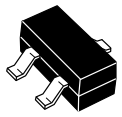
The RF Line

NPN Silicon High-Frequency Transistors

. . . designed primarily for use in high-gain, low-noise, small-signal UHF and microwave amplifiers constructed with thick and thin-film circuits using surface mount components.

BFR93ALT1

RF TRANSISTORS
NPN SILICON



CASE 318-07, STYLE 6
SOT-23
LOW PROFILE

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	12	Vdc
Collector-Base Voltage	V_{CBO}	15	Vdc
Emitter-Base Voltage	V_{EBO}	2.0	Vdc
Collector Current — Continuous	I_C	35	mAdc
Maximum Junction Temperature	T_{Jmax}	150	°C
Power Dissipation, T_{case} = 75°C Derate linearly above T_{case} = 75°C @	$P_{D(max)}$	0.306 4.08	W mW/°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Storage Temperature	T_{stg}	–55 to +150	°C
Thermal Resistance Junction to Case	$R_{\theta JC}$	245	°C/W

DEVICE MARKING

BFR93ALT1 = R2

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted.)

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector-Emitter Breakdown Voltage (1) (I_C = 10 mA)	$V_{(BR)CEO}$	12	—	Vdc
Collector-Base Breakdown Voltage (I_C = 10 μA)	$V_{(BR)CBO}$	15	—	Vdc
Emitter-Base Breakdown Voltage (I_C = 100 μA)	$V_{(BR)EBO}$	2.0	—	Vdc
Collector Cutoff Current (V_{CE} = 10 V)	I_{CEO}	—	50	nA
Collector Cutoff Current (V_{CB} = 10 V)	I_{CBO}	—	50	nA
ON CHARACTERISTICS				
DC Current Gain (1) (I_C = 30 mA, V_{CE} = 5.0 V)	h_{FE}	40	—	—
Collector-Emitter Saturation Voltage (1) (I_C = 35 mA, I_B = 7.0 mA)	$V_{CE(sat)}$	—	0.5	Vdc
Base-Emitter Saturation Voltage (1) (I_C = 35 mA, I_B = 7.0 mA)	$V_{BE(sat)}$	—	1.2	Vdc

NOTE:
1. Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%.

(continued)

ELECTRICAL CHARACTERISTICS — continued (T_A = 25°C unless otherwise noted.)

Characteristic	Symbol	Min	Max	Unit
SMALL-SIGNAL CHARACTERISTICS				
Current-Gain — Bandwidth Product (I_C = 30 mA, V_{CE} = 5.0 V, f = 500 MHz)	f_T	3.0	—	GHz
Noise Figure (V_{CE} = 5.0 V, I_C = 2.0 mA, R_S = 50 Ω, f = 30 MHz)	NF	—	3.0	dB

PACKAGE DIMENSIONS

F SUFFIX
SOG
CASE 751J–01

Literature Distribution Centers:
USA: Motorola Literature Distribution; P.O. Box 20912; Phoenix, Arizona 85036.
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