

# MSG33001

## 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 $T_a = 25^\circ\text{C}$

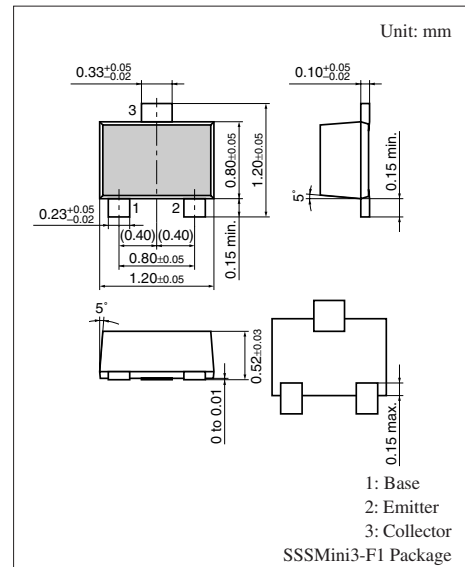
Parameter	Symbol	Rating	Unit
Collector-base voltage (Emitter open)	$V_{CBO}$	9	V
Collector-emitter voltage (Base open)	$V_{CEO}$	6	V
Emitter-base voltage (Collector open)	$V_{EBO}$	1	V
Collector current	$I_C$	30	mA
Collector power dissipation *	$P_C$	100	mW
Junction temperature	$T_j$	125	$^\circ\text{C}$
Storage temperature	$T_{stg}$	-55 to +125	$^\circ\text{C}$

Note) \*: Copper plate at the collector is 5.0 mm<sup>2</sup> on substrate at 10 mm × 12 mm × 0.8 mm.

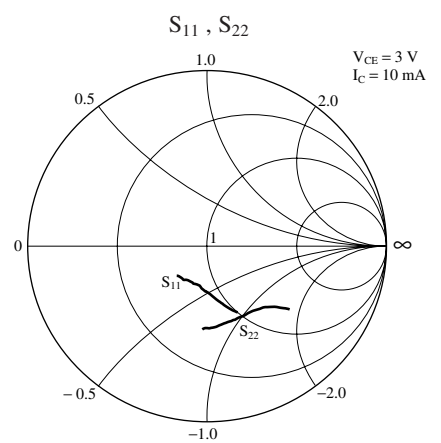
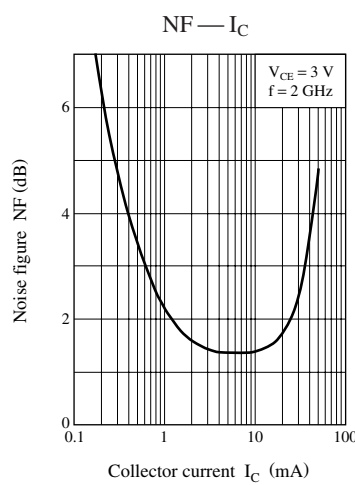
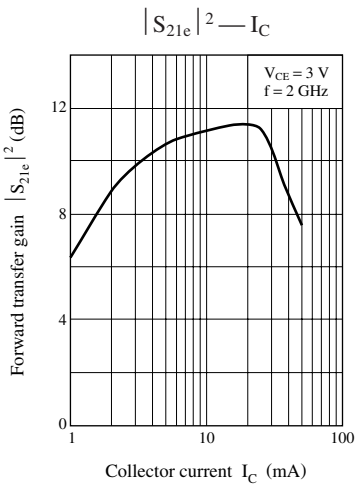
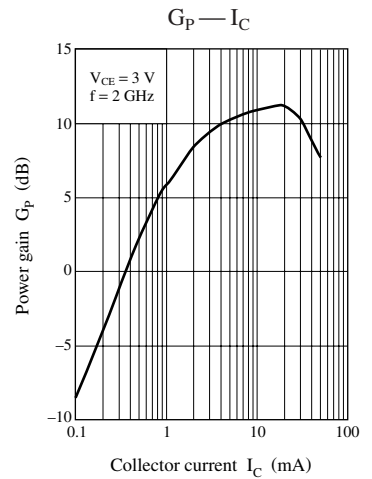
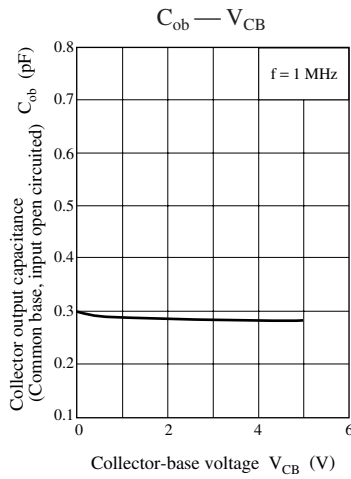
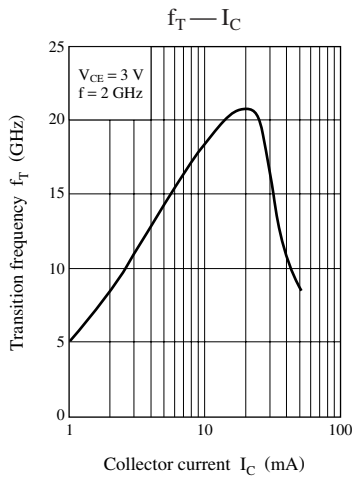
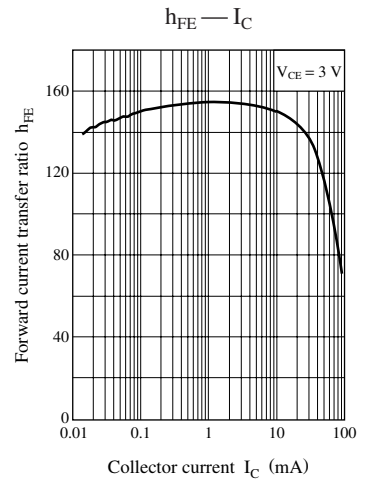
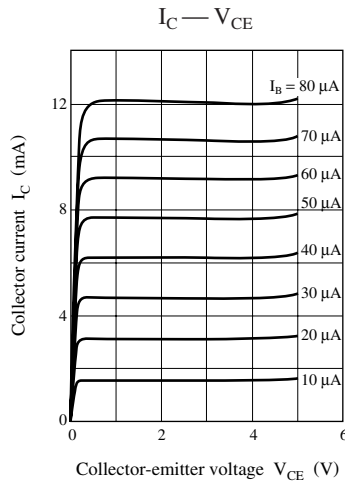
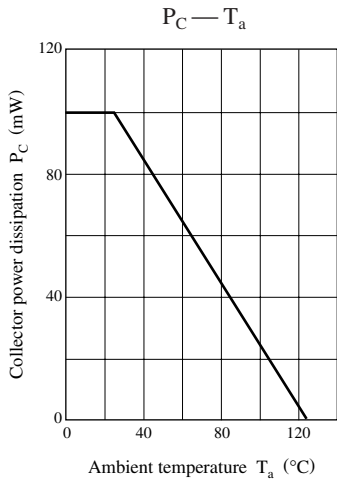
### ■ Electrical Characteristics $T_a = 25^\circ\text{C} \pm 3^\circ\text{C}$

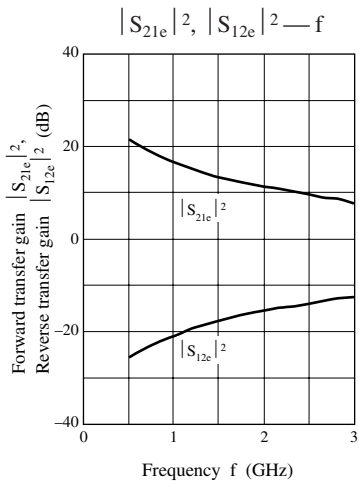
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector-base cutoff current (Emitter open)	$I_{CBO}$	$V_{CB} = 9\text{ V}, I_E = 0$			1	nA
Collector-emitter cutoff current (Base open)	$I_{CEO}$	$V_{CE} = 6\text{ V}, I_B = 0$			1	$\mu\text{A}$
Emitter-base cutoff current (Collector open)	$I_{EBO}$	$V_{EB} = 1\text{ V}, I_C = 0$			1	$\mu\text{A}$
Forward current transfer ratio	$h_{FE}$	$V_{CE} = 3\text{ V}, I_C = 3\text{ mA}$	100		220	—
Transition frequency	$f_T$	$V_{CE} = 3\text{ V}, I_C = 10\text{ mA}, f = 2\text{ GHz}$		19		GHz
Forward transfer gain	$ S_{21e} ^2$	$V_{CE} = 3\text{ V}, I_C = 10\text{ mA}, f = 2\text{ GHz}$	9.0	11.0		dB
Noise figure	NF	$V_{CE} = 3\text{ V}, I_C = 3\text{ mA}, f = 2\text{ GHz}$		1.4	2.0	dB
Collector output capacitance (Common base, input open circuited)	$C_{ob}$	$V_{CB} = 3\text{ V}, I_E = 0, f = 1\text{ MHz}$		0.3	0.6	pF

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



Marking Symbol: 5S





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