

MSG33002

SiGe HBT type

For low-noise RF amplifier

■ Features

- Compatible between high breakdown voltage and high cutoff frequency
- Low-noise, high-gain amplification
- Suitable for high-density mounting and downsizing of the equipment for Ultraminiature package
0.8 mm × 1.2 mm (height 0.52 mm)

■ Absolute Maximum Ratings $T_a = 25^\circ\text{C}$

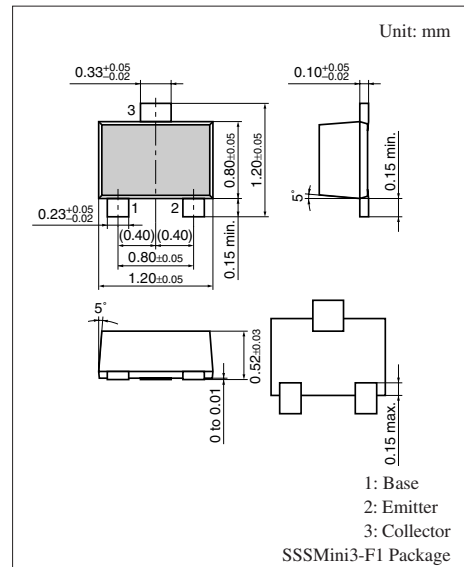
Parameter	Symbol	Rating	Unit
Collector-base voltage (Emitter open)	V_{CBO}	9	V
Collector-emitter voltage (Base open)	V_{CEO}	6	V
Emitter-base voltage (Collector open)	V_{EBO}	1	V
Collector current	I_{C}	60	mA
Collector power dissipation*	P_{C}	100	mW
Junction temperature	T_{j}	125	$^\circ\text{C}$
Storage temperature	T_{stg}	-55 to +125	$^\circ\text{C}$

Note) *: Copper plate at the collector is 5.0 cm² on substrate at 10 mm × 12 mm × 0.8 mm.

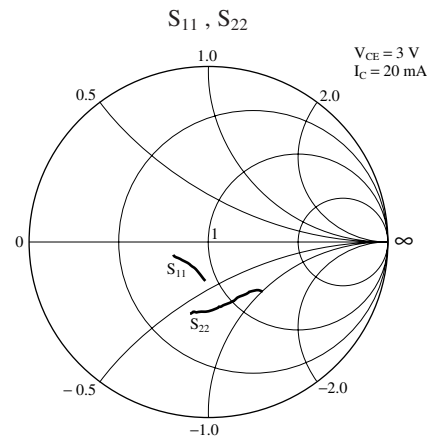
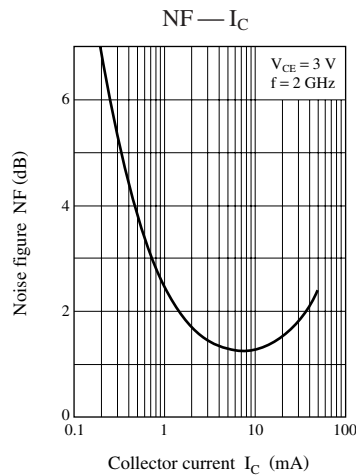
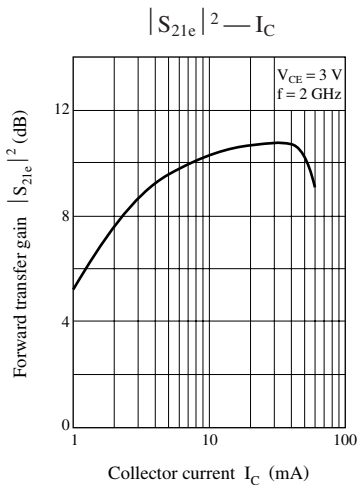
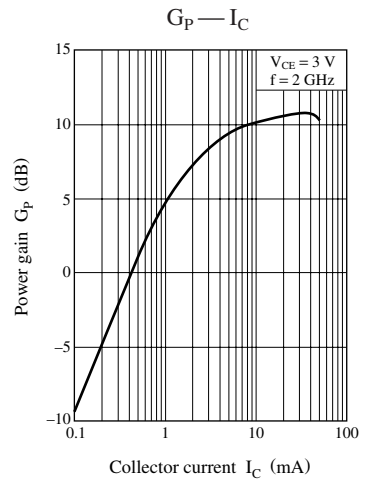
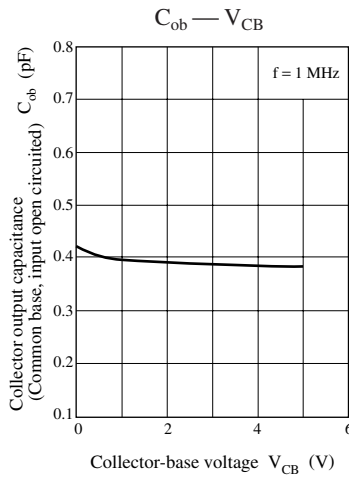
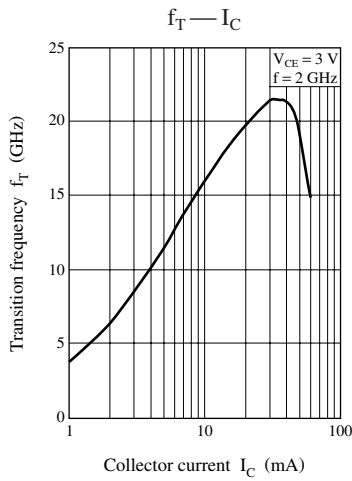
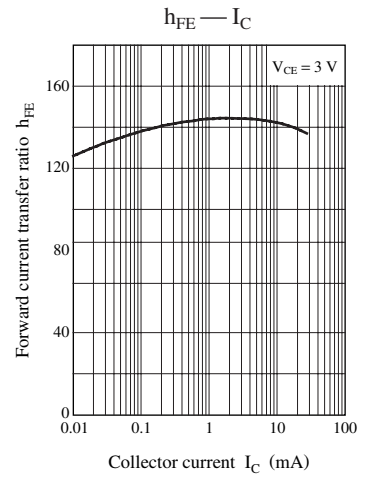
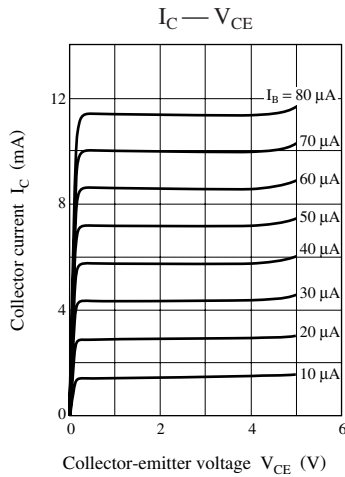
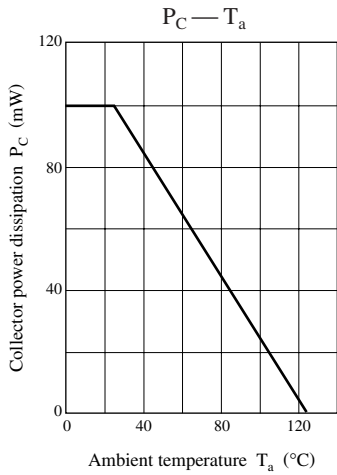
■ Electrical Characteristics $T_a = 25^\circ\text{C} \pm 3^\circ\text{C}$

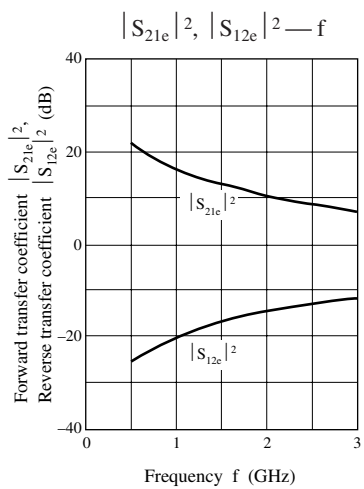
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector-base cutoff current (Emitter open)	I_{CBO}	$V_{\text{CB}} = 9 \text{ V}, I_{\text{E}} = 0$			1	μA
Collector-emitter cutoff current (Base open)	I_{CEO}	$V_{\text{CE}} = 6 \text{ V}, I_{\text{B}} = 0$			1	μA
Emitter-base cutoff current (Collector open)	I_{EBO}	$V_{\text{EB}} = 1 \text{ V}, I_{\text{C}} = 0$			1	μA
Forward current transfer ratio	h_{FE}	$V_{\text{CE}} = 3 \text{ V}, I_{\text{C}} = 6 \text{ mA}$	100		220	—
Transition frequency	f_{T}	$V_{\text{CE}} = 3 \text{ V}, I_{\text{C}} = 20 \text{ mA}, f = 2 \text{ GHz}$		19		GHz
Forward transfer gain	$ S_{21e} ^2$	$V_{\text{CE}} = 3 \text{ V}, I_{\text{C}} = 20 \text{ mA}, f = 2 \text{ GHz}$	7.5	10.5		dB
Noise figure	NF	$V_{\text{CE}} = 3 \text{ V}, I_{\text{C}} = 6 \text{ mA}, f = 2 \text{ GHz}$		1.4	2.0	dB
Collector output capacitance (Common base, input open circuited)	C_{ob}	$V_{\text{CB}} = 3 \text{ V}, I_{\text{E}} = 0, f = 1 \text{ MHz}$		0.4	0.7	pF

Note) Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.



Marking Symbol: 5T





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