

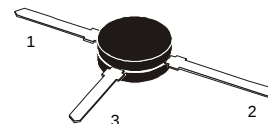
The RF Line NPN Silicon High-Frequency Transistor

DESCRIPTION

The BFR91 is an NPN silicon epitaxial transistor designed for low noise amplifier at VHF, UHF and CATV band.

It has dynamic range and good current characteristic.

This small-signal plastic transistor offers superior quality and performance at low cost.



1 – Base
2 – Collector
3 – Emitter

FEATURES

- High Gain-Bandwidth Products
 $f_T=5.0$ GHz (Typ) @ 30 mA
- Low Noise Figure
 $N_F=1.9$ dB (Typ) @ 500 MHz
- High Gain
 $G_{PS}=18.0$ dB (Typ) @ 500 MHz

	SOT37
JEDEC	TO-50
EIAJ	–
GOST	KT-29
Weight:	0.2g

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$)

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	$^\circ\text{C}$
Operating Junction Temperature Range	T_J	-45 to +70	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-65 to +150	$^\circ\text{C}$

THERMAL CHARACTERISTIC

Thermal Resistance, Junction to Case	$R_{\theta JC}$	400	$^\circ\text{C/W}$
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ORDERING INFORMATION

Device	Marking	Package	Quantity	Packing Style
BFR91	BFR91	SOT-37	1 Kpcs / plastic bags	In bulk

BFR91

ELECTRICAL CHARACTERISTICS ($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
DC CHARACTERISTICS					
Collector Cutoff Current, $I_E = 0\text{mA}$, $V_{CB} = 20\text{V}$	I_{CBO}	—	—	100	nA
Emitter Cutoff Current, $I_C = 0\text{mA}$, $V_{EB} = 2\text{V}$	I_{EBO}	—	—	10	μA
Collector – Emitter Breakdown Voltage, $I_C = 1\text{mA}$, $I_B = 0\text{mA}$	$V_{(BR)CEO}$	12	—	—	V
DC Current Gain, $I_E = 30\text{mA}$, $V_{CB} = 5\text{V}$	h_{FE}	25	50	150	—

AC CHARACTERISTICS

Transition Frequency, $I_C = 30\text{mA}$, $V_{CB} = 5\text{V}$, $f = 300\text{MHz}$	f_T	—	5.0	—	GHz
Collector-Base Capacitance, $I_E = 0\text{mA}$, $V_{CB} = 10\text{V}$, $f = 1\text{MHz}$	C_{cb}	—	0.5	0.9	pF
Noise Figure, $I_E = 2\text{mA}$, $V_{CE} = 5\text{V}$, $f = 500\text{MHz}$, $Z_S = 50\Omega$	N_F	—	1.9	—	dB
Power Gain, $I_E = 30\text{mA}$, $V_{CE} = 5\text{V}$, $f = 500\text{MHz}$, $Z_L = Z_{Lopt}$ $I_E = 30\text{mA}$, $V_{CE} = 5\text{V}$, $f = 800\text{MHz}$, $Z_L = Z_{Lopt}$	G_{PS}	—	18.0 13.0	—	dB

TIPICAL CHARACTERISTICS ($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)

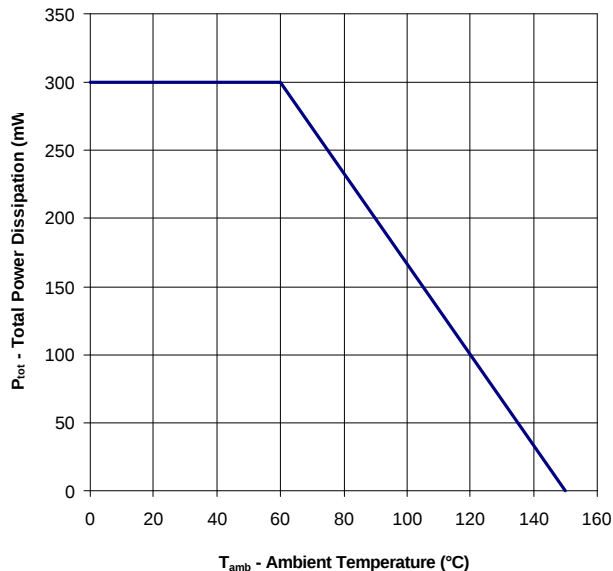


Figure 1. Total Power Dissipation vs. Ambient Temperature

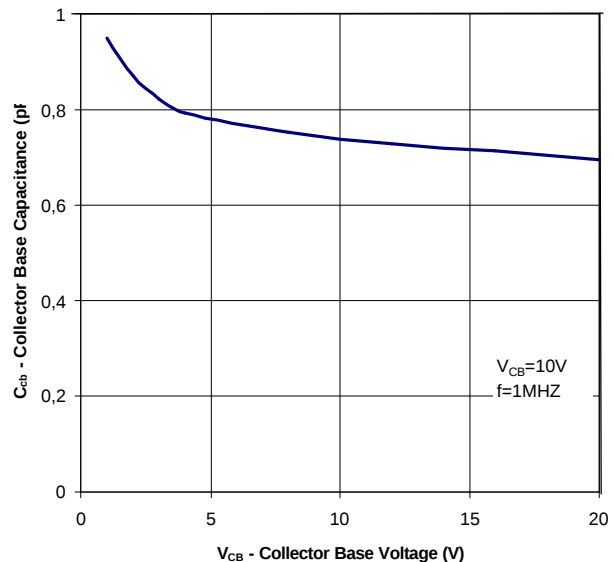


Figure 2. Collector – Base Capacitance vs. Collector – Base Voltage

TIPICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

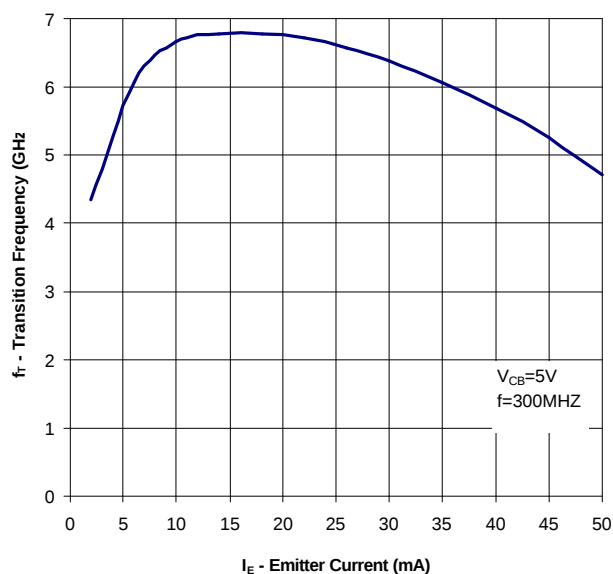


Figure 3. Transition Frequency vs. Emitter Current

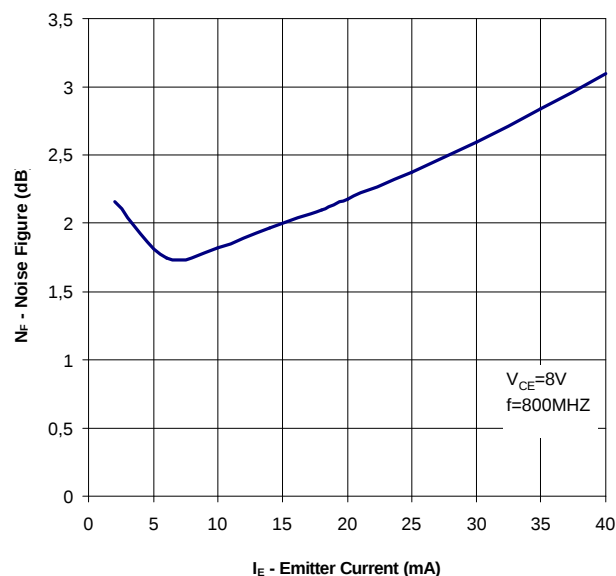


Figure 4. Noise Figure vs. Emitter Current

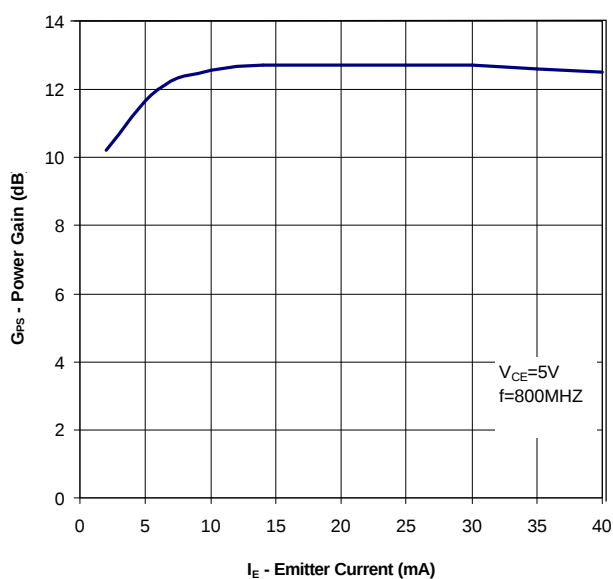


Figure 5. Power Gain vs. Emitter Current

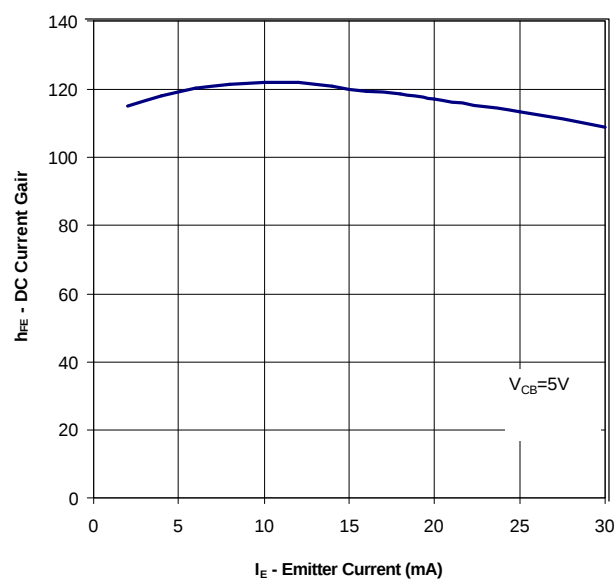
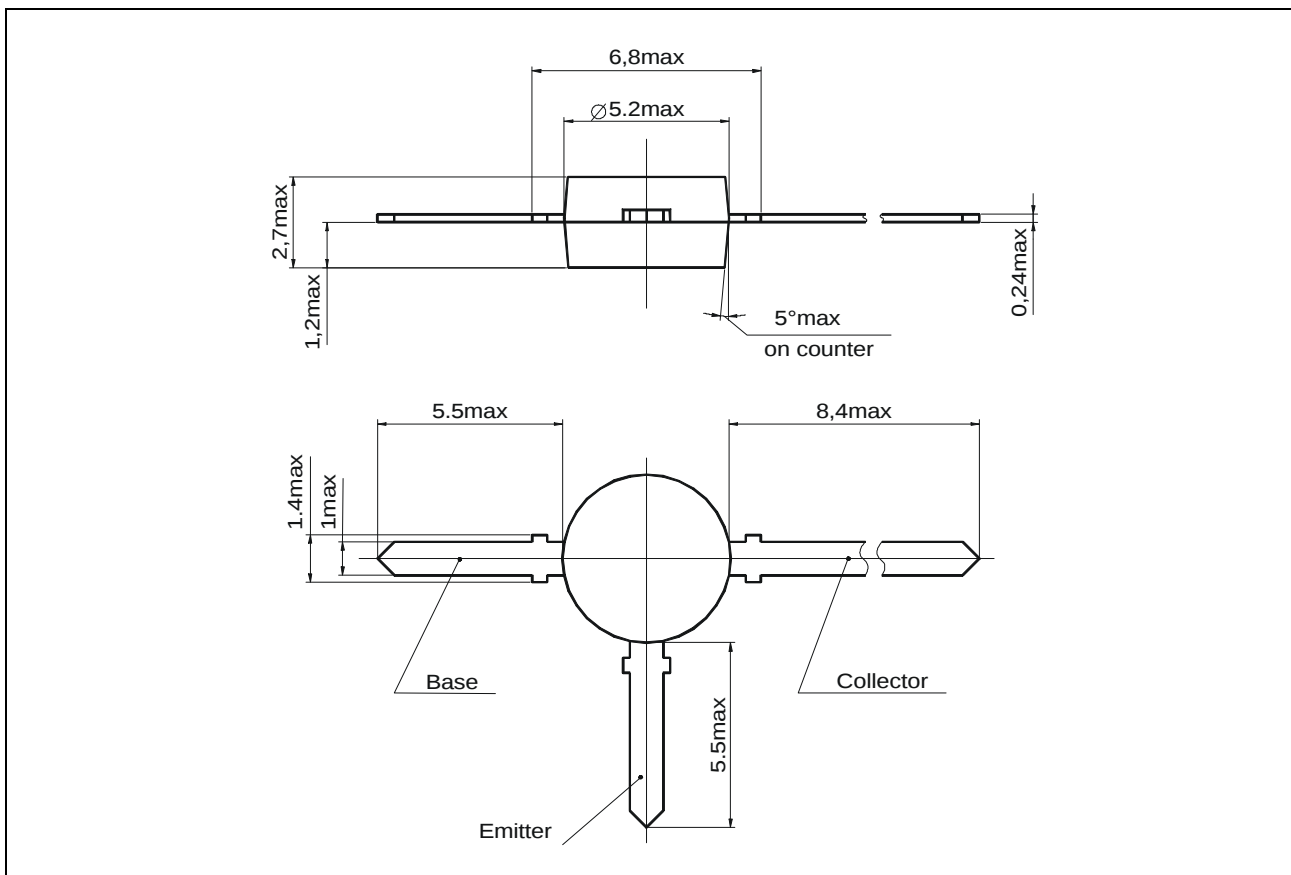


Figure 6. DC Current Gain vs. Emitter Current

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PACKAGE DIMENSIONS in mm



PLASTIC CASE KT-29