DATA SHEET

BFS17
NPN 1 GHz wideband transistor

Product specification

September 1995

NPN 1 GHz wideband transistor BFS17

DESCRIPTION

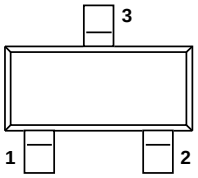
NPN transistor in a plastic SOT23 package.

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



Marking code: E1p.

Fig.1 SOT23.

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 °C; note 1	–	300	mW
f_T	transition frequency	I_C = 25 mA; V_{CE} = 5 V; f = 500 MHz; T_j = 25 °C	1	–	GHz
F	noise figure	I_C = 2 mA; V_{CE} = 5 V; R_S = 50 Ω; f = 500 MHz; T_j = 25 °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 °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.

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j\text{-}s}$	thermal resistance from junction to soldering point	up to T_s = 70 °C; note 1	260	K/W

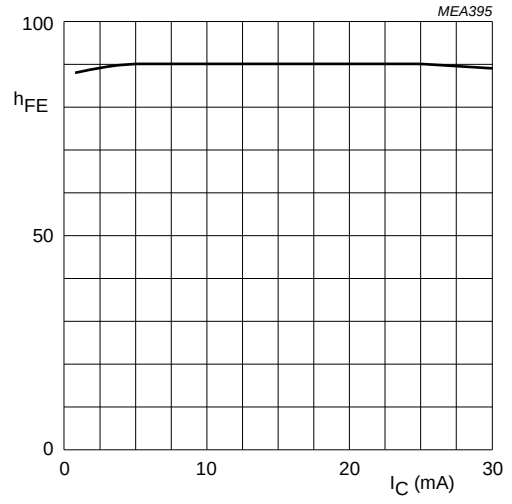
Note

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

CHARACTERISTICS

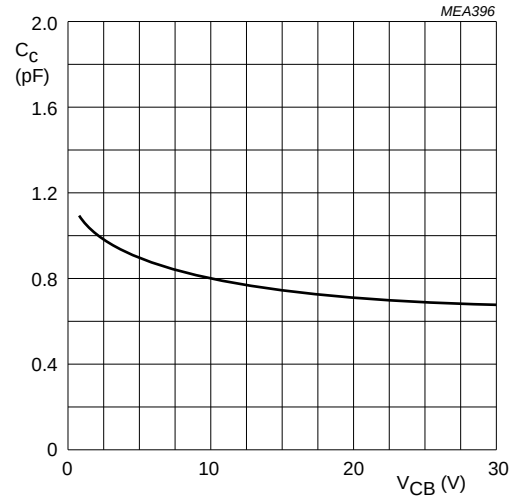
T_j = 25 °C unless otherwise specified.

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 mA; V_{CE} = 1 V	25	90	–	
		I_C = 25 mA; V_{CE} = 1 V	25	90	–	
f_T	transition frequency	I_C = 2 mA; V_{CE} = 5 V; f = 500 MHz	–	1	–	GHz
		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 V; f = 1 MHz	–	–	2	pF
C_{re}	feedback capacitance	I_C = 1 mA; V_{CE} = 5 V; f = 1 MHz	–	0.65	–	pF
F	noise figure	I_C = 2 mA; V_{CE} = 5 V; R_S = 50 Ω; f = 500 MHz	–	4.5	–	dB



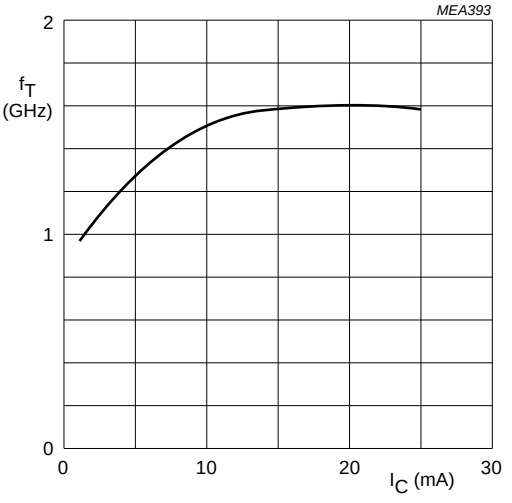
V_{CE} = 1 V; T_j = 25 °C.

Fig.2 DC current gain as a function of collector current.



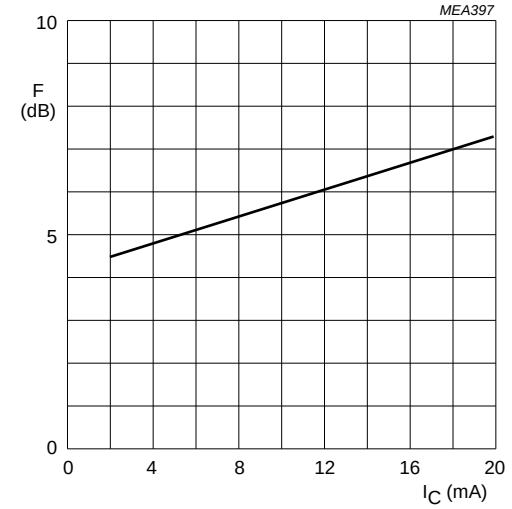
$I_E = i_e$ = 0; f = 1 MHz; T_j = 25 °C.

Fig.3 Collector capacitance as a function of collector-base voltage.



V_{CE} = 5 V; f = 500 MHz; T_j = 25 °C.

Fig.4 Transition frequency as a function of collector current.

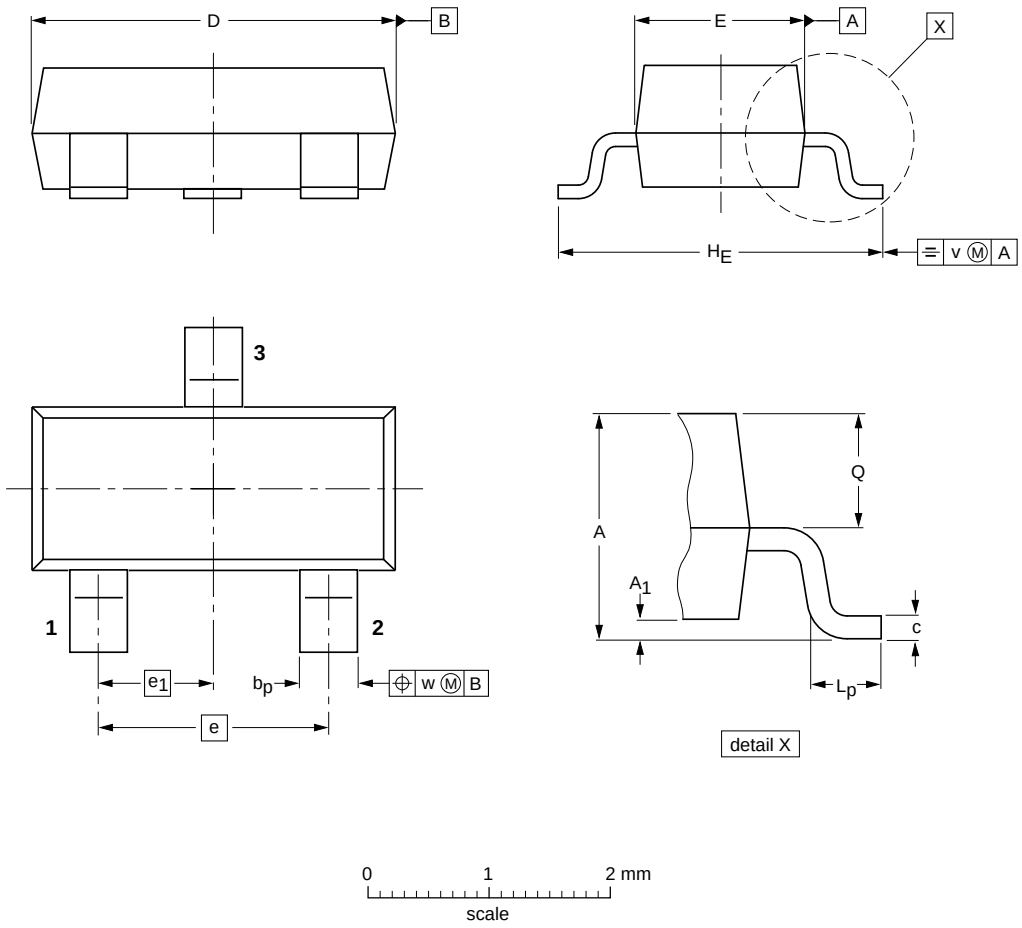


V_{CE} = 5 V; R_S = 50 Ω; f = 500 MHz; T_j = 25 °C.

Fig.5 Minimum noise figure as a function of collector current.

PACKAGE OUTLINE

Plastic surface-mounted package; 3 leads **SOT23**



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

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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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

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