PNP 4 GHz wideband transistor BFQ32C

DESCRIPTION

PNP transistor in hermetically-sealed, sub-miniature, SOT173 and SOT173X micro-stripline envelopes. It is intended for use in UHF applications such as broadband aerial amplifiers. Microwave applications include radar systems, spectrum analyzers etc.

The transistor features a high transition frequency and a low intermodulation distortion figure over a wide current range.

NPN complement is BFP96.

PINNING

PIN	DESCRIPTION
Code: C2	
1	collector
2	emitter
3	base (indicated by a red dot on body)
4	emitter

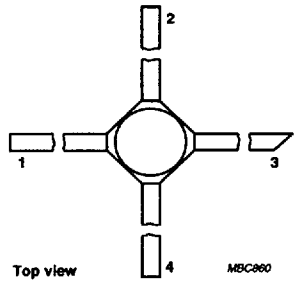


Fig.1 SOT173.

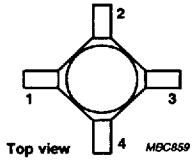


Fig.2 SOT173X.

QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{CEO}	collector-emitter voltage	open base	–	–	–15	V
I_C	DC collector current		–	–	–100	mA
P_{tot}	total power dissipation	up to T_s = 115 °C (note 1)	–	–	700	mW
h_{FE}	DC current gain	I_C = –50 mA; V_{CE} = –10 V; T_j = 25 °C	20	50	–	
f_T	transition frequency	I_C = –50 mA; V_{CE} = –10 V; f = 500 MHz; T_j = 25 °C	–	4.5	–	GHz
G_{UM}	maximum unilateral power gain	I_C = –50 mA; V_{CE} = –10 V; f = 500 MHz; T_{amb} = 25 °C	–	18	–	dB
		I_C = –50 mA; V_{CE} = –10 V; f = 800 MHz; T_{amb} = 25 °C	–	14	–	dB

Note

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

This Material Copyrighted By Its Respective Manufacturer

LIMITING VALUES

In accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{CBO}	collector-base voltage	open emitter	–	–20	V
V_{CEO}	collector-emitter voltage	open base	–	–15	V
V_{EBO}	emitter-base voltage	open collector	–	–3	V
I_C	DC collector current		–	–100	mA
P_{tot}	total power dissipation	up to T_s = 115 °C (note 1)	–	700	mW
T_{stg}	storage temperature		–65	150	°C
T_j	junction temperature		–	175	°C

THERMAL RESISTANCE

SYMBOL	PARAMETER	CONDITIONS	THERMAL RESISTANCE
$R_{th\ j\text{-}s}$	thermal resistance from junction to soldering point	up to T_s = 115 °C (note 1)	85 K/W

Note

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

CHARACTERISTICS

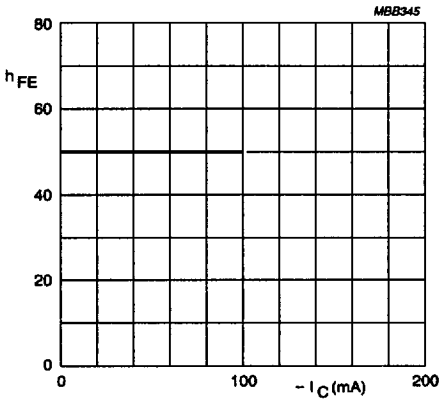
T_j = 25 °C unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I_{CBO}	collector cut-off current	I_E = 0; V_{CB} = –10 V	–	–	–100	nA
h_{FE}	DC current gain	I_C = –50 mA; V_{CE} = –10 V	20	50	–	
C_c	collector capacitance	$I_E = i_e$ = 0; V_{CB} = –10 V; f = 1 MHz	–	1.9	–	pF
C_e	emitter capacitance	$I_C = i_c$ = 0; V_{EB} = –0.5 V; f = 1 MHz	–	5	–	pF
C_{re}	feedback capacitance	I_C = 0; V_{CE} = –10 V; f = 1 MHz	–	1.4	–	pF
f_T	transition frequency	I_C = –50 mA; V_{CE} = –10 V; f = 500 MHz	–	4.5	–	GHz
G_{UM}	maximum unilateral power gain (note 1)	I_C = –50 mA; V_{CE} = –10 V; f = 500 MHz; T_{amb} = 25 °C	–	18	–	dB
		I_C = –50 mA; V_{CE} = –10 V; f = 800 MHz; T_{amb} = 25 °C	–	14	–	dB
F	noise figure	I_C = –50 mA; V_{CE} = –10 V; Z_S = opt. f = 800 MHz; T_{amb} = 25 °C	–	4.3	–	dB

Note

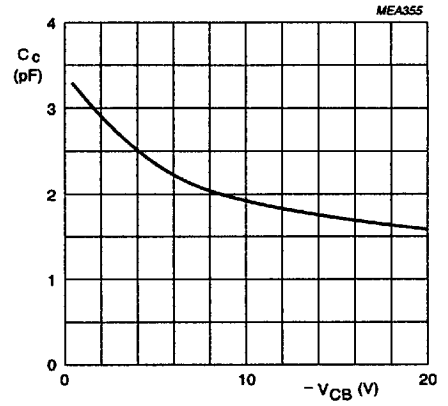
1. G_{UM} is the maximum unilateral power gain, assuming S_{12} is zero and $G_{UM} = 10 \log \frac{|S_{21}|^2}{(1-|S_{11}|^2)(1-|S_{22}|^2)}$ dB.

This Material Copyrighted By Its Respective Manufacturer



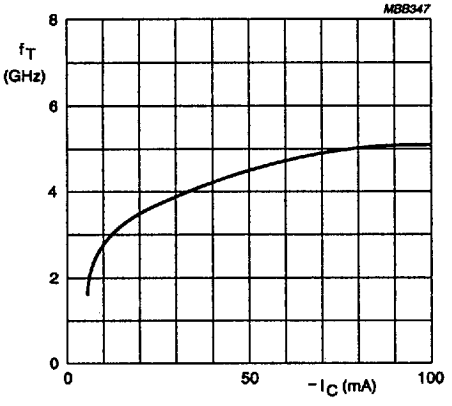
$V_{CE} = -10$ V; $T_j = 25$ °C.

Fig.3 DC current gain as a function of collector current.



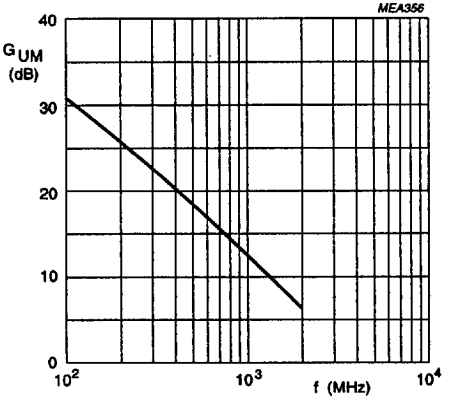
$I_E = i_e = 0$; $f = 1$ MHz; $T_j = 25$ °C.

Fig.4 Collector capacitance as a function of collector-base voltage.



$V_{CE} = -10$ V; $f = 500$ MHz; $T_j = 25$ °C.

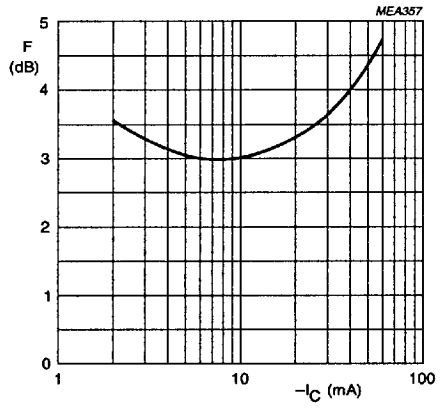
Fig.5 Transition frequency as a function of collector current.



$I_C = -50$ mA; $V_{CE} = -10$ V; $T_{amb} = 25$ °C.

Fig.6 Maximum unilateral power gain as a function of frequency.

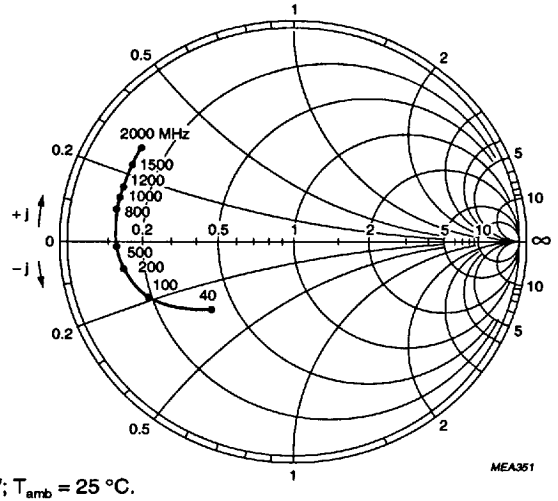
This Material Copyrighted By Its Respective Manufacturer



$V_{CE} = -10$ V; Z_S = opt; f = 800 MHz; T_{amb} = 25 °C.

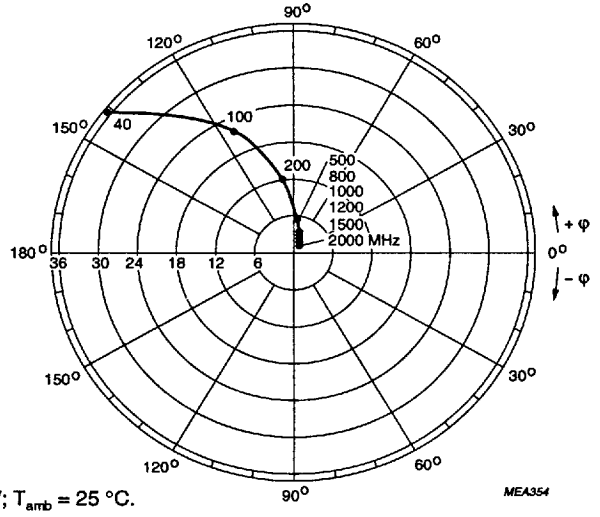
Fig.7 Minimum noise figure as a function of collector current.

This Material Copyrighted By Its Respective Manufacturer



I_C = −50 mA; V_{CE} = −10 V; T_{amb} = 25 °C.

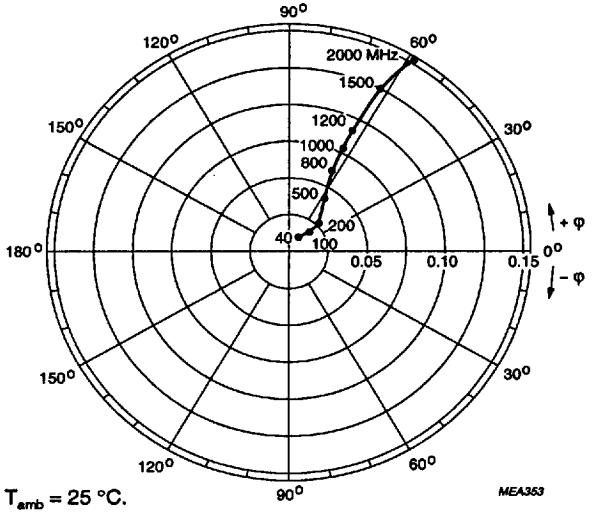
Fig.8 Common emitter input reflection coefficient (S_{11}).



I_C = −50 mA; V_{CE} = −10 V; T_{amb} = 25 °C.

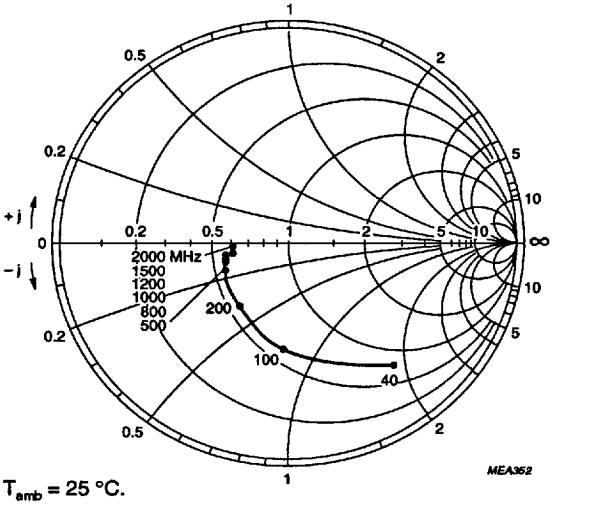
Fig.9 Common emitter forward transmission coefficient (S_{21}).

This Material Copyrighted By Its Respective Manufacturer



I_C = −50 mA; V_{CE} = −10 V; T_{amb} = 25 °C.

Fig.10 Common emitter reverse transmission coefficient (S_{12}).



I_C = −50 mA; V_{CE} = −10 V; T_{amb} = 25 °C.

Fig.11 Common emitter output reflection coefficient (S_{22}).

This Material Copyrighted By Its Respective Manufacturer