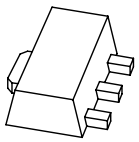

BFQ18A

NPN 4 GHz wideband transistor

Rev. 03 — 28 September 2007 Product data sheet

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NPN 4 GHz wideband transistor BFQ18A

DESCRIPTION

NPN transistor in a plastic SOT89 envelope intended for application in thick and thin-film circuits. It is primarily intended for MATV purposes.

PINNING

PIN	DESCRIPTION
Code: FF	
1	emitter
2	collector
3	base

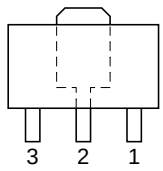


Fig.1 SOT89.

QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	TYP.	MAX.	UNIT
V_{CBO}	collector-base voltage	open emitter	–	25	V
V_{CEO}	collector-emitter voltage	open base	–	18	V
I_C	DC collector current		–	150	mA
P_{tot}	total power dissipation	up to T_s = 155 °C (note 1)	–	1	W
f_T	transition frequency	I_C = 100 mA; V_{CE} = 10 V; f = 500 MHz; T_j = 25 °C	4	–	GHz
C_{re}	feedback capacitance	I_C = 0; V_{CE} = 10 V; f = 10.7 MHz	1.2	–	pF
d_{im}	intermodulation distortion	I_C = 80 mA; V_{CE} = 10 V; R_L = 75 Ω; V_o = 700 mV; measured at $f_{(p+q-r)}$ = 793.25 MHz	–	–60	dB

LIMITING VALUES

In accordance with the Absolute Maximum 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	–	18	V
V_{EBO}	emitter-base voltage	open collector	–	2	V
I_C	DC collector current		–	150	mA
P_{tot}	total power dissipation	up to T_s = 155 °C (note 1)	–	1	W
T_{stg}	storage temperature		–65	150	°C
T_j	junction temperature		–	175	°C

Note

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

THERMAL RESISTANCE

SYMBOL	PARAMETER	CONDITIONS	THERMAL RESISTANCE
$R_{th\ j\text{-}s}$	thermal resistance from junction to soldering point	up to T_s = 155 °C (note 1)	20 K/W

Note

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

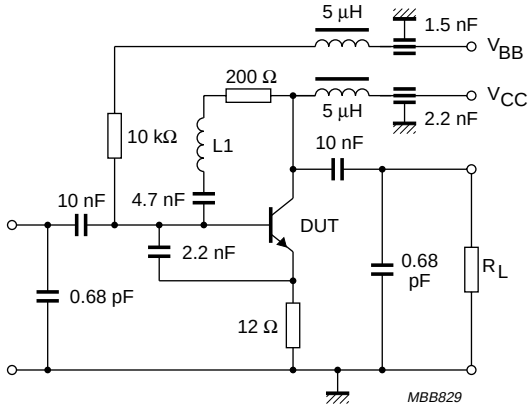
CHARACTERISTICS

T_j = 25 °C unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	UNIT
h_{FE}	DC current gain	I_C = 100 mA; V_{CE} = 10 V	25	–	
C_c	collector capacitance	$I_E = i_e$ = 0; V_{CB} = 10 V; f = 1 MHz	–	2	pF
C_e	emitter capacitance	$I_C = i_c$ = 0; V_{EB} = 0.5 V; f = 1 MHz	–	11	pF
C_{re}	feedback capacitance	I_C = 0; V_{CE} = 10 V; f = 10.7 MHz	–	1.2	pF
f_T	transition frequency	I_C = 100 mA; V_{CE} = 10 V; f = 500 MHz	–	4	GHz
d_{im}	intermodulation distortion (see Fig.2)	note 1	–	–60	dB

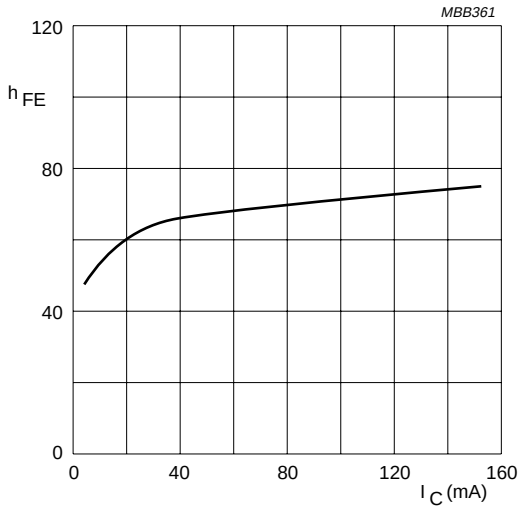
Note

1. I_c = 80 mA; V_{CE} = 10 V; R_L = 75 Ω;
   $V_p = V_o$ = 700 mV; f_p =795.25 MHz;
   $V_q = V_o$ –6 dB; f_q = 803.25 MHz;
   $V_r = V_o$ –6 dB; f_r = 805.25 MHz;
   measured at $f_{(p+q-r)}$ = 793.25 MHz.



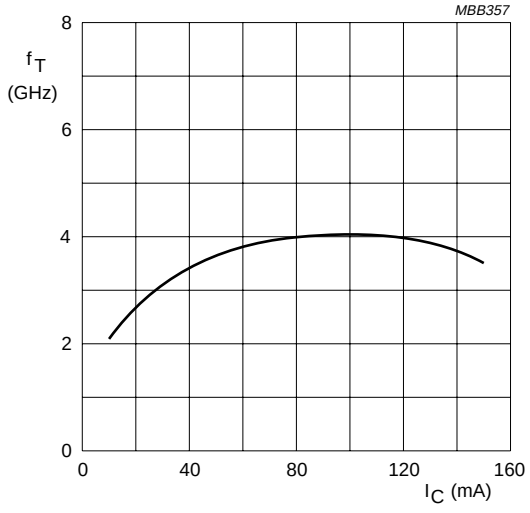
f = 40 – 860 MHz.

Fig.2 Intermodulation distortion MATV test circuit.



V_{CE} = 10 V; T_j = 25 °C.

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

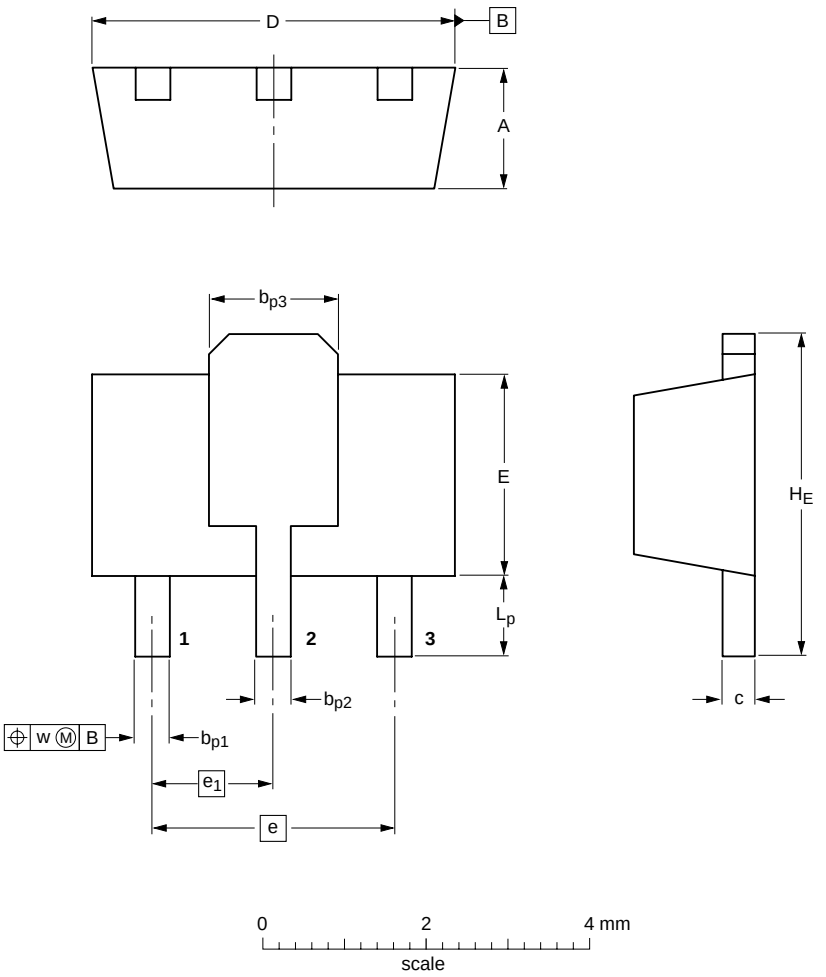


V_{CE} = 10 V; f = 500 MHz; T_j = 25 °C.

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

PACKAGE OUTLINE

Plastic surface-mounted package; collector pad for good heat transfer; 3 leads **SOT89**



DIMENSIONS (mm are the original dimensions)

UNIT	A	b_{p1}	b_{p2}	b_{p3}	c	D	E	e	e_1	H_E	L_p	w
mm	1.6 1.4	0.48 0.35	0.53 0.40	1.8 1.4	0.44 0.23	4.6 4.4	2.6 2.4	3.0	1.5	4.25 3.75	1.2 0.8	0.13

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA			
SOT89		TO-243	SC-62			~~06-03-16~~ 06-08-29

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Data sheet status

Document status[1][2]	Product status[3]	Definition
Objective [short] data sheet	Development	This document contains data from the objective specification for product development.
Preliminary [short] data sheet	Qualification	This document contains data from the preliminary specification.
Product [short] data sheet	Production	This document contains the product specification.

[1] Please consult the most recently issued document before initiating or completing a design.

[2] The term 'short data sheet' is explained in section "Definitions".

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Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
BFQ18A_N_3	20070928	Product data sheet	-	BFQ18A_CNV_2
Modifications:	• Fig. 1 and package outline updated			
BFQ18A_CNV_2	19950901	Product specification	-	-

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