

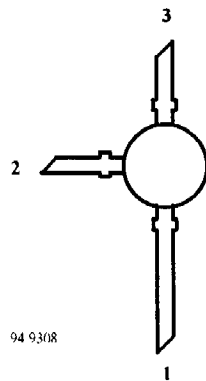
Silicon NPN Planar RF Transistor

Applications

RF-amplifier up to GHz range specially for wide band antenna amplifier.

Features

- High power gain
- Low noise figure
- High transition frequency



BFR90A Marking: BFR90A
 Plastic case (TO 50)
 1= Collector; 2= Emitter; 3= Base

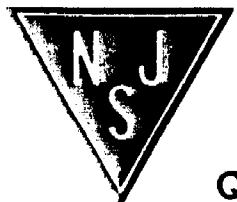
Absolute Maximum Ratings

Parameters	Symbol	Value	Unit
Collector-base voltage	V_{CBO}	20	V
Collector-emitter voltage	V_{CEO}	15	V
Emitter-base voltage	V_{EBO}	2	V
Collector current	I_C	30	mA
Total power dissipation $T_{amb} \leq 60^\circ\text{C}$	P_{tot}	300	mW
Junction temperature	T_j	150	$^\circ\text{C}$
Storage temperature range	T_{stg}	-65 to +150	$^\circ\text{C}$

Maximum Thermal Resistance

Parameters	Symbol	Value	Unit
Junction ambient on glass fibre printed board (40 x 25 x 1.5) mm ³ plated with 35 μm Cu	R_{thJA}	300	K/W

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BFR90A

Electrical DC Characteristics

$T_j = 25^\circ\text{C}$, unless otherwise specified

Parameters / Test Conditions	Symbol	Min.	Typ.	Max.	Unit
Collector-emitter cut-off current $V_{CE} = 20\text{ V}, V_{BE} = 0$	I_{CES}			100	μA
Collector-base cut-off current $V_{CB} = 15\text{ V}, I_E = 0$	I_{CBO}			100	nA
Emitter-base cut-off current $V_{EB} = 2\text{ V}, I_C = 0$	I_{EBO}			10	μA
Collector-emitter breakdown voltage $I_C = 1\text{ mA}, I_B = 0$	$V_{(BR)CEO}$	15			V
DC forward current transfer ratio $V_{CE} = 10\text{ V}, I_C = 14\text{ mA}$	h_{FE}	50	100	150	

Electrical AC Characteristics

$T_{amb} = 25^\circ\text{C}$

Parameters / Test Conditions	Symbol	Min.	Typ.	Max.	Unit
Transition frequency $V_{CE} = 10\text{ V}, I_C = 14\text{ mA}, f = 500\text{ MHz}$	f_T		6		GHz
Collector-emitter capacitance $V_{CE} = 10\text{ V}, f = 1\text{ MHz}$	C_{ce}		0.25		pF
Collector-base capacitance $V_{CB} = 10\text{ V}, f = 1\text{ MHz}$	C_{cb}		0.3		pF
Emitter-base capacitance $V_{EB} = 0.5\text{ V}, f = 1\text{ MHz}$	C_{eb}		0.9		pF
Noise figure $V_{CE} = 10\text{ V}, I_C = 2\text{ mA}, f = 800\text{ MHz}, Z_S = 50\ \Omega$	F		1.8		dB
Power gain $V_{CE} = 10\text{ V}, I_C = 14\text{ mA}, Z_L = Z_{Lopt}, f = 800\text{ MHz}$	G_{pe}		16		dB
Linear output voltage – two tone intermodulation test $V_{CE} = 10\text{ V}, I_C = 14\text{ mA}, d_{IM} = 60\text{ dB},$ $Z_S = Z_L = 50\ \Omega, f_1 = 806\text{ MHz}, f_2 = 810\text{ MHz}$	$V_1 = V_2$		120		mV
Third order intercept point $V_{CE} = 10\text{ V}, I_C = 14\text{ mA}, f = 800\text{ MHz}$	IP_3		24		dBm