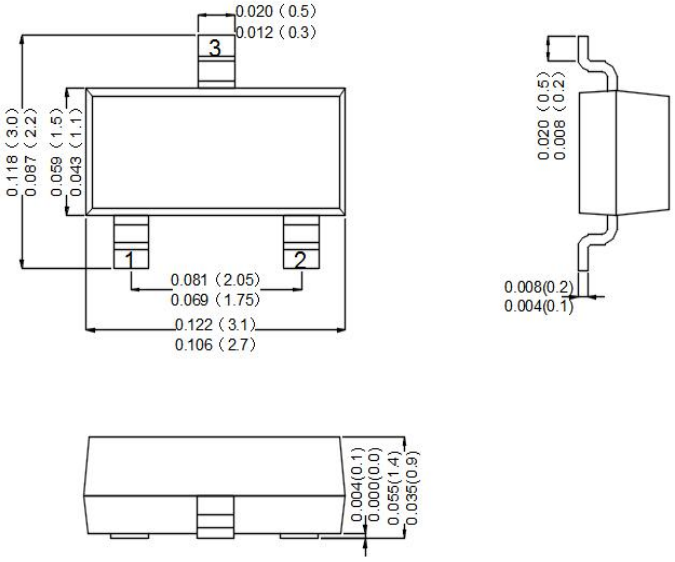
BFR93A

Low Noise Silicon Bipolar RF Transistor

Features

- High Gain-Bandwidth Products f_T=6 GHz (Typ) @ 30 mA
- Low Noise Figure N_F=1.6 dB (Typ) @ 800 MHz
- High Gain G_{PS}= 14.0 dB (Typ) @ 800 MHz

SOT-23



Dimensions in inches and (millimeters)

Mechanical Data

- Case:Molded Plastic,SOT-23
- Epoxy:UL 94V-0 rate flame retardant
- Terminals:Plated Leads Solderable perMIL-STD-750,Method-2026.
- Marking: R2s
- Mounting Position : Any.
- Equivalent Circuit:

Maximum Ratings Maximum Ratings (Rating at 25℃ ambient temperature unless otherwise specified.)

Rating	Symbol	Value	Unit
Collector – Emitter Voltage	V_{CEO}	**12**	V
Collector – Base Voltage	V_{CBO}	**20**	V
Emitter – Base Voltage	V_{EBO}	**2**	V
Collector Current	I_C	**50**	mA
Power Dissipation	P_{tot}	**300**	mW
Junction Temperature	T_{JMAX}	**150**	°C
Operating Junction Temperature Range	T_J	**-45 to +150**	°C
Storage Temperature Range	T_{STG}	**-65 to +150**	°C
Thermal Resistance, Junction to Case	$R_{\Theta JC}$	**450**	°C/W

Electrical Characteristics (Rating at 25℃ ambient temperature unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit
DC CHARACTERISTICS					
Collector – Base Cutoff Current, I_E= 0mA, V_{CB}=10V	I_{CBO}	–	–	**100**	nA
Emitter – Base Cutoff Current, I_C= 0mA, V_{EB}= 2V	I_{EBO}	–	–	**10.0**	μA
Collector – Emitter Breakdown Voltage, I_C= 1mA, I_B= 0mA	$V_{(BR)CEO}$	**12**	–	–	V
Collector – Emitter Saturation Voltage, I_C=50mA, I_B= 5mA	$V_{CE(sat)}$	–	**100**	**400**	mV
DC Current Gain, I_E=30mA, V_{CB}= 5V	h_{FE}	**40**	**90**	**150**	–
AC CHARACTERISTICS					
Transition Frequency, I_C=30mA, V_{CB}= 5V, f=300MHz	f_T	**4.6**	**6.0**	–	GHz
Collector-Base Capacitance, I_E= 0mA, V_{CB}=10V, f= 1MHz	C_{cb}	–	**0.45**	**0.9**	pF
Noise Figure, I_E= 5mA, V_{CE}= 8V, f=800MHz, Z_S=50Ω	N_F	–	**1.6**	–	dB
Power Gain, I_E=30mA, V_{CE}= 8V, f=800MHz, Z_S=50Ω, Z_L=Z_{Lopt}	G_{PS}	**12.5**	**14.0**	–	dB

Rating And Characteristic Curves

Figure 1. Total Power Dissipation vs. Ambient Temperature

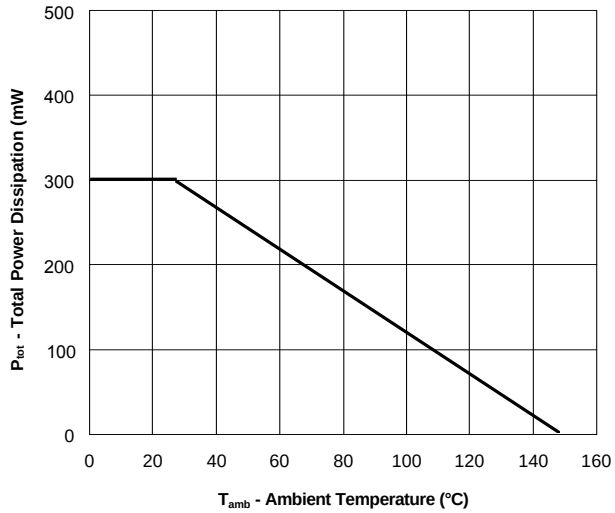


Figure 2. Collector – Base Capacitance vs. Collector – Base Voltage

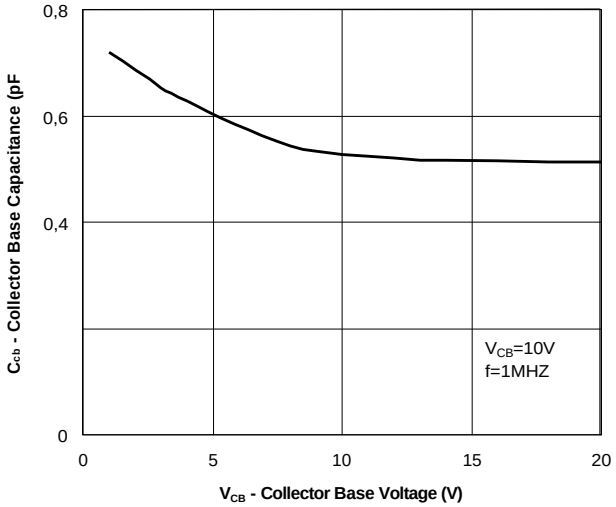


Figure 3. Transition Frequency vs. Emitter Current

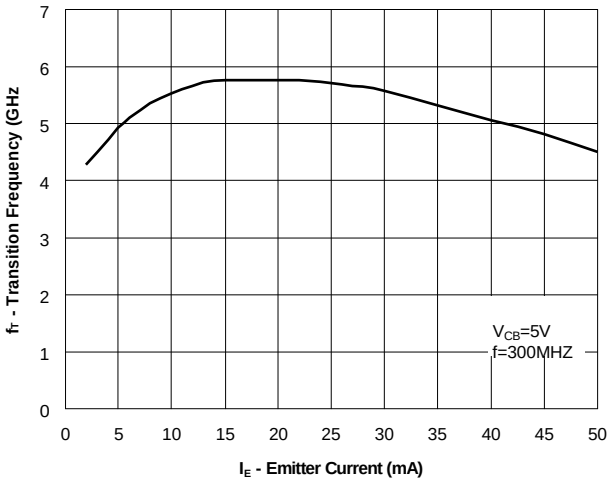


Figure 4. Noise Figure vs. Emitter Current

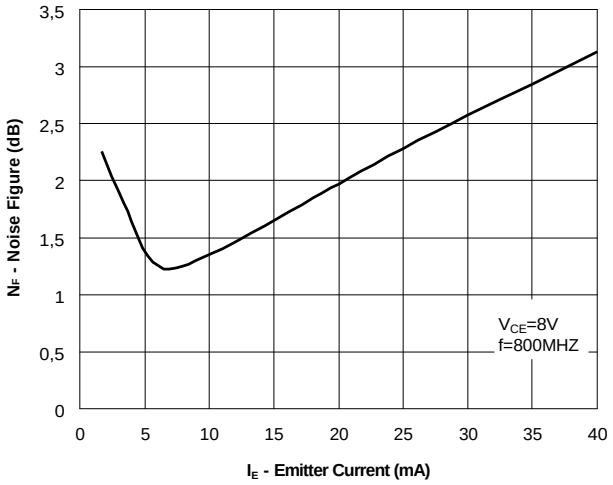


Figure 5. Power Gain vs. Emitter Current

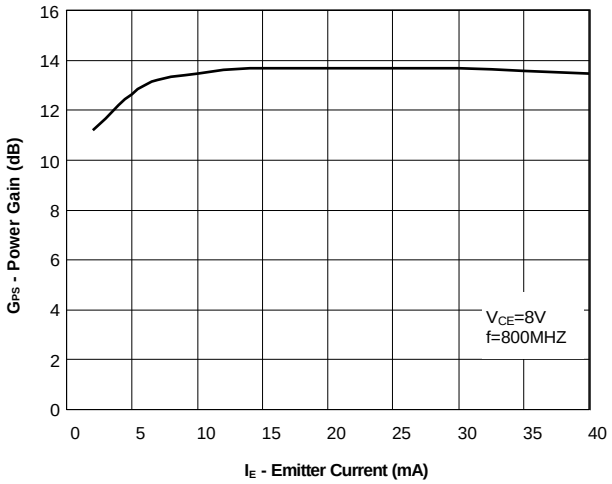
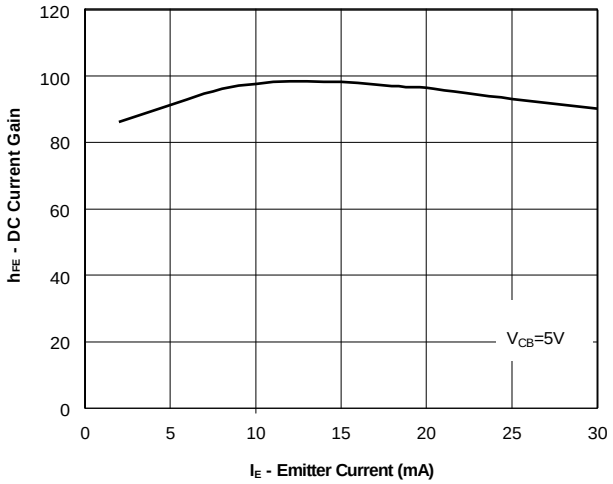


Figure 6. DC Current Gain vs. Emitter Current



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