

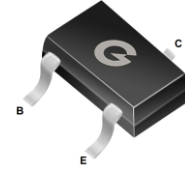
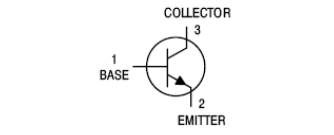
Features

- Low leakage current
- Low capacitance characteristics
- Large dynamic range

HF

Mechanical Data

- Case: SOT-323
- Molding compound: UL flammability classification rating 94V-0
- Terminals: Tin-plated; solderability per MIL-STD-202, Method 208



SOT-323

Ordering Information

Part Number	Package	Shipping Quantity	Marking Code
BFR380F	SOT-323	3000 pcs / Tape & Reel	FCs

Maximum Ratings (@ T_A = 25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Collector-Base Breakdown Voltage	V _{CBO}	12	V
Collector-Emitter Breakdown Voltage	V _{CEO}	5	V
Emitter-Base Breakdown Voltage	V _{EBO}	2.5	V
Collector Current (continuous)	I _C	80	mA

Thermal Characteristics

Parameter	Symbol	Value	Unit
Power Dissipation	P _D	380	mW
Junction Temperature Range	T _J	-55 ~ +150	°C
Storage Temperature Range	T _{STG}	-65 ~ +150	°C

Electrical Characteristics (@ $T_A = 25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = 100\mu\text{A}, I_E = 0$	12	-	-	V
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 1\text{mA}, I_B = 0$	5	-	-	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = 10\mu\text{A}, I_C = 0$	2.5	-	-	V
Collector Cut-off Current	I_{CBO}	$V_{CB} = 12\text{V}, I_E = 0$	-	-	100	nA
Collector Cut-off Current	I_{CEO}	$V_{CE} = 5\text{V}, I_B = 0$	-	-	100	nA
Emitter Cut-off Current	I_{EBO}	$V_{EB} = 2.5\text{V}, I_C = 0$	-	-	1	μA
DC Current Gain	h_{FE}	$V_{CE} = 3\text{V}, I_C = 40\text{mA}$	80	100	200	-
Transition Frequency	f_T	$I_C = 15\text{mA}, V_{CE} = 3\text{V}, f = 1\text{GHz}$	11	-	-	GHz
Insertion Power Gain	$ S_{21e} ^2$	$V_{CE} = 3\text{V}, I_C = 40\text{mA}$ $f = 1.8\text{GHz}$	-	11	-	dB
		$V_{CE} = 3\text{V}, I_C = 40\text{mA}$ $f = 3\text{GHz}$	-	6.5	-	dB
Feed-Back Capacitance	C_{re}	$I_C = I_C = 0, V_{CB} = 5\text{V}, f = 1\text{MHz}$	-	0.2	-	pF
Collector Capacitance	C_c	$I_E = I_E = 0, V_{CB} = 5\text{V}, f = 1\text{MHz}$	-	0.47	0.7	pF
Emitter Capacitance	C_e	$I_C = I_C = 0, V_{EB} = 0.5\text{V}, f = 1\text{MHz}$	-	1	-	pF
Noise Figure	N_F	$V_{CE} = 3\text{V}, I_C = 8\text{mA}$ $f = 1.8\text{GHz}$	-	1.10	-	dB
Maximum Unilateral Power Gain	G_{UM}	$V_{CE} = 3\text{V}, I_C = 40\text{mA}, f = 1.8\text{GHz}$	-	13.5	-	dB
		$V_{CE} = 3\text{V}, I_C = 40\text{mA}, f = 3.0\text{GHz}$	-	9	-	dB
	IP_3	$V_{CE} = 3\text{V}, I_C = 40\text{mA}$ $Z_S = Z_L = 50\Omega, f = 1.8\text{GHz}$		29		dBm

Ratings and Characteristics Curves (@ $T_A = 25^\circ\text{C}$ unless otherwise specified)

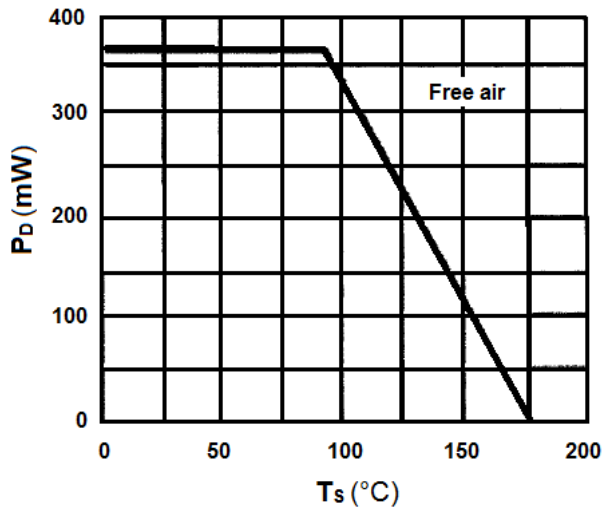


Fig. 1 Total Power Dissipation vs.
Ambient Temperature

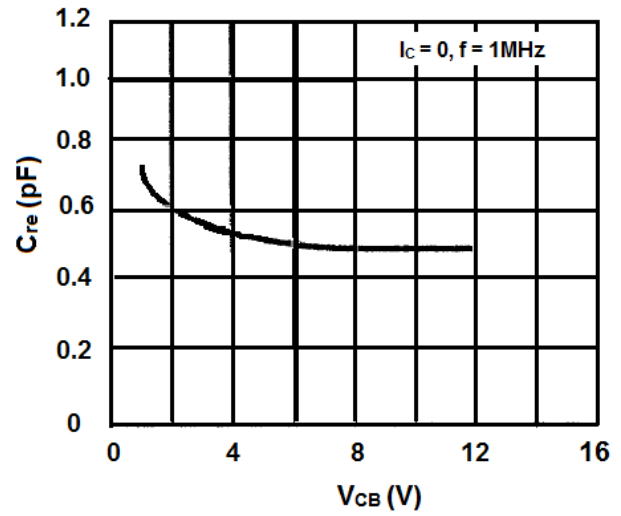


Fig. 2 Reverse Transfer Capacitance vs.
Collector to Base Voltage

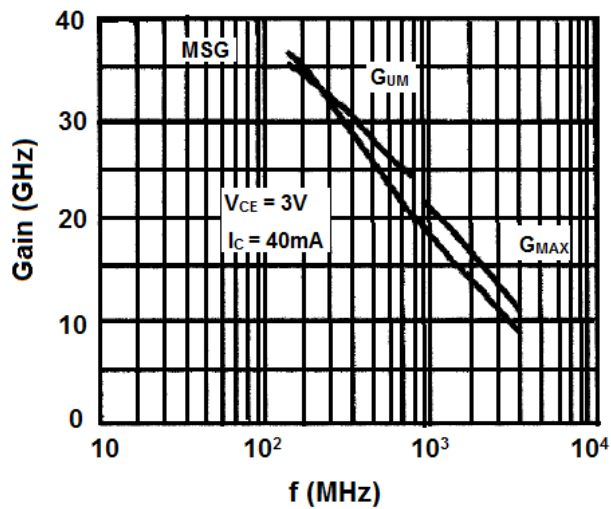


Fig. 3 Gain vs. Function of Frequency

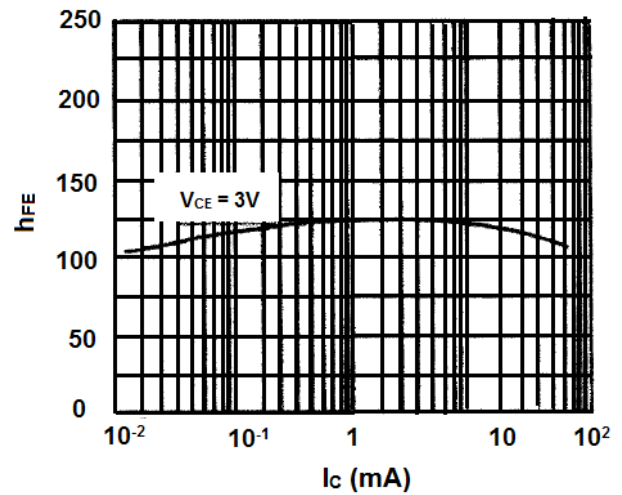


Fig. 4 DC Current vs. Collector Current

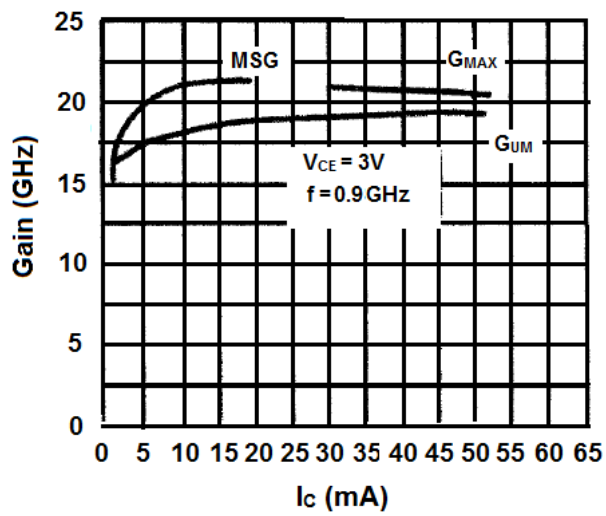


Fig. 5 Gain vs. Function of Collector Current

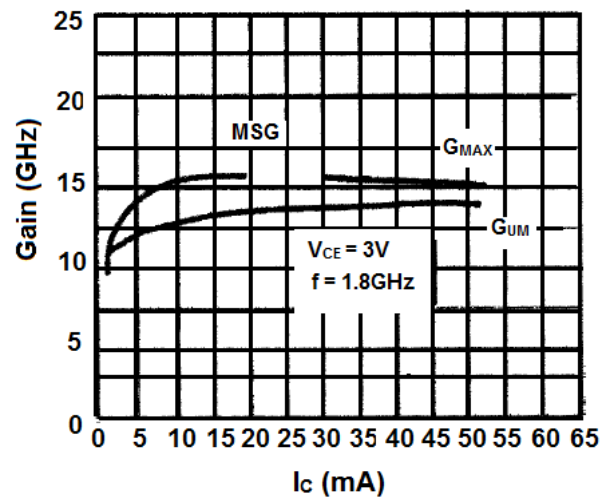


Fig. 6 Gain vs. Function of Collector Current

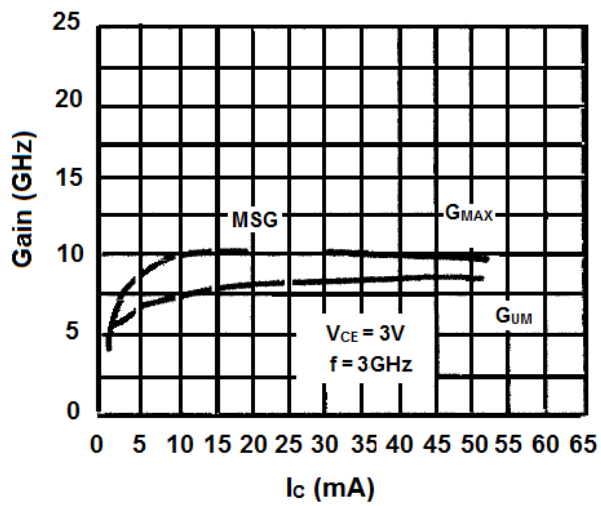


Fig. 7 Gain vs. Function of Collector Current

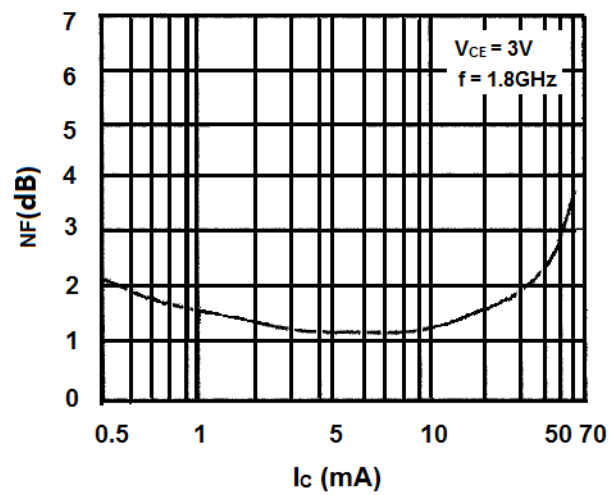
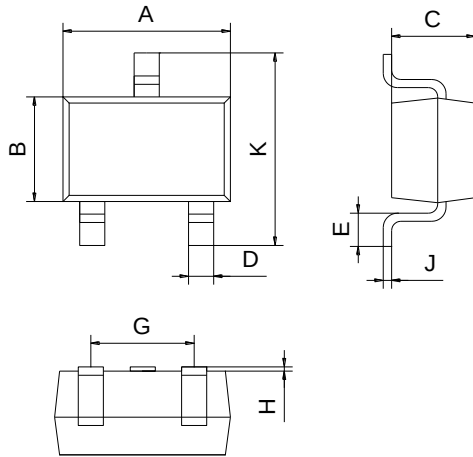


Fig. 8 Noise Figure vs. Collector Current

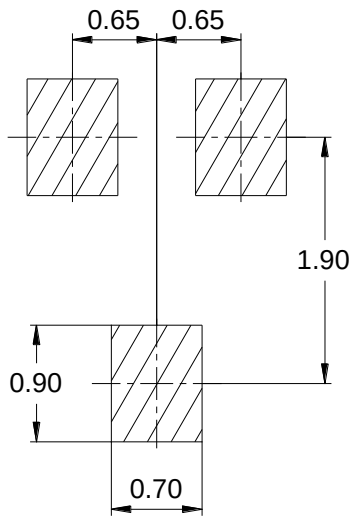
Package Outline Dimensions (Unit: mm)



SOT-323		
Dimension	Min.	Max.
A	2.00	2.20
B	1.15	1.35
C	0.90	1.10
D	0.15	0.35
E	0.25	0.40
G	1.20	1.40
H	0.02	0.10
J	0.05	0.15
K	2.20	2.40

Mounting Pad Layout (Unit: mm)

SOT-323



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