# MSG33004

### SiGe HBT type

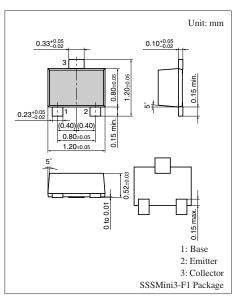
For low-noise RF amplifier

#### Features

- Compatible between high breakdown voltage and high cut-off frequency
- Low noise, high-gain amplification
- Optimal size reduction and high level integration for ultra-small packages

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

Parameter	Symbol	Rating	Unit	
Collector-base voltage (Emitter open)	V <sub>CBO</sub>	9	V	
Collector-emitter voltage (Base open)	V <sub>CEO</sub>	6	V	
Emitter-base voltage (Collector open)	V <sub>EBO</sub>	1	V	
Collector current	I <sub>C</sub>	100	mA	
Collector power dissipation *	P <sub>C</sub>	100	mW	
Junction temperature	Tj	125	°C	
Storage temperature	T <sub>stg</sub>	-55 to +125	°C	



Marking Symbol: 5Y

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

Electrical Characteristics	$T_a = 25^{\circ}C \pm 3^{\circ}C$
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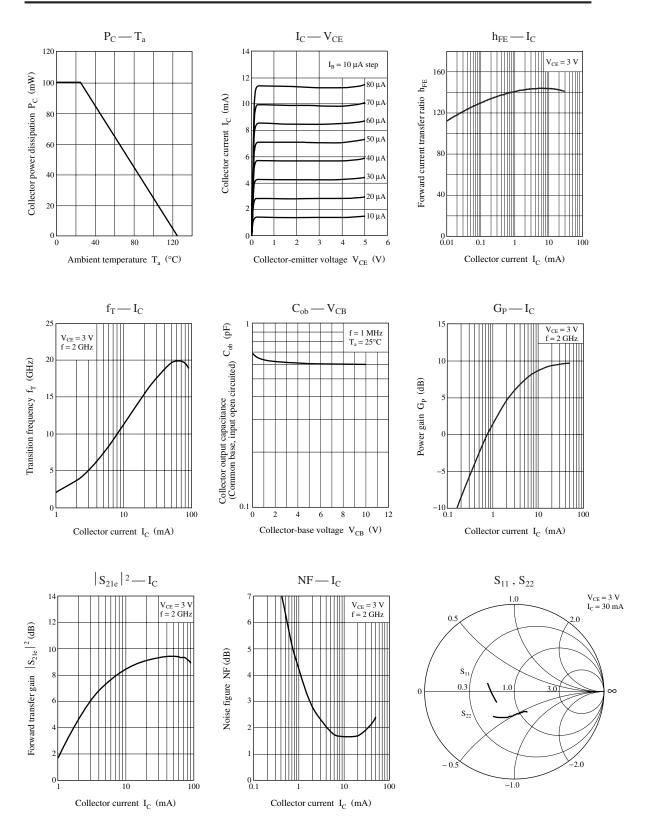
Parameter	Symbol	Conditions	Min	Тур	Max	Unit
Collector-base cutoff current (Emitter open)	I <sub>CBO</sub>	$V_{CB} = 9 V, I_E = 0$			1	μΑ
Collector-emitter cutoff current (Base open)	I <sub>CEO</sub>	$V_{CE} = 6 V, I_B = 0$			1	μΑ
Emitter-base cutoff current (Collector open)	I <sub>EBO</sub>	$V_{EB} = 1 V, I_C = 0$			1	μΑ
Forward current transfer ratio	h <sub>FE</sub>	$V_{CE} = 3 V, I_C = 15 mA$	100		220	
Transition frequency *	f <sub>T</sub>	$V_{CE} = 3 \text{ V}, I_{C} = 30 \text{ mA}, f = 2 \text{ GHz}$		17		GHz
Forward transfer gain *	S <sub>21e</sub>   <sup>2</sup>	$V_{CE} = 3 \text{ V}, I_{C} = 30 \text{ mA}, f = 2 \text{ GHz}$	6.0	9.0		dB
Noise figure *	NF	$V_{CE} = 3 \text{ V}, I_{C} = 15 \text{ mA}, f = 2 \text{ GHz}$		1.4	2.0	dB
Collector output capacitance	C <sub>ob</sub>	$V_{CB} = 3 V, I_E = 0, f = 1 MHz$		0.6	0.9	pF
(Common base, input open circuited) *						

Note) 1. Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

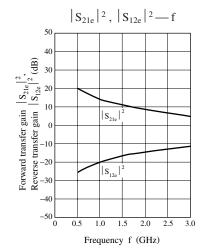
2. Observe precautions for handling. Electrostatic sensitive devices.

3. \*: Verified by random sampling

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