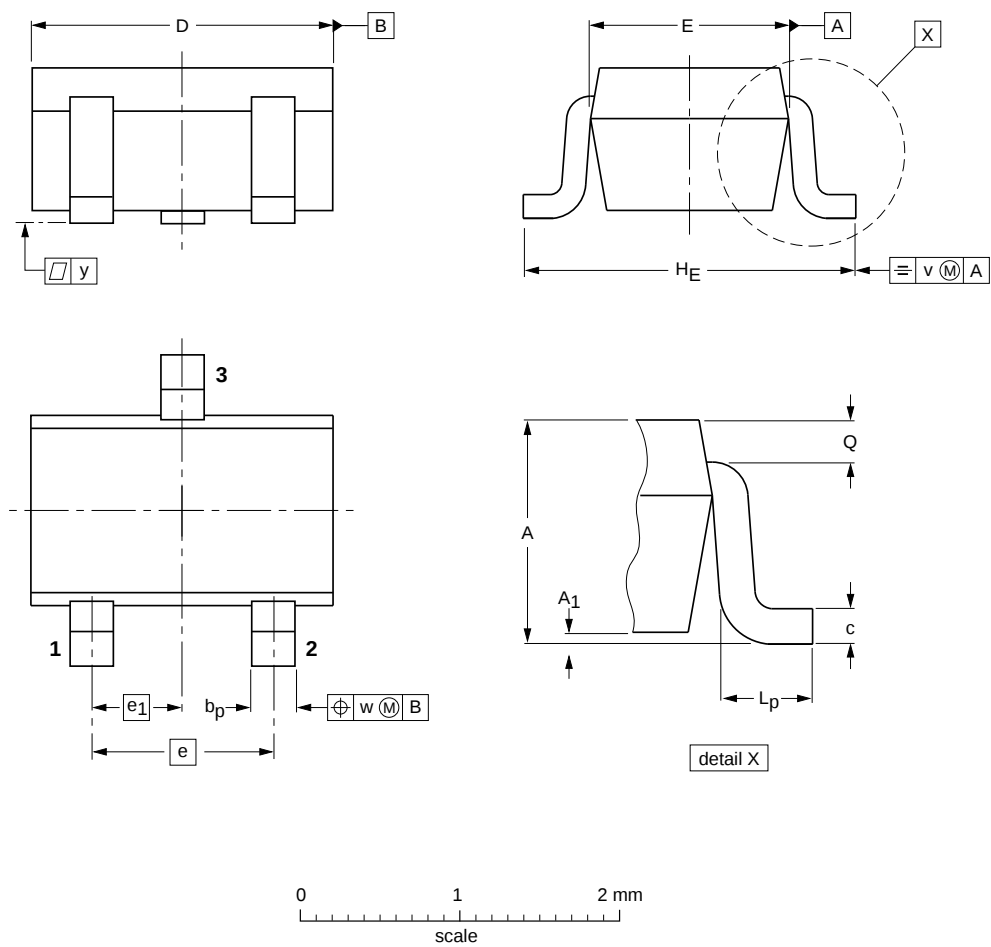
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PACKAGE OUTLINE

Plastic surface-mounted package; 3 leads

SOT323



DIMENSIONS (mm are the original dimensions)

UNIT	A	A1max	bp	c	D	E	e	e1	HE	Lp	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	JEITA			
SOT323			SC-70			04-11-04 06-03-16

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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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