

NPN 1 GHz wideband transistor

BFS17

DESCRIPTION

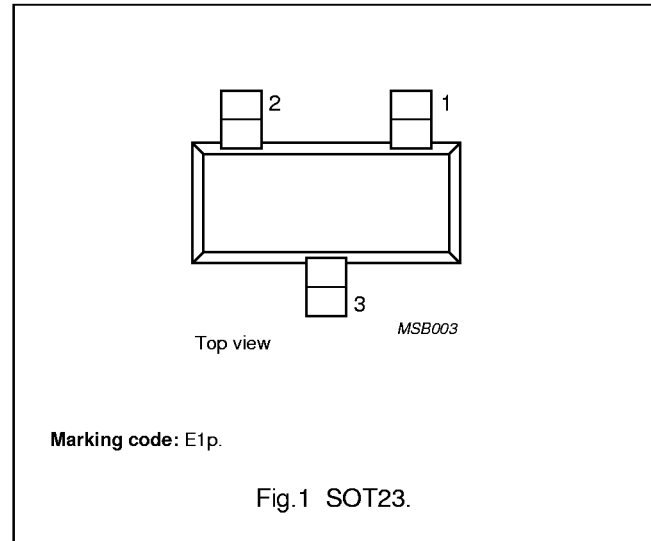
NPN transistor in a plastic SOT23 package.

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	$I_C = 2\text{ mA}$; $V_{CE} = 5\text{ V}$; $R_S = 50\text{ }\Omega$; $f = 500\text{ MHz}$; $T_j = 25\text{ °C}$	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_{thj-s}	thermal resistance from junction to soldering point	up to $T_s = 70\text{ °C}$; note 1	260	K/W

Note

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

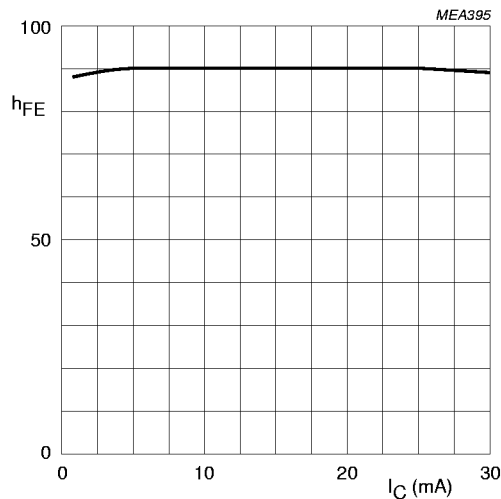
CHARACTERISTICS

$T_j = 25\text{ °C}$ 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	$I_E = I_C = 0$; $V_{CB} = 10\text{ V}$; $f = 1\text{ MHz}$	–	0.8	1.5	pF
C_e	emitter capacitance	$I_C = I_E = 0$; $V_{EB} = 0.5\text{ V}$; $f = 1\text{ MHz}$	–	–	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

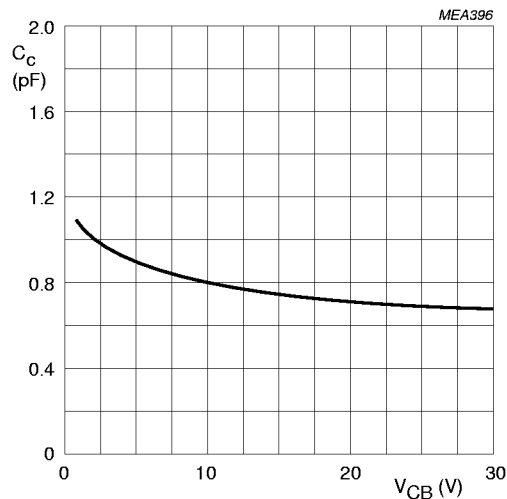
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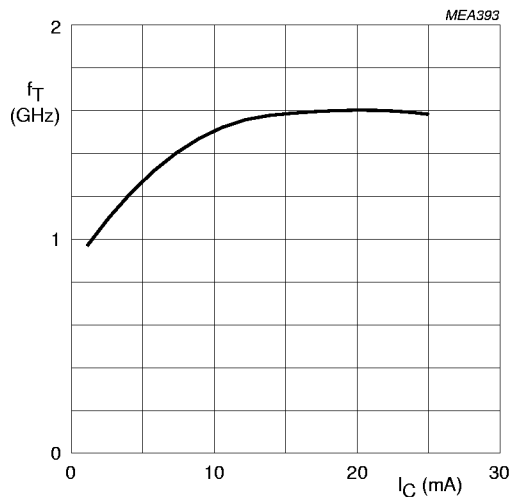
$V_{CE} = 1\text{ V}$; $T_j = 25\text{ }^{\circ}\text{C}$.

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



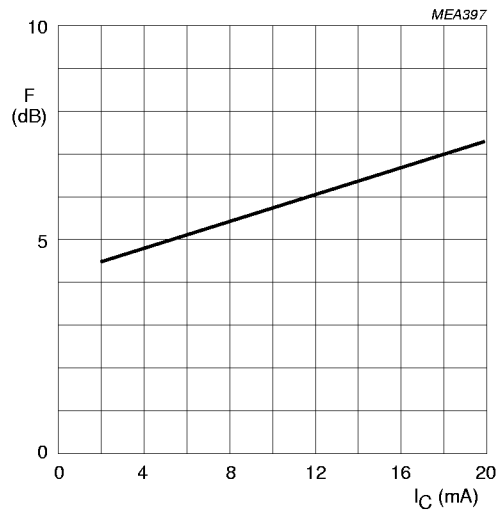
$I_E = I_B = 0$; $f = 1\text{ MHz}$; $T_j = 25\text{ }^{\circ}\text{C}$.

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



$V_{CE} = 5\text{ V}$; $f = 500\text{ MHz}$; $T_j = 25\text{ }^{\circ}\text{C}$.

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



$V_{CE} = 5\text{ V}$; $R_S = 50\text{ }\Omega$; $f = 500\text{ MHz}$; $T_j = 25\text{ }^{\circ}\text{C}$.

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

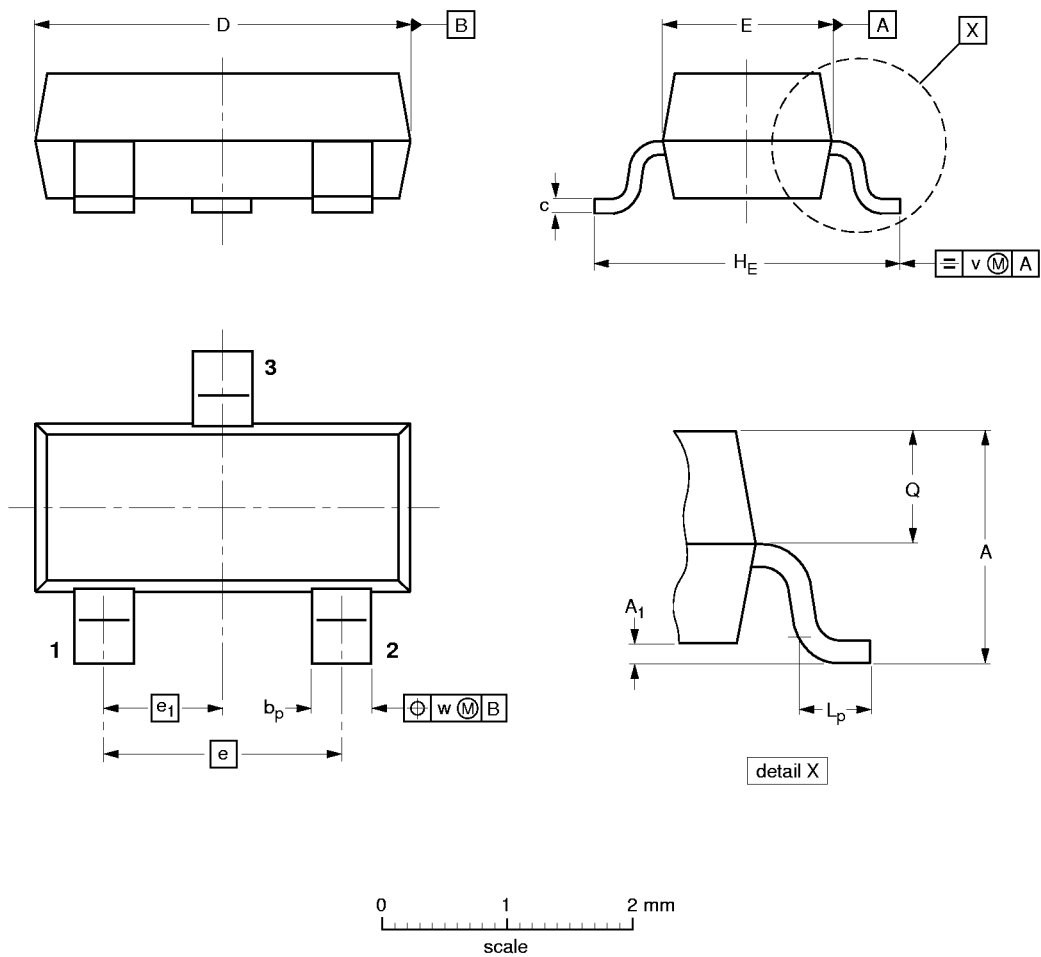
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PACKAGE OUTLINE

Package description

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	EIAJ			
SOT23						96-10-18