YFW 佑风微

BFR93A SOT-23

NPN Plastic-Encapsulate

Appilcations

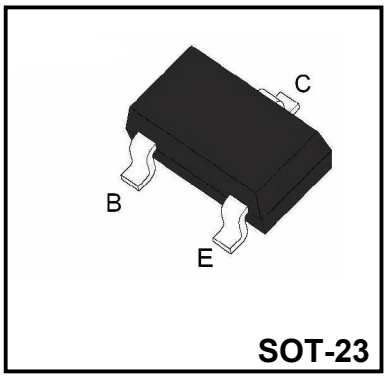
➢Wide band amplifier up to GHz range.

Features

➢High power gain

➢Low noise figure

➢High transition frequency



Product Specification Classification

Part Number	Package	Marking	Pack
BFR93A	SOT-23	R2	3000PCS/Tape

Absolute Maximum Ratings (Ta=25℃)

Parameter	Symbol	Value	Unit
Collector-Base Voltage	BV_{CBO}	20	V
Collector-Emitter Voltage	BV_{CEO}	12	V
Emitter-Base Voltage	BV_{EBO}	2	V
Collector Current	I_C	50	mA
Total Power Dissipation ($T_{amb} \leq 60℃$)	P_{tot}	200	mW
Junction Temperature	T_j	150	℃
Storage Temperature	T_{stg}	-65～＋150	℃

Thermal characteristics

Parameter	Symbol	Conditions	Value	Unit
Junction ambient	R_{thJA}	on glass fibre printed board (25×20×1.5) mm^3 plated with 35μm Cu	450	K/W

Electrical Characteristics (Ta=25℃ unless otherwise specified.)

Parameter	Symbol	Conditions	Value			Unit
			Min	Typ	Max	
Collector-emitter voltage	BV_{CEO}	I_C = 1mA, I_B = 0	12			V
Collector-base cut-off current	I_{CBO}	V_{CB} = 10V， I_E = 0			100	nA
Collector cut-off current	I_{CES}	V_{CE} = 20V， I_E = 0			100	nA
Emitter-base cut-off current	I_{EBO}	V_{EB} = 2V， I_C = 0			10	nA
DC current gain	h_{FE}	V_{CE} = 5V， I_C = 30mA	40		150	
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C = 50mA, I_B = 5mA			0.4	V
Transition frequency	f_T	V_{CE} = 5V,I_C = 30mA,f=500MHz	4.5	6		GHz
Collector-base capacitance	C_{cb}	V_{CB} = 10V, f =1MHz		0.45		pF
Collector-emitter capacitance	C_{ce}	V_{CE} =5V, f =1MHz		0.2		pF
Emitter-base capacitance	C_{eb}	V_{EB} =0.5V, f =1MHz		1.5		pF
Power gain	G_{pe}	V_{CE} =8V, I_C=25mA, Z_S= 50Ω Z_L= Z_{Lopt} , f =800MHz		14		dB
Noise Figure	NF	V_{CE} =8 V, I_C =5mA, Z_S= 50Ω , f =800MHz		1.6		dB
		V_{CE} =8 V, I_C =25mA, Z_S= 50Ω , f =800MHz		2.1		
Linear output voltage – two tone intermodulation test	V_1=V_2	V_{CE} =8 V, I_C =25mA, d_{IM}=60dB f_1=806MHz , f_2=810MHz Z_S=Z_L= 50Ω		260		mV
Third order intercept point	IP_3	V_{CE}=8 V, I_C=25mA, f =800MHz		31		dBm

Typical Characteristics

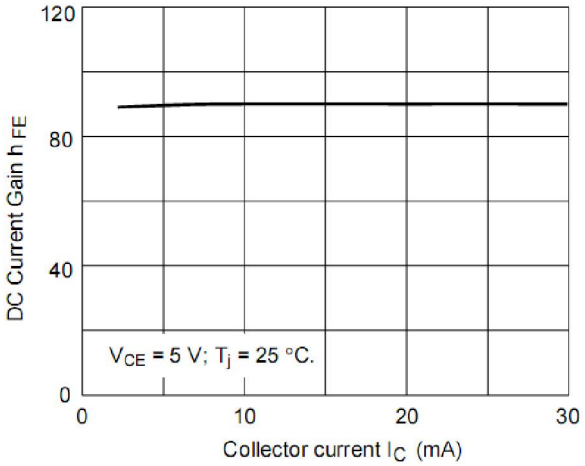


Figure 2. DC Current Gain

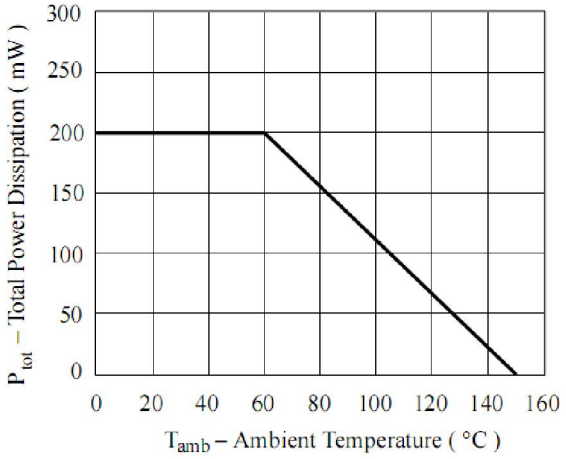


Figure 2. Total Power Dissipation vs. Ambient Temperature

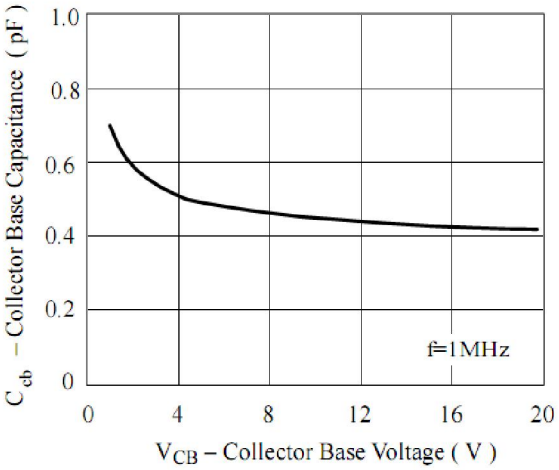


Figure 3. Collector Base Capacitance vs. Collector Base Voltage

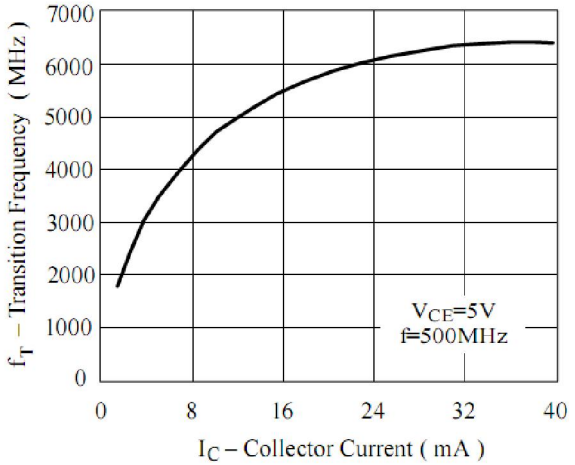


Figure 4. Transition Frequency vs. Collector Current

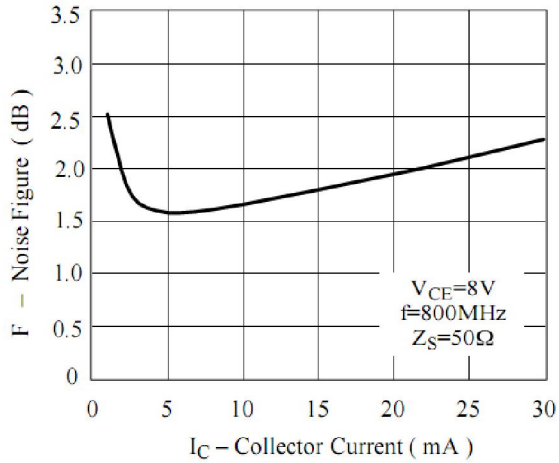


Figure 5. Noise Figure vs. Collector Current

Typical Characteristics (VCE = 8 V, IC = 25 mA , Z0 = 50Ω)

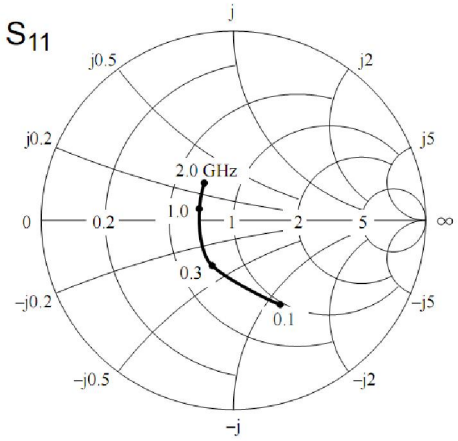


Figure 6. Input reflection coefficient

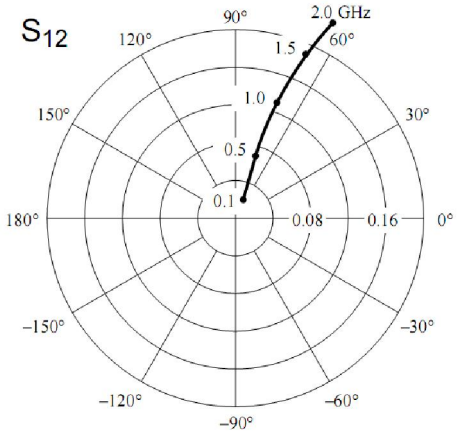


Figure7. Reverse transmission coefficient

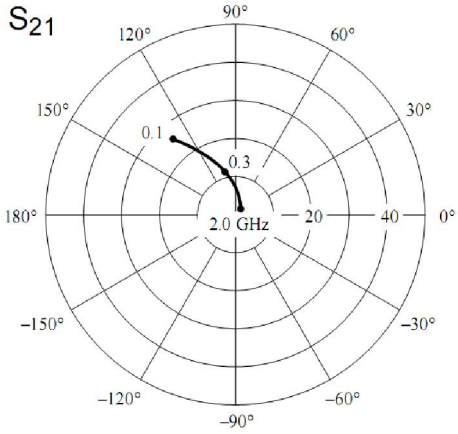


Figure 8. Forward transmission coefficient

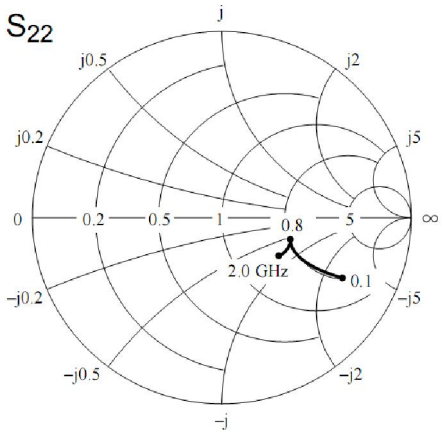
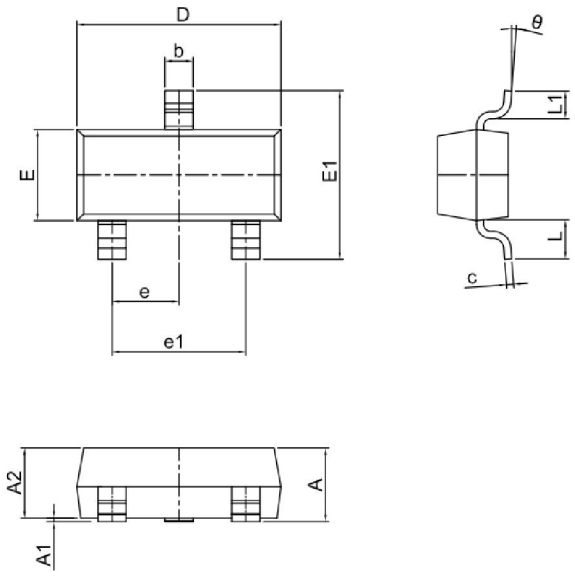


Figure 9. Output reflection coefficient

Package Dimensions



Symbol	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	0.90	1.15	0.035	0.045
A1	0.00	0.10	0.000	0.004
A2	0.90	1.05	0.035	0.041
b	0.30	0.50	0.012	0.020
c	0.08	0.15	0.003	0.006
D	2.80	3.00	0.110	0.118
E	1.20	1.40	0.047	0.055
E1	2.25	2.55	0.089	0.100
e	0.90	1.00	0.035	0.039
e1	1.80	2.00	0.071	0.079
L	0.50	0.60	0.020	0.024
L1	0.30	0.50	0.012	0.020