

MSG43003

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 0.6 mm × 1.0 mm (height 0.39mm)

■ 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}	100	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 mm² on substrate at 10 mm × 12 mm × 0.8 mm.

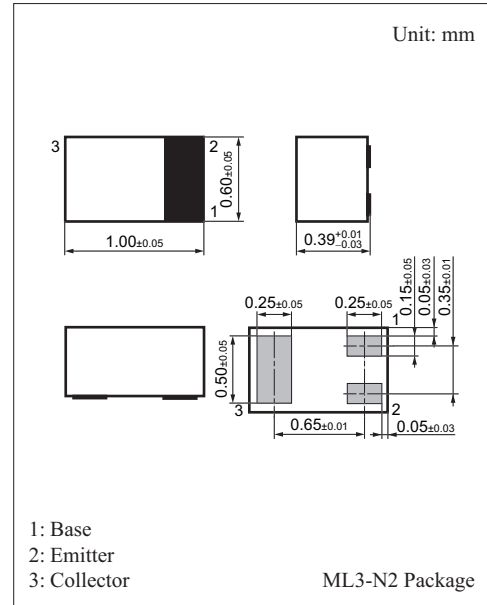
■ Electrical Characteristics $T_a = 25^\circ\text{C} \pm 3^\circ\text{C}$

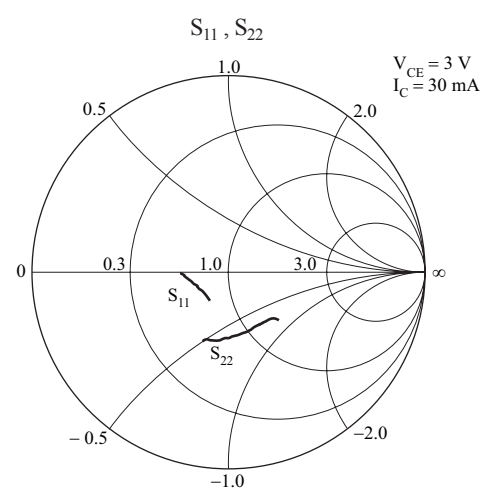
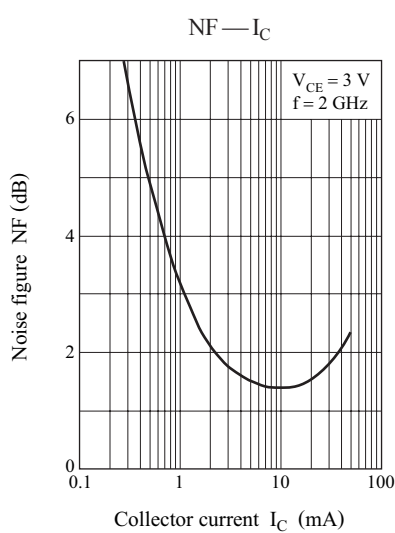
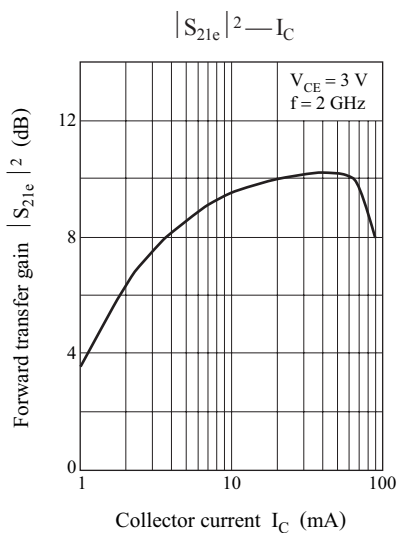
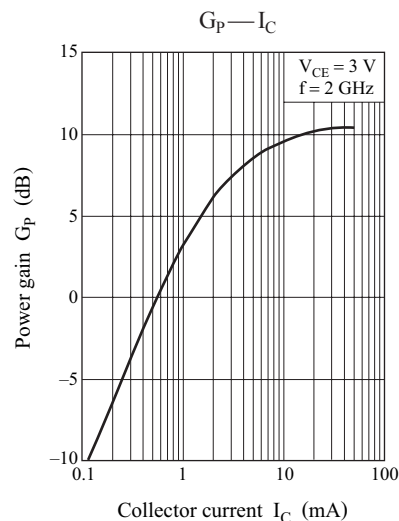
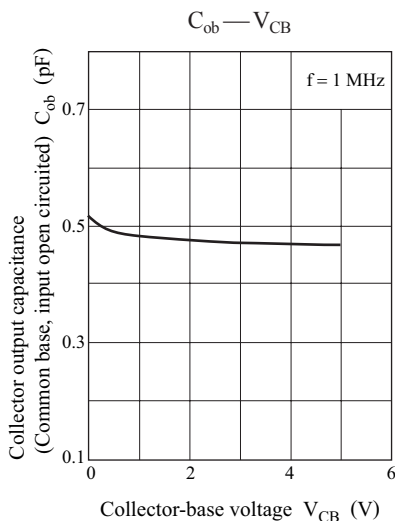
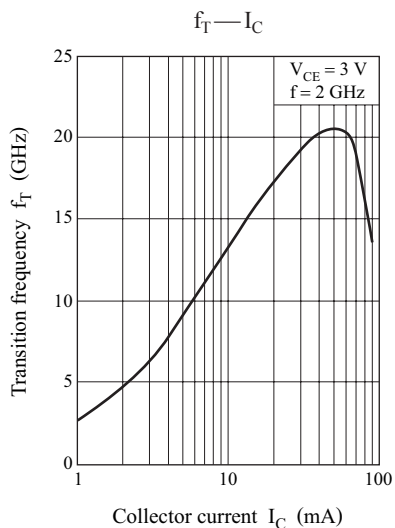
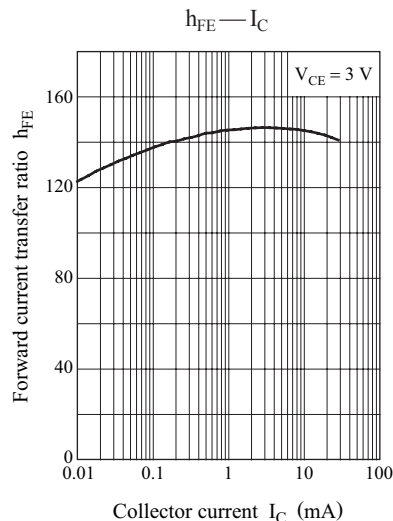
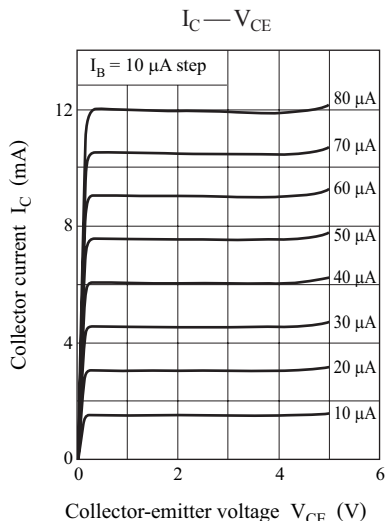
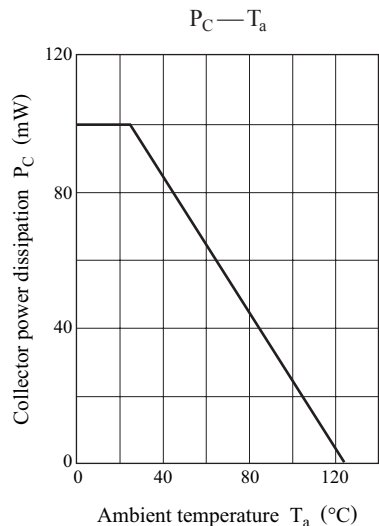
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector-base cutoff current (Emitter open)	I_{CBO}	$V_{\text{CB}} = 9 \text{ V}, I_{\text{E}} = 0$			1	μA
Collector-emitter cutoff current (Base open)	I_{CEO}	$V_{\text{CE}} = 6 \text{ V}, I_{\text{B}} = 0$			1	μA
Emitter-base cutoff current (Collector open)	I_{EBO}	$V_{\text{EB}} = 1 \text{ V}, I_{\text{C}} = 0$			1	μA
Forward current transfer ratio	h_{FE}	$V_{\text{CE}} = 3 \text{ V}, I_{\text{C}} = 10 \text{ mA}$		100	220	—
Transition frequency *	f_{T}	$V_{\text{CE}} = 3 \text{ V}, I_{\text{C}} = 30 \text{ mA}, f = 2 \text{ GHz}$	19			GHz
Forward transfer gain *	$ S_{21e} ^2$	$V_{\text{CE}} = 3 \text{ V}, I_{\text{C}} = 30 \text{ mA}, f = 2 \text{ GHz}$	10.0	7.0		dB
Noise figure *	NF	$V_{\text{CE}} = 3 \text{ V}, I_{\text{C}} = 10 \text{ mA}, f = 2 \text{ GHz}$	1.4		2.0	dB
Collector output capacitance (Common base, input open circuited) *	C_{ob}	$V_{\text{CB}} = 3 \text{ V}, I_{\text{E}} = 0, f = 1 \text{ MHz}$	0.5		0.8	pF

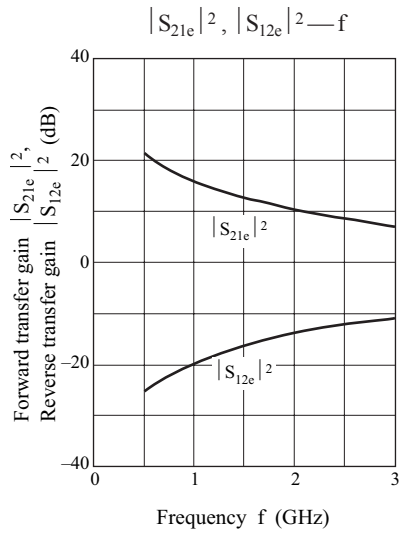
Note) 1. Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

2. Observe precautions for handling. Electrostatic sensitive devices.

3. *: Verified by random sampling







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