

# DATA SHEET

**BFS17**

NPN 1 GHz wideband transistor

Product specification

September 1995



# NPN 1 GHz wideband transistor

# BFS17

## DESCRIPTION

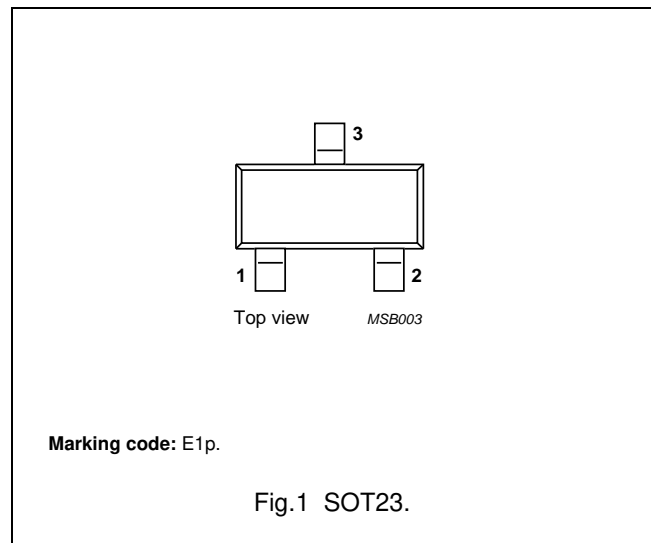
NPN transistor in a plastic SOT23 package.

## APPLICATIONS

- A wide range of RF applications such as:
  - Mixers and oscillators in TV tuners
  - RF communications equipment.

## PINNING

PIN	DESCRIPTION
1	base
2	emitter
3	collector



## QUICK REFERENCED DATA

SYMBOL	PARAMETER	CONDITIONS	TYP.	MAX.	UNIT
$V_{CBO}$	collector-base voltage	open emitter	–	25	V
$V_{CEO}$	collector-emitter voltage	open base	–	15	V
$I_C$	DC collector current		–	25	mA
$P_{tot}$	total power dissipation	up to $T_s = 70\text{ °C}$ ; note 1	–	300	mW
$f_T$	transition frequency	$I_C = 25\text{ mA}$ ; $V_{CE} = 5\text{ V}$ ; $f = 500\text{ MHz}$ ; $T_j = 25\text{ °C}$	1	–	GHz
F	noise figure	$I_C = 2\text{ mA}$ ; $V_{CE} = 5\text{ V}$ ; $R_S = 50\ \Omega$ ; $f = 500\text{ MHz}$ ; $T_j = 25\text{ °C}$	4.5	–	dB

## 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
$I_C$	DC collector current		–	25	mA
$I_{CM}$	peak collector current		–	50	mA
$P_{tot}$	total power dissipation	up to $T_s = 70\text{ °C}$ ; note 1	–	300	mW
$T_{stg}$	storage temperature		–65	+150	°C
$T_j$	junction temperature		–	150	°C

### Note to the Quick reference data and the Limiting values

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 $T_s = 70\text{ °C}$ ; note 1	260	K/W

## Note

- $T_s$  is the temperature at the soldering point of the collector pin.

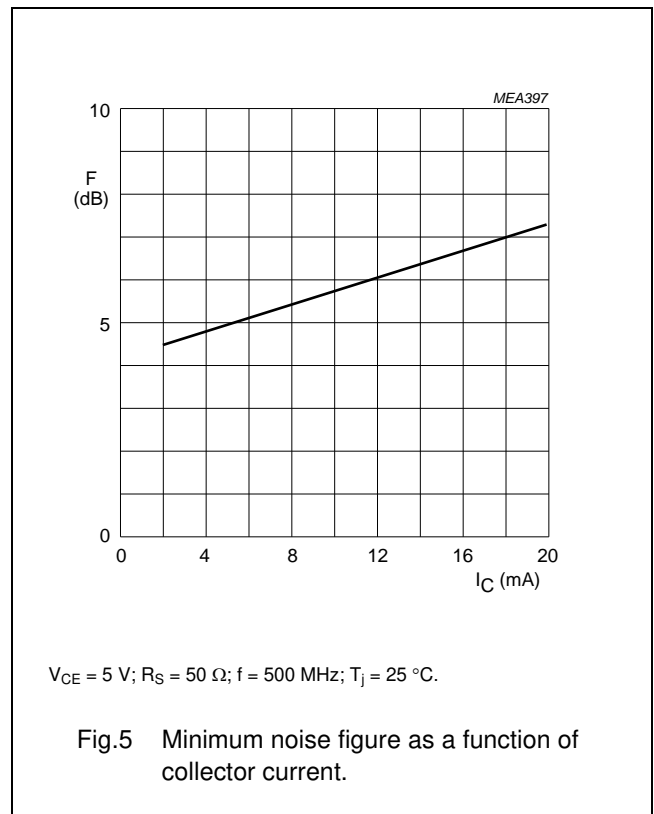
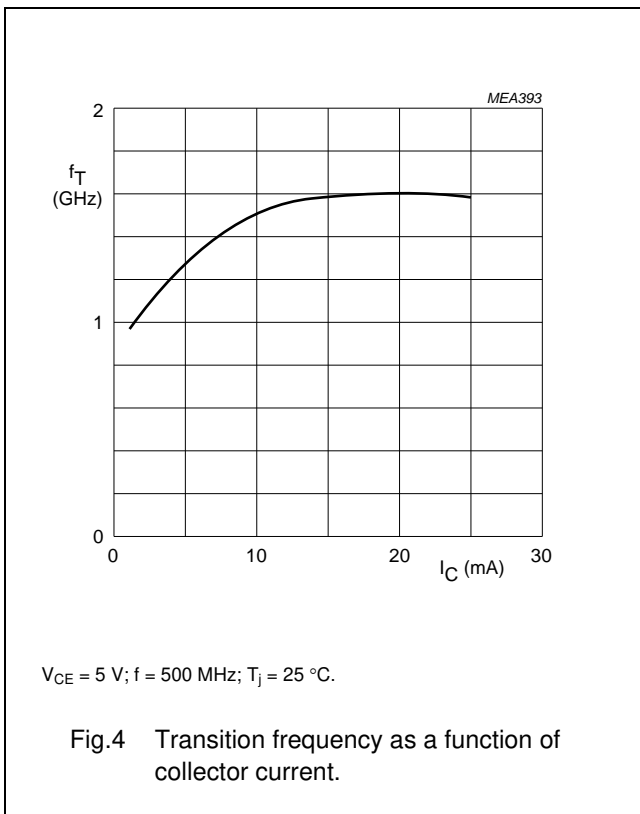
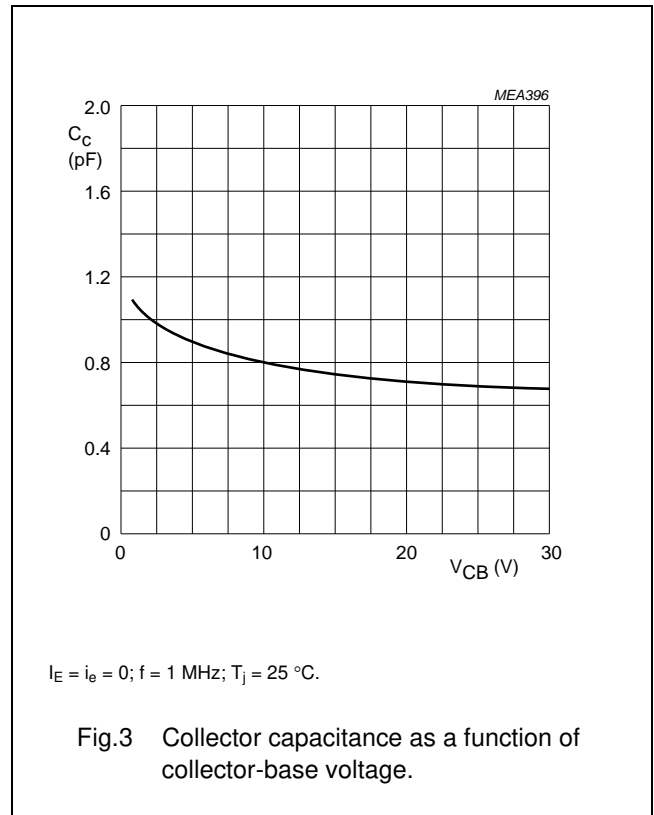
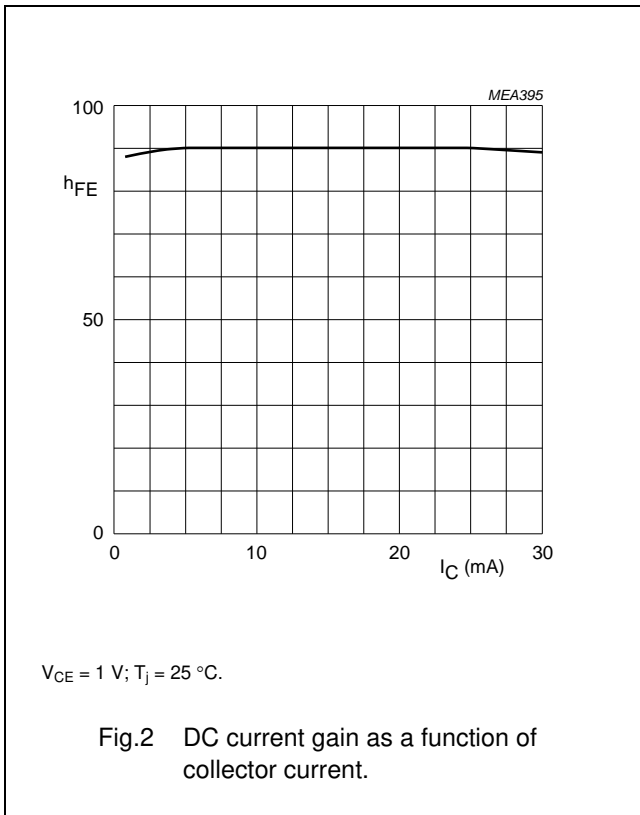
## CHARACTERISTICS

$T_j = 25\text{ °C}$  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	–	
		$I_C = 25\text{ mA}$ ; $V_{CE} = 1\text{ V}$	25	90	–	
$f_T$	transition frequency	$I_C = 2\text{ mA}$ ; $V_{CE} = 5\text{ V}$ ; $f = 500\text{ MHz}$	–	1	–	GHz
		$I_C = 25\text{ mA}$ ; $V_{CE} = 5\text{ V}$ ; $f = 500\text{ MHz}$	–	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	$I_C = 1\text{ mA}$ ; $V_{CE} = 5\text{ V}$ ; $f = 1\text{ MHz}$	–	0.65	–	pF
F	noise figure	$I_C = 2\text{ mA}$ ; $V_{CE} = 5\text{ V}$ ; $R_S = 50\text{ }\Omega$ ; $f = 500\text{ MHz}$	–	4.5	–	dB

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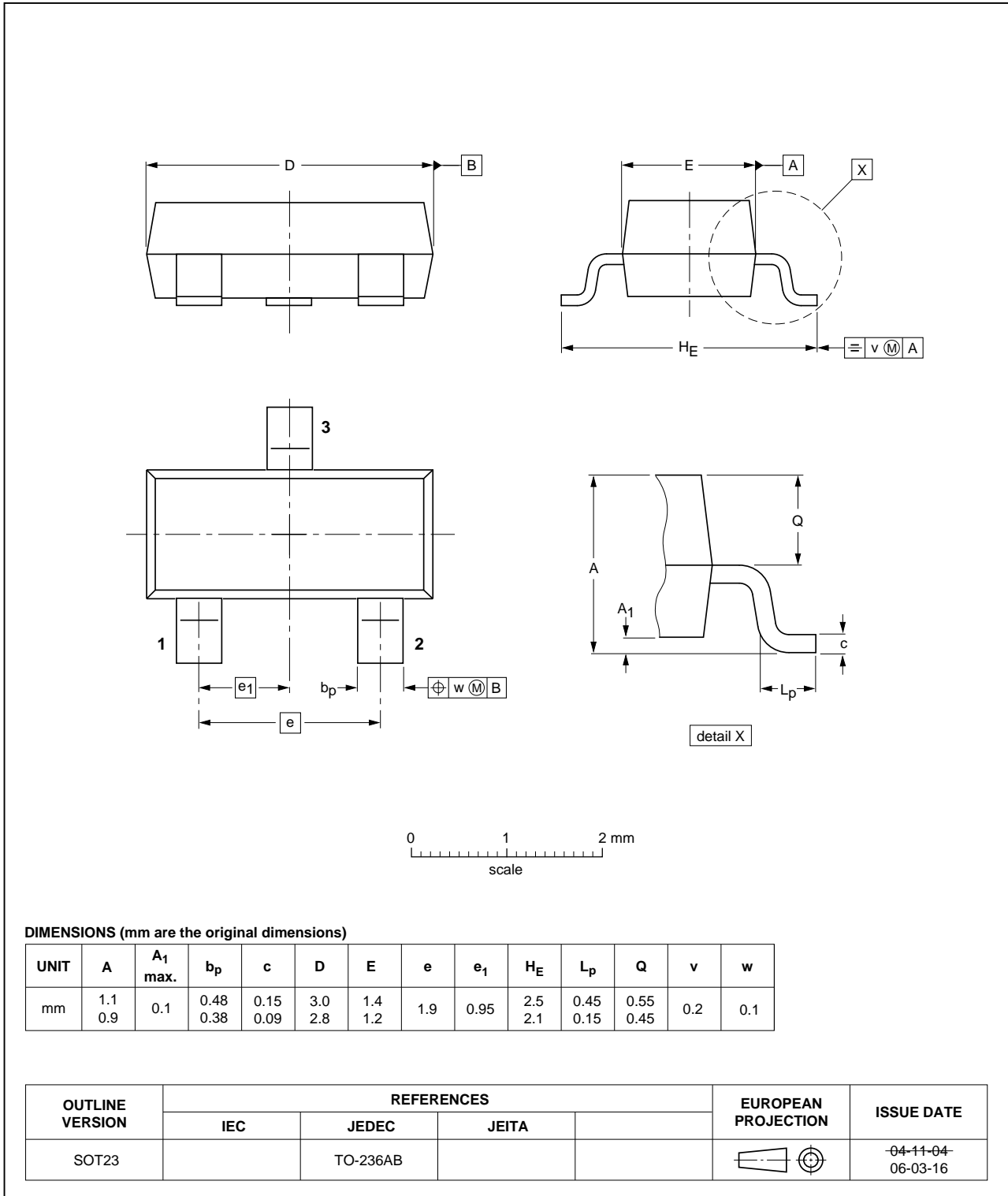
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PACKAGE OUTLINE

Plastic surface-mounted package; 3 leads

SOT23



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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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## **Contact information**

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Printed in The Netherlands

R77/02/pp8

Date of release: September 1995