BFR380F — Microwave low noise silicon bipolar RF transistor

Description

- The transistor is suitable for operation with a collector current of 30 to 40mA and a voltage range of 3 to 5V; It can amplify signals for oscillator circuits operating at frequencies up to 3.8 GHz; At 1.8 GHz, the noise is approximately 1.1 dB;
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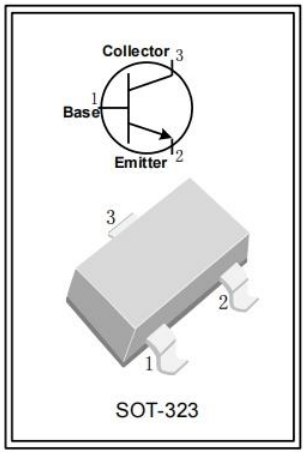
- Low leakage current, small junction capacitance, wide dynamic range, and ideal current linearity; Utilizing lead-free (Pb-free) surface-mount SOT323 packaging compliant with RoHS regulations;
- Mainly used in television tuners, satellite TV receivers, CATV video amplifiers, analog-digital cordless phones, radar motion sensors, wireless remote data transmission, wireless communications, RFID passive RFID systems, optical fiber amplifiers, etc.
- Ideal for signal amplification in VHF/UHF amplifiers, oscillators, mixers, detectors, and high-frequency microwave signal transmission and reception circuits;
- Package type: SOT323, Marking: FCs.



Maximum Ratings（Tamb=25℃)

Parameter	Symbol	Value	Unit
collector-base breakdown voltage	BV_{CBO}	15	V
collector-emitter breakdown voltage	BV_{CEO}	6	V
emitter-base breakdown voltage	BV_{EBO}	2	V
collector current	I_C	80	mA
power dissipation	P_T	380	mW
maximum junction temperature	T_J	150	℃
storage temperature	T_{STG}	-65～+150	℃

Electrical characteristics（T_{amb}=25℃）:

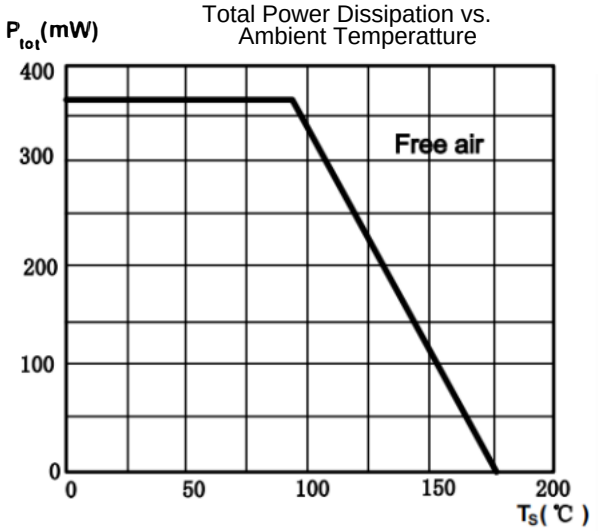
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
collector emitter breakdown voltage	BV_{CEO}	I_C=1mA,I_B=0	6	9	-	V
collector emitter cutoff current	I_{CES}	V_{CE}=4V,V_{BE}=0	-	1	30	nA
collector base cut-off current	I_{CBO}	V_{CB}=6V,I_E=0	-	-	100	nA
emitter base cutoff current	I_{EBO}	V_{EB}=6V,I_C=0	-	-	-	μA
DC current amplification factor	h_{FE}	V_{CE}=3V,I_C=40mA	80	100	200	-
characteristic frequency	f_T	V_{CE}=3V,I_C=15mA,f=1GHz	11	14	-	GHz
feedback capacitor	Cre	I_C=i_C=0,V_{CB}=5V,f=1MHz	-	0.2	-	pF
collector capacitance	Cc	I_E=i_e=0,V_{CB}=5V,f=1MHz	-	0.47	0.7	pF
emitter capacitance	Ce	I_C=i_C=0,V_{EB}=0.5V,f=1MHz	-	1	-	pF
insertion power gain	$\|S_{21}\|^2$	V_{CE}=3V,I_C=40mA,f=1.8GHz	-	11	-	dB
		V_{CE}=3V,I_C=40mA,f=3.0GHz	-	6.5	-	dB
noise figure	NF	V_{CE}=3V,I_C=8mA,f=1.8GHz	-	1.1	-	dB
maximum unilateral power gain	G_{UM}	V_{CE}=3V,I_C=40mA,f=1.8GHz	-	13.5	-	dB
		V_{CE}=3V,I_C=40mA,f=3.0GHz	-	9	-	dB
output third-order intercept point gain	IP3	V_{CE}=3V,I_C=40mA,Z_S=Z_L=50Ω, f=1.8GHz	-	29	-	dBm

$$G_{UM} = 10\log\frac{|S_{21}|^2}{(1-S_{11})^2(1-S_{22})^2}\,dB$$

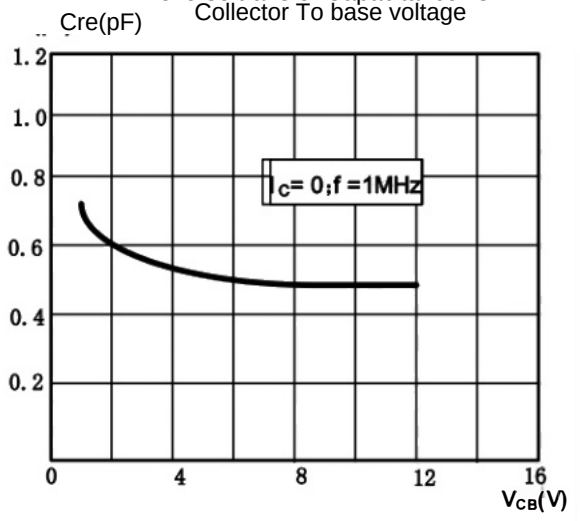
Typical characteristic curve

T_A=25℃,unless otherwise specified

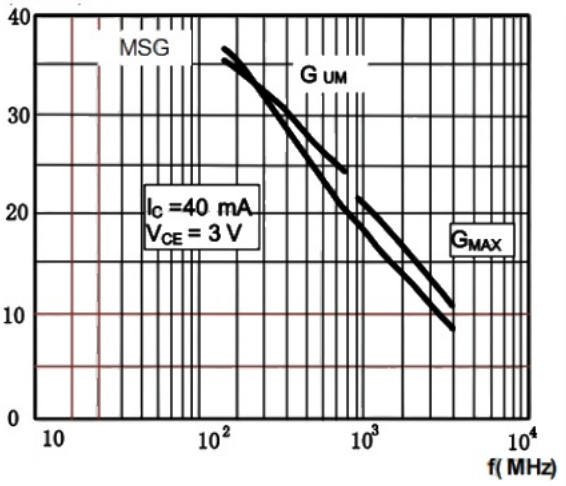
Total Power Dissipation vs. Ambient Temperatture



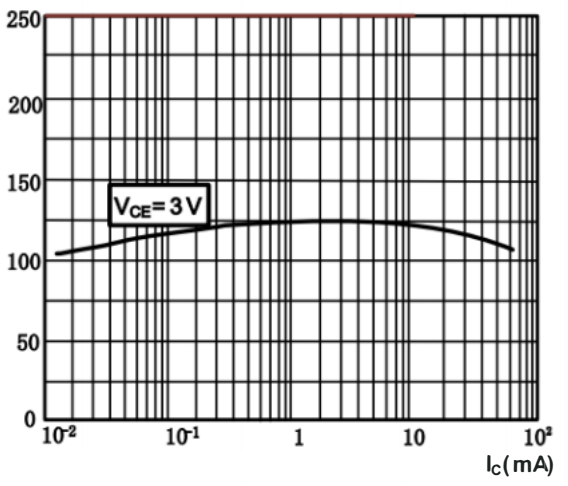
Reverse transfer Capacitance vs Collector To base voltage



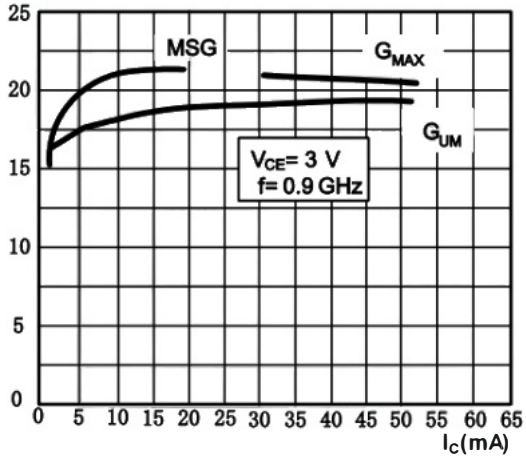
Gain vs.Function of Frequency gain(GHz)



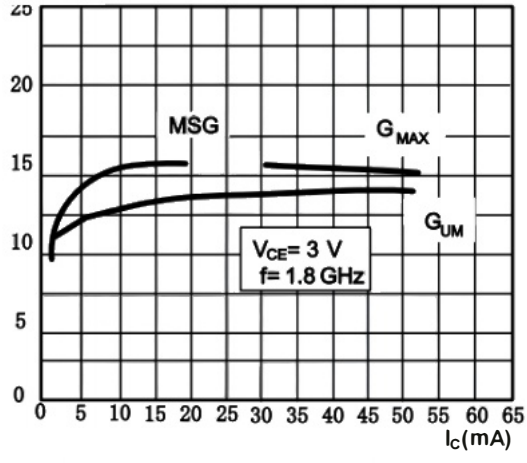
DC Current vs.Collector Current



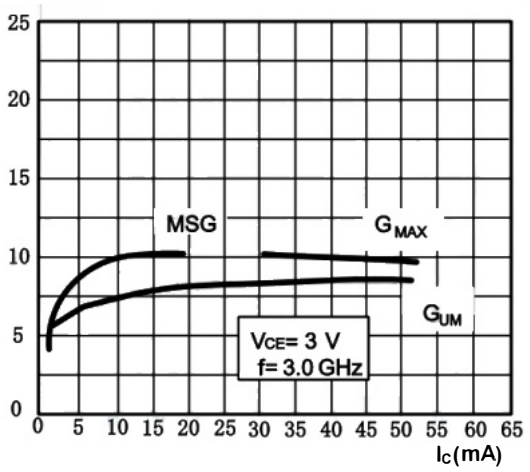
Gain vs. Function of Collector Current gain(GHz)



Gain vs. Function of Collector Current gain(GHz)



Gain vs. Function of Collector Current gain(GHz)



Noise Figure vs. Collector Current