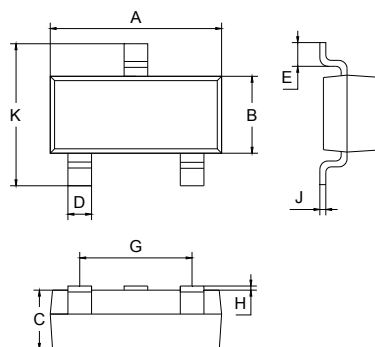


FEATURES

- Low noise and high gain.
NF=1.1dB TYP., $G_s=11\text{dB}$ TYP.
@ $V_{CE}=10\text{V}$, $I_C=7\text{mA}$, $f=1.0\text{GHz}$
- High power gain. MAG=13dB TYP.
@ $V_{CE}=10\text{V}$, $I_C=20\text{mA}$, $f=1.0\text{GHz}$.

APPLICATIONS

- Designed for low noise amplifier at VHF, UHF and CATV band.



SOT-23		
Dim	Min	Max
A	2.70	3.10
B	1.10	1.50
C	1.0 Typical	
D	0.4 Typical	
E	0.35	0.48
G	1.80	2.00
H	0.02	0.1
J	0.1 Typical	
K	2.20	2.60
All Dimensions in mm		

ORDERING INFORMATION

SOT-23

Type No.	Marking	Package Code
BFR93A	R23/R24/R25	SOT-23

MAXIMUM RATING @ $T_a=25^\circ\text{C}$ unless otherwise specified

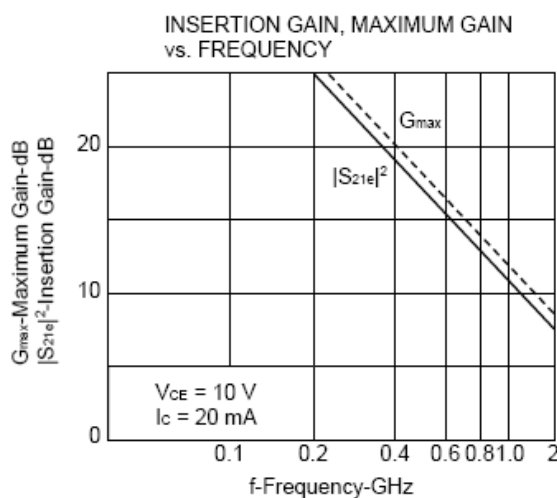
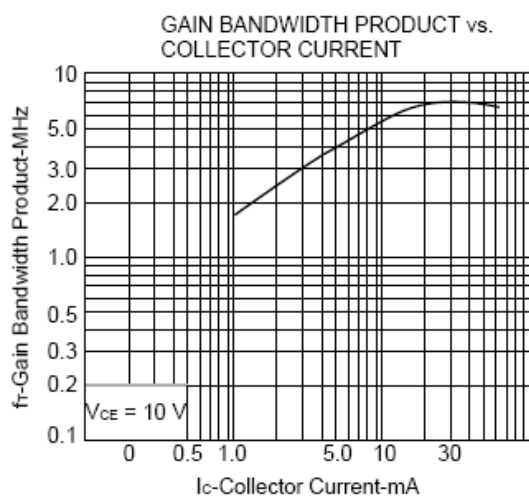
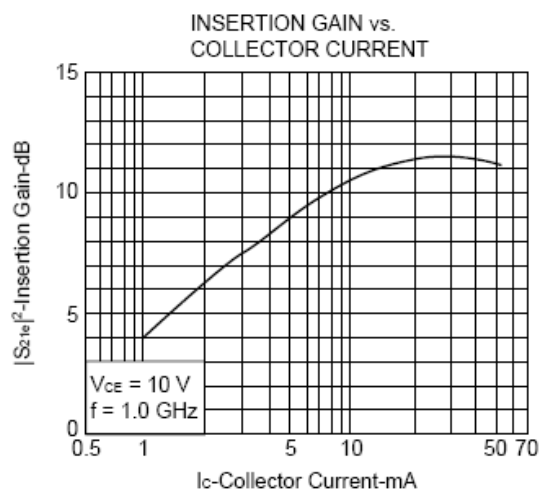
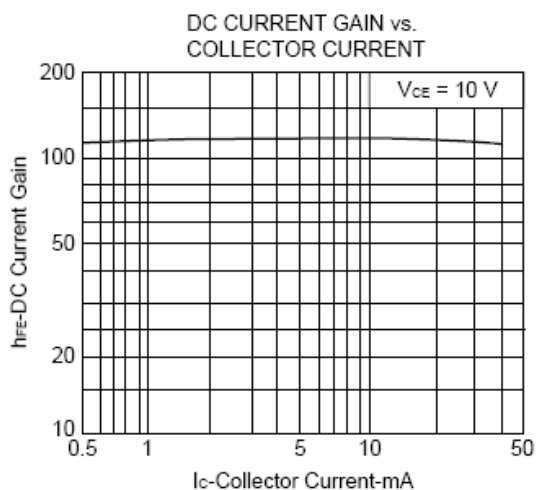
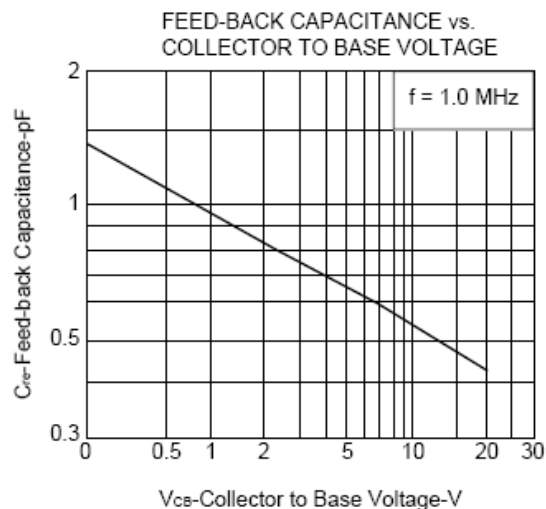
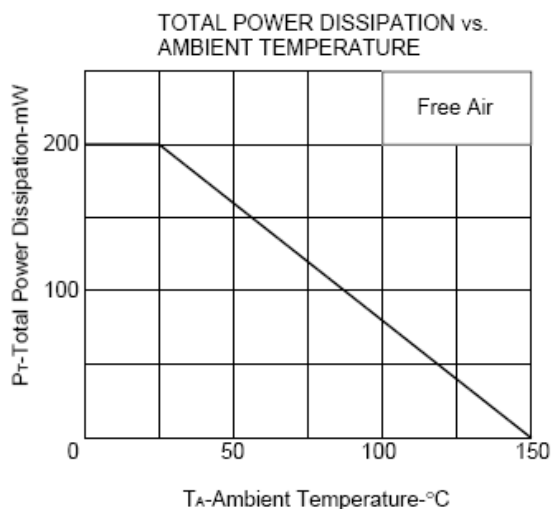
Symbol	Parameter	Value	Units
V_{CBO}	Collector-Base Voltage	20	V
V_{CEO}	Collector-Emitter Voltage	12	V
V_{EBO}	Emitter-Base Voltage	3	V
I_C	Collector Current -Continuous	100	mA
P_C	Collector Dissipation	200	mW
T_j, T_{stg}	Junction and Storage Temperature	-65 to +150	$^\circ\text{C}$

ELECTRICAL CHARACTERISTICS @ $T_a=25^\circ\text{C}$ unless otherwise specified

Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=10\mu\text{A}, I_E=0$	20			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C=1\text{mA}, I_B=0$	12			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=10\mu\text{A}, I_C=0$	3			V
Collector cut-off current	I_{CBO}	$V_{CB}=10\text{V}, I_E=0$			1	μA
Emitter cut-off current	I_{EBO}	$V_{EB}=1\text{V}, I_C=0$			1	μA
DC current gain	h_{FE}	$V_{CE}=10\text{V}, I_C=20\text{mA}$	50	120	300	
Transition frequency	f_T	$V_{CE}=10\text{V}, I_C=20\text{mA}$		7		GHz
Insertion power gain	$ S_{21e} ^2$	$V_{CE}=10\text{V}, I_C=20\text{mA}, f=1\text{GHz}$		11.5		dB
Feed-back capacitance	C_{re}	$V_{CB}=10\text{V}, I_E=0, f=1\text{MHz}$		0.55	1.0	pF
Noise Figure	NF	$V_{CE}=10\text{V}, I_C=7\text{mA}, f=1\text{GHz}$		1.1	2.0	dB

CLASSIFICATION OF h_{FE}

Rank	Q	R	S
Range	50-100	80-160	125-250
Marking	R23	R24	R25

TYPICAL CHARACTERISTICS @ Ta=25°C unless otherwise specified


Device	Package	Shipping
BFR93A	SOT-23	3000/Tape&Reel