

# BFQ18A

NPN 4 GHz wideband transistor

Rev. 03 — 28 September 2007

Product data sheet

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NXP Semiconductors

# NPN 4 GHz wideband transistor

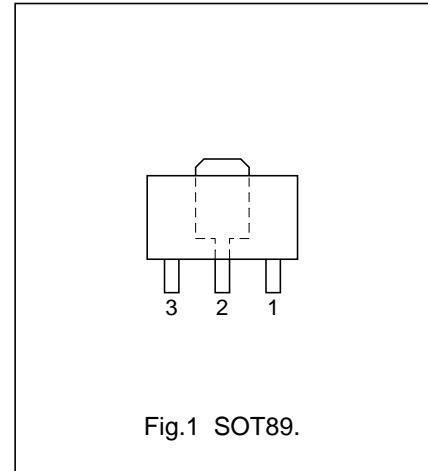
# BFQ18A

### 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



### QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	TYP.	MAX.	UNIT
V <sub>CBO</sub>	collector-base voltage	open emitter	–	25	V
V <sub>CEO</sub>	collector-emitter voltage	open base	–	18	V
I <sub>C</sub>	DC collector current		–	150	mA
P <sub>tot</sub>	total power dissipation	up to T <sub>s</sub> = 155 °C (note 1)	–	1	W
f <sub>T</sub>	transition frequency	I <sub>C</sub> = 100 mA; V <sub>CE</sub> = 10 V; f = 500 MHz; T <sub>j</sub> = 25 °C	4	–	GHz
C <sub>re</sub>	feedback capacitance	I <sub>C</sub> = 0; V <sub>CE</sub> = 10 V; f = 10.7 MHz	1.2	–	pF
d <sub>im</sub>	intermodulation distortion	I <sub>C</sub> = 80 mA; V <sub>CE</sub> = 10 V; R <sub>L</sub> = 75 Ω; V <sub>o</sub> = 700 mV; measured at f <sub>(p+q-r)</sub> = 793.25 MHz	–	–60	dB

### LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V <sub>CBO</sub>	collector-base voltage	open emitter	–	25	V
V <sub>CEO</sub>	collector-emitter voltage	open base	–	18	V
V <sub>EBO</sub>	emitter-base voltage	open collector	–	2	V
I <sub>C</sub>	DC collector current		–	150	mA
P <sub>tot</sub>	total power dissipation	up to T <sub>s</sub> = 155 °C (note 1)	–	1	W
T <sub>stg</sub>	storage temperature		–65	150	°C
T <sub>j</sub>	junction temperature		–	175	°C

### Note

1. T<sub>s</sub> is the temperature at the soldering point of the collector tab.

## NPN 4 GHz wideband transistor

BFQ18A

## THERMAL RESISTANCE

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

## Note

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

## CHARACTERISTICS

$T_j = 25\text{ °C}$  unless otherwise specified.

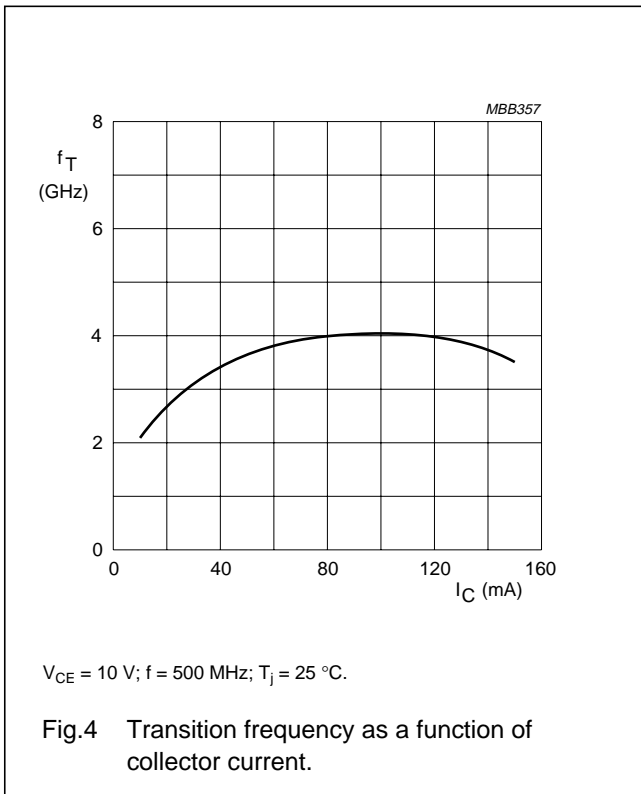
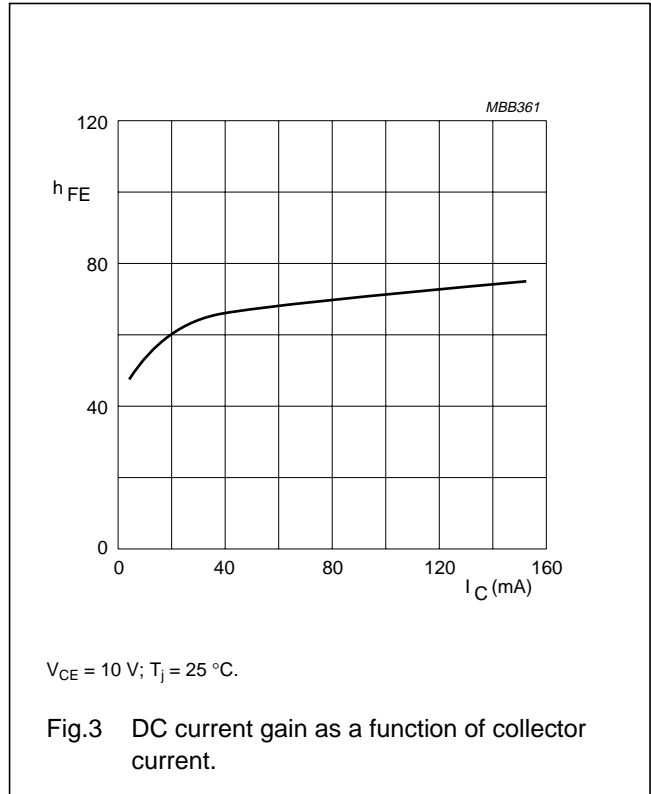
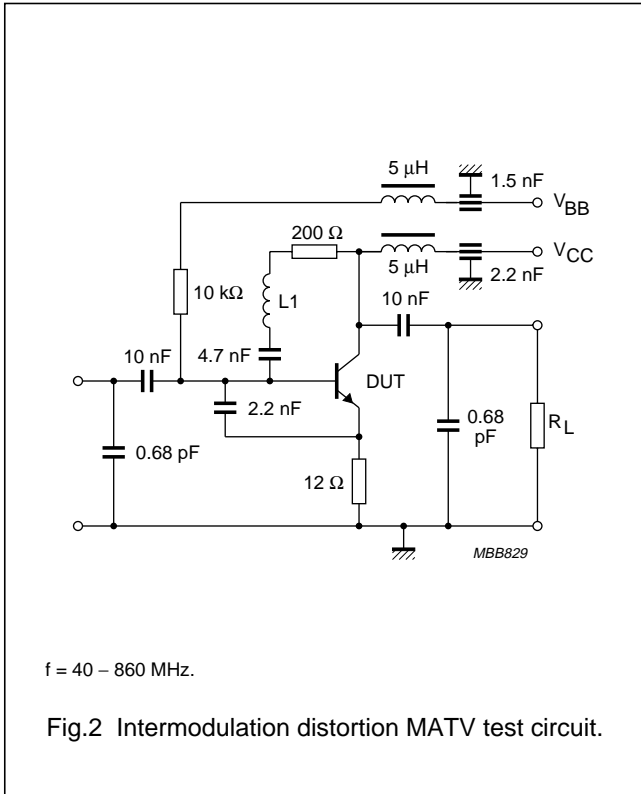
SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	UNIT
$h_{FE}$	DC current gain	$I_C = 100\text{ mA}$ ; $V_{CE} = 10\text{ V}$	25	–	
$C_c$	collector capacitance	$I_E = i_e = 0$ ; $V_{CB} = 10\text{ V}$ ; $f = 1\text{ MHz}$	–	2	pF
$C_e$	emitter capacitance	$I_C = i_c = 0$ ; $V_{EB} = 0.5\text{ V}$ ; $f = 1\text{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

## Note

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

NPN 4 GHz wideband transistor

BFQ18A



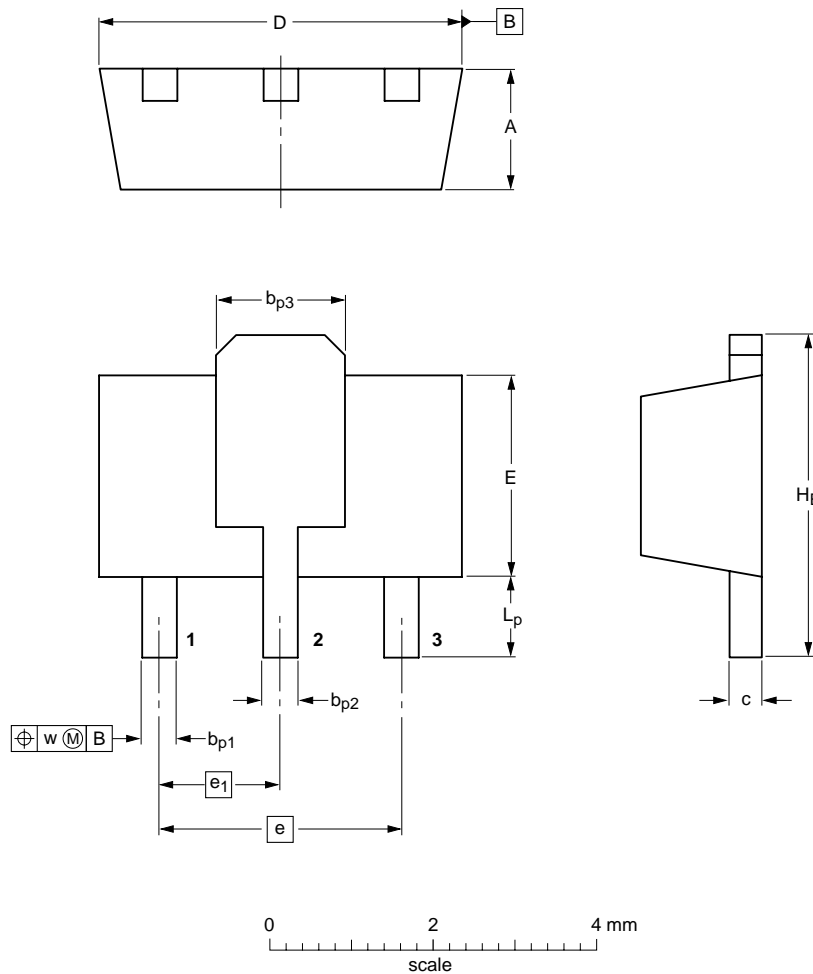
NPN 4 GHz wideband transistor

BFQ18A

PACKAGE OUTLINE

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

SOT89



DIMENSIONS (mm are the original dimensions)

UNIT	A	b <sub>p1</sub>	b <sub>p2</sub>	b <sub>p3</sub>	c	D	E	e	e <sub>1</sub>	H <sub>E</sub>	L <sub>p</sub>	w
mm	1.6	0.48	0.53	1.8	0.44	4.6	2.6	3.0	1.5	4.25	1.2	0.13
	1.4	0.35	0.40	1.4	0.23	4.4	2.4					

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

## Legal information

### Data sheet status

Document status <sup>[1][2]</sup>	Product status <sup>[3]</sup>	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

### 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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Date of release: 28 September 2007

Document identifier: BFQ18A\_N\_3