

TOSHIBA TRANSISTOR SILICON-GERMANIUM NPN EPITAXIAL PLANER TYPE

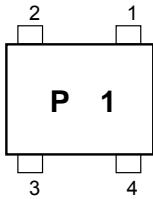
MT4S104U

UHF-SHF Low Noise Amplifier Application

FEATURES

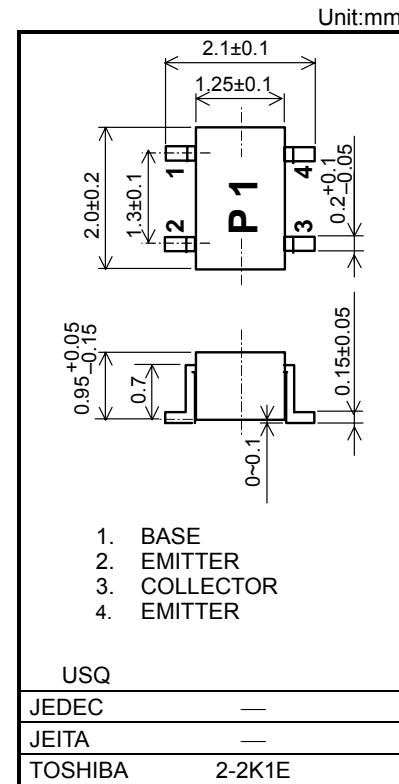
- Low Noise Figure : $NF=1.25\text{dB}$ (@ $f=5.2\text{GHz}$)
- High Gain: $|S21e|^2=10.0\text{dB}$ (@ $f=5.2\text{GHz}$)

Marking



Maximum Ratings (Ta = 25°C)

Characteristics	Symbol	Rating	Unit
Collector-Base voltage	V_{CBO}	6	V
Collector-Emitter voltage	V_{CEO}	3	V
Emitter-Base voltage	V_{EBO}	1.2	V
Collector-Current	I_C	10	mA
Base-Current	I_B	5	mA
Collector Power dissipation	P_C	30	mW
Junction temperature	T_j	150	°C
Storage temperature Range	T_{stg}	-55~150	°C



USQ

JEDEC —

JEITA —

TOSHIBA 2-2K1E

Weight: 0.006 g

Microwave Characteristics (Ta = 25°C)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Transition Frequency	f_T	$V_{CE}=2V, I_C=7mA, f=2GHz$	19	23	—	GHz
Insertion Gain	$ S21e ^2(1)$	$V_{CE}=2V, I_C=7mA, f=2GHz$	14.0	16.5	—	dB
	$ S21e ^2(2)$	$V_{CE}=2V, I_C=7mA, f=5.2GHz$	—	10.0	—	dB
Noise Figure	NF(1)	$V_{CE}=2V, I_C=5mA, f=2GHz$	—	0.67	0.95	dB
	NF(2)	$V_{CE}=2V, I_C=5mA, f=5.2GHz$	—	1.25	—	dB

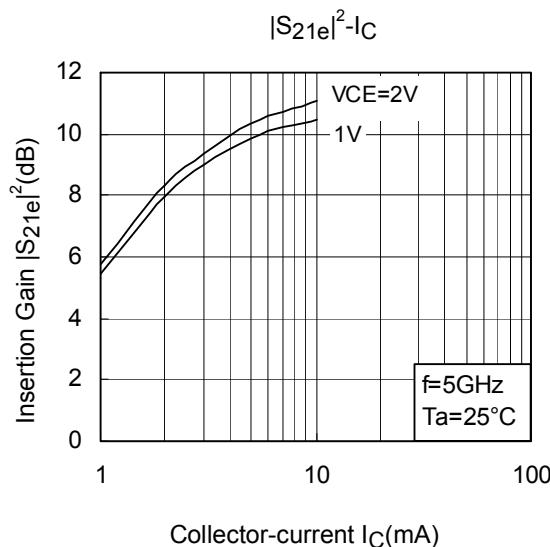
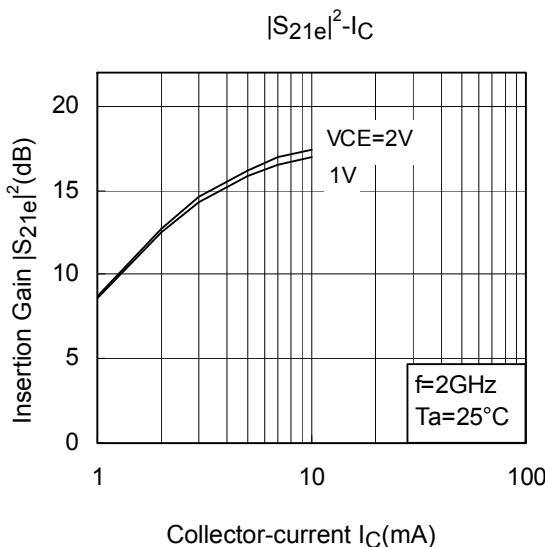
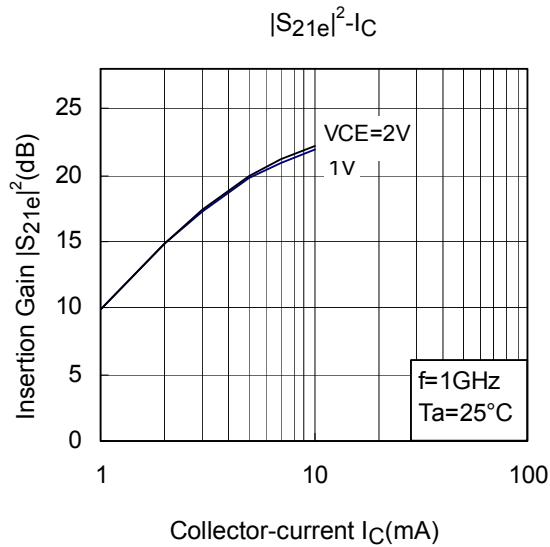
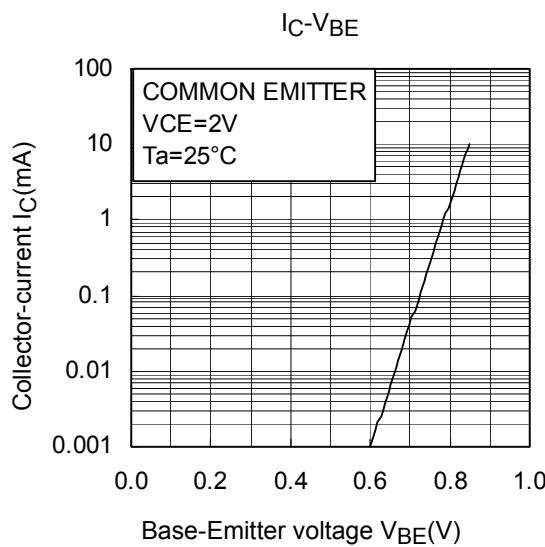
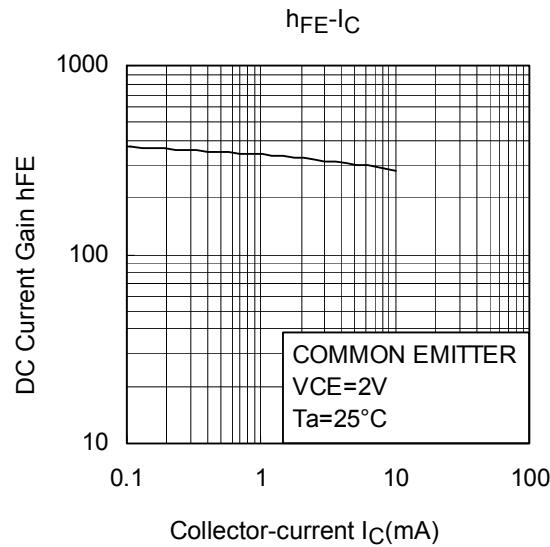
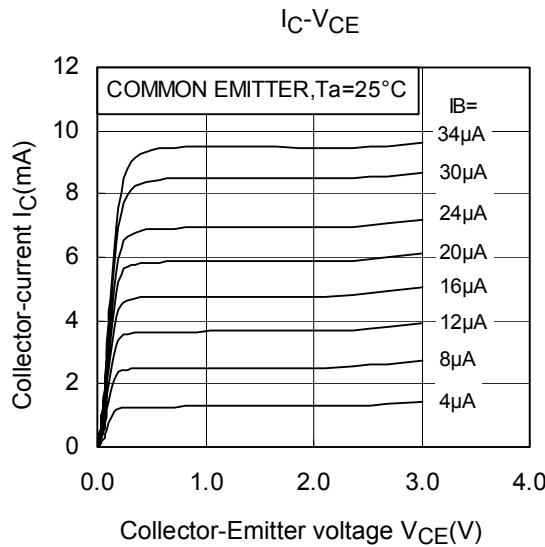
Electrical Characteristics (Ta = 25°C)

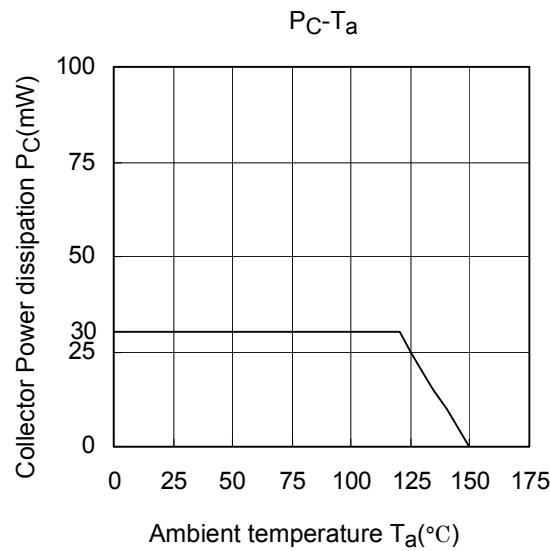
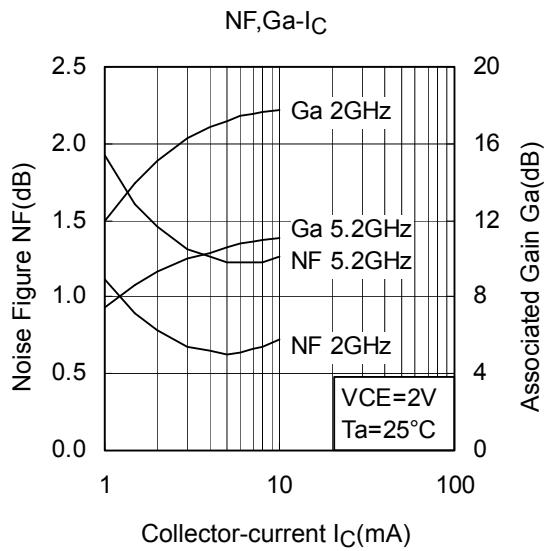
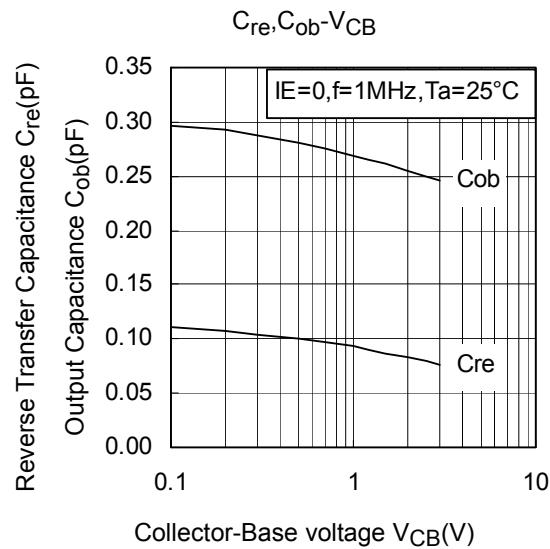
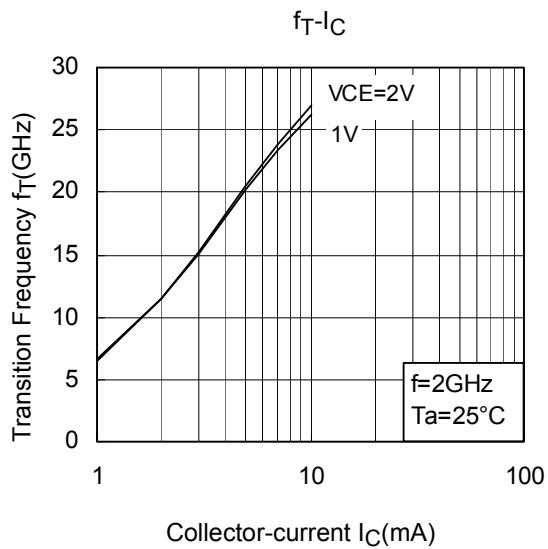
Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Collector Cut-off Current	I_{CBO}	$V_{CB}=6V, I_E=0$	—	—	1	μA
Emitter Cut-off Current	I_{EBO}	$V_{EB}=1V, I_C=0$	—	—	1	μA
DC Current Gain	hFE	$V_{CE}=2V, I_C=7mA$	200	—	400	-
Output Capacitance	C_{ob}	$V_{CB}=2V, I_E=0, f=1MHz$	—	0.26	0.5	pF
Reverse Transfer Capacitance	C_{re}	$V_{CB}=2V, I_E=0, f=1MHz$ (Note 1)	—	0.09	0.18	pF

Note 1: C_{re} is measured by 3 terminal method with capacitance bridge.

Caution: This device is sensitive to electrostatic discharge.

Please make enough tool and equipment earthed when you handle.





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