

MT3S19R

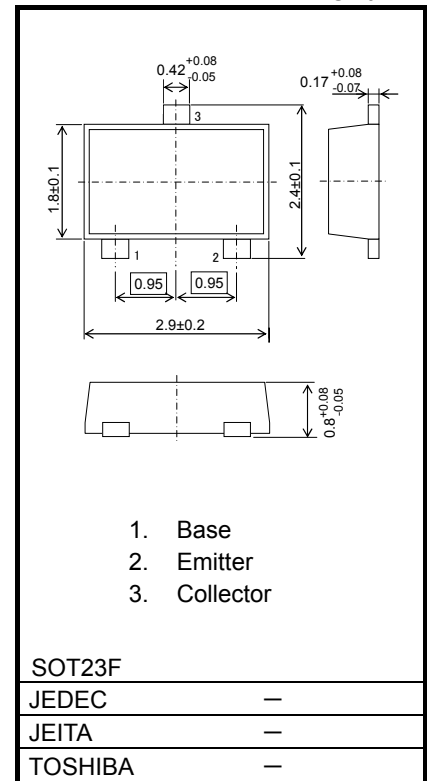
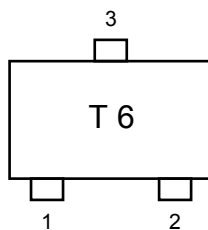
VHF-UHF Band Low-Noise, Low-Distortion Amplifier Applications

Unit: mm

FEATURES

- Low Noise Figure: $NF=1.5dB(Typ.)$ (@ $f=1GHz$)
- High Gain: $|S_{21e}|^2=13dB(Typ.)$ (@ $f=1GHz$)

Marking



Weight: 11 mg (typ.)

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

Characteristics	Symbol	Rating	Unit
Collector-base voltage	V_{CBO}	12	V
Collector-emitter voltage	V_{CEO}	6	V
Emitter-base voltage	V_{EBO}	2	V
Collector-current	I_C	80	mA
Base-current	I_B	10	mA
Collector power dissipation	$P_C(Notes1)$	320	mW
Junction temperature	T_j	150	$^{\circ}C$
Storage temperature range	T_{stg}	-55 to 150	$^{\circ}C$

Note 1: The device is mounted on a FR4 board (20 mm x 25 mm x 1.55 mm (t))

Note 2: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings.

Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

Microwave Characteristics (Ta = 25°C)

Characteristics	Symbol	Test Condition	Min	Typ	Max	Unit
Transition frequency	f_T	$V_{CE}=5V, I_C=50mA$	11.5	13.5	—	GHz
Insertion gain	$ S_{21e} ^2(1)$	$V_{CE}=5V, I_C=50mA, f=500MHz$	—	18.5	—	dB
	$ S_{21e} ^2(2)$	$V_{CE}=5V, I_C=50mA, f=1GHz$	11	13	—	
Noise figure	NF	$V_{CE}=5V, I_C=20mA, f=1GHz$	—	1.5	1.9	dB
3 rd order intermodulation distortion output intercept point	OIP3	$V_{CE}=5V, I_C=50mA, f=500MHz, \Delta f=1MHz$	29.5	33.5	—	dBmW

Electrical Characteristics (Ta = 25°C)

Characteristics	Symbol	Test Condition	Min	Typ	Max	Unit
Collector cut-off current	I_{CBO}	$V_{CB}=6V, I_E=0$	—	—	100	nA
Emitter cut-off current	I_{EBO}	$V_{EB}=1V, I_C=0$	—	—	100	nA
DC current gain	h_{FE}	$V_{CE}=5V, I_C=50mA$	100	—	250	—
Reverse transfer capacitance	C_{re}	$V_{CB}=5V, I_E=0, f=1MHz$ (Note3)	—	0.75	1	pF

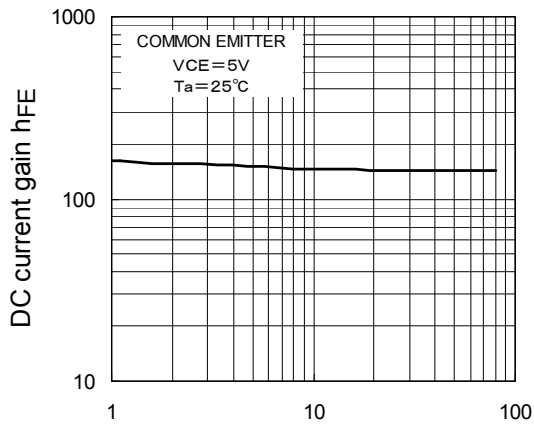
Note 3: C_{re} is measured using a 3-terminal method with capacitance bridge

Caution:

This device is sensitive to electrostatic discharge.

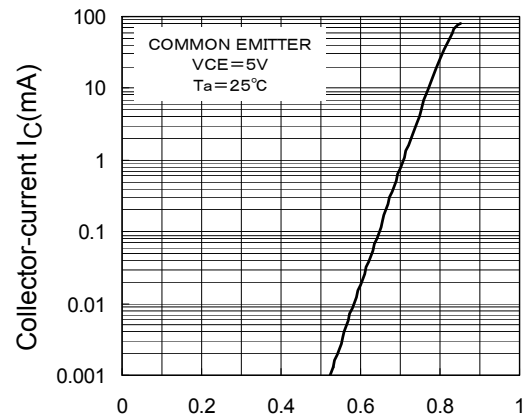
Please make enough tool and equipment earthed when you handle.

$h_{FE}-I_C$



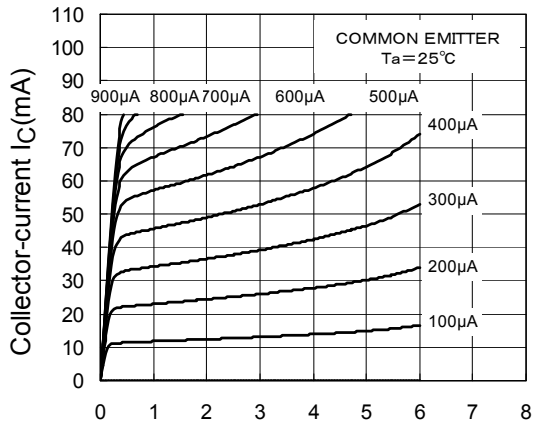
Collector-current I_C (mA)

I_C-V_{BE}



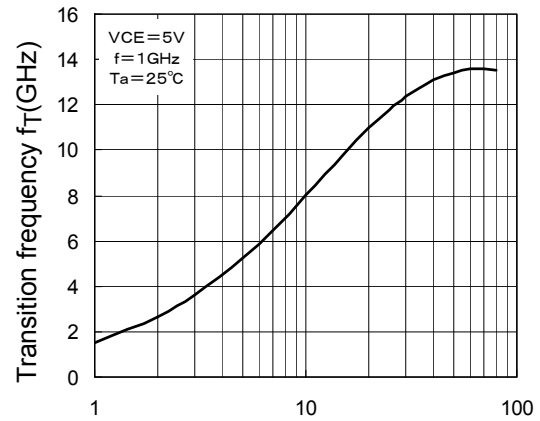
Base-emitter voltage V_{BE} (V)

I_C-V_{CE}



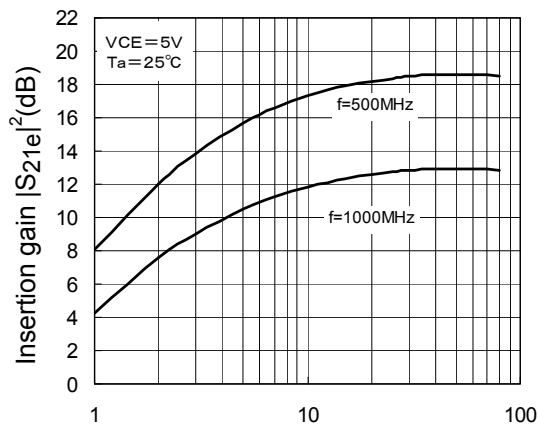
Collector-emitter voltage V_{CE} (V)

f_T-I_C



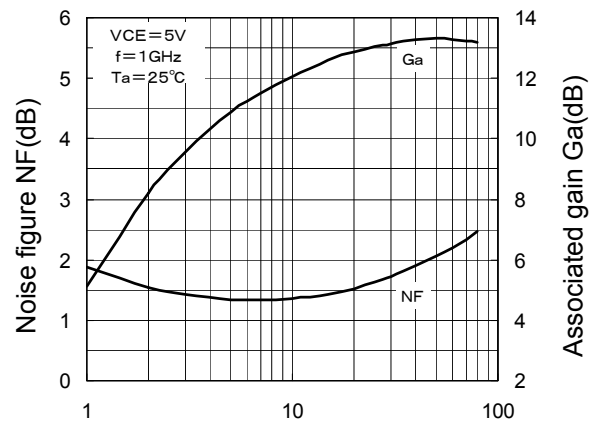
Collector-current I_C (mA)

$|S_{21e}|^2-I_C$



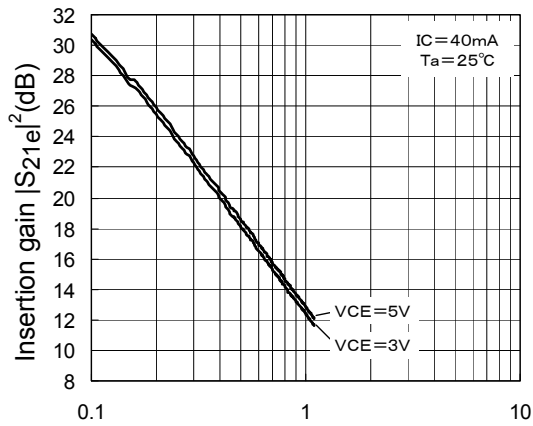
Collector-current I_C (mA)

NF, Ga - I_C

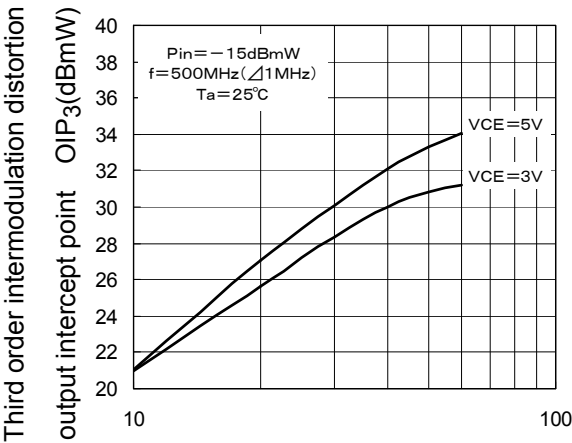


Collector-current I_C (mA)

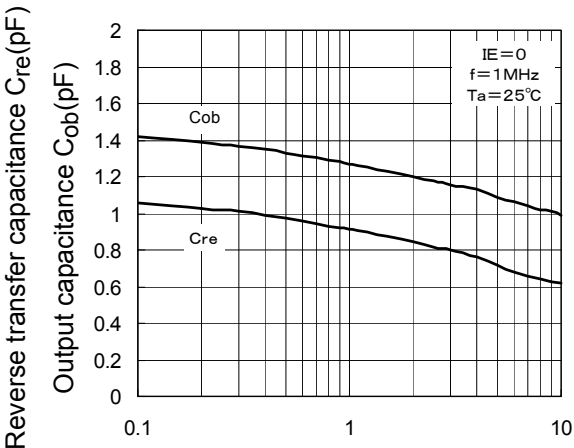
$|S_{21e}|^2$ -Freq.



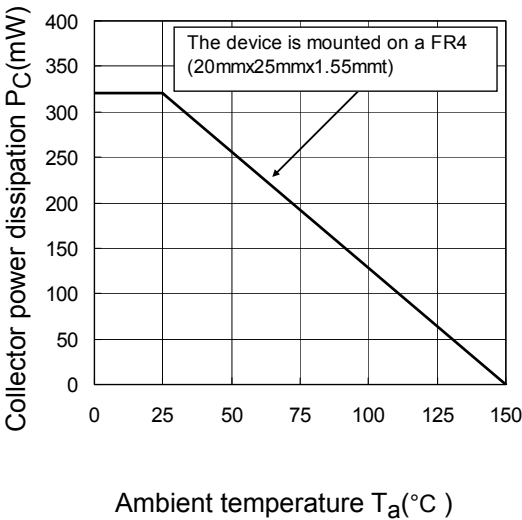
OIP₃-I_C



C_{re}, C_{ob} -V_{CB}



P_C-T_a



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