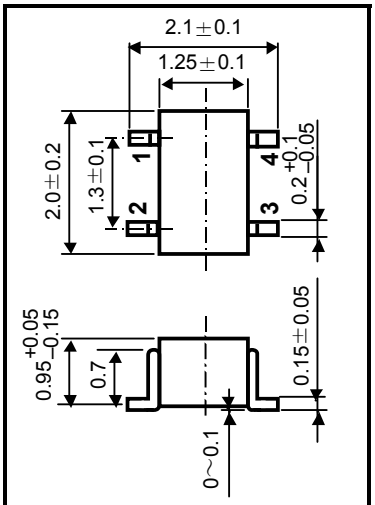
TOSHIBA TRANSISTOR SILICON-GERMANIUM NPN EPITAXIAL PLANER TYPE

MT4S101U

UHF LOW NOISE AMPLIFIER APPLICATION

Unit: mm



1.BASE
2.EMITTER
3.COLLECTOR
4.EMITTER

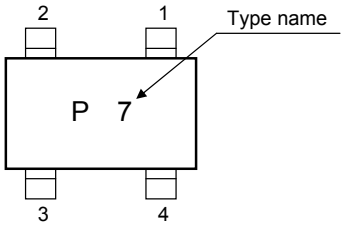
USQ	
JEDEC	—
JEITA	—
TOSHIBA	2-2K1E

Weight: 0.006 g (typ.)

FEATURES

- Low Noise Figure :NF=0.8dB (@f=2GHz)
- High Gain:$|S21e|^2$=16.0dB (@f=2GHz)

Marking



Absolute 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

Note: 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).

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Microwave Characteristics (Ta = 25°C)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Transition Frequency	fT	V_{CE}=2V, I_C=7mA, f=2GHz	17	21	-	GHz
Insertion Gain	$\|S21e\|^2$	V_{CE}=2V, I_C=7mA, f=2GHz	13.5	16	-	dB
Noise Figure	NF	V_{CE}=2V, I_C=5mA, f=2GHz	-	0.8	1.05	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	-	0.34	0.6	pF
Reverse Transistor Capacitance	C_{re}	V_{CB}=2V, I_E=0, f=1MHz (Note 1)	-	0.1	0.2	pF

Note 1: Cre 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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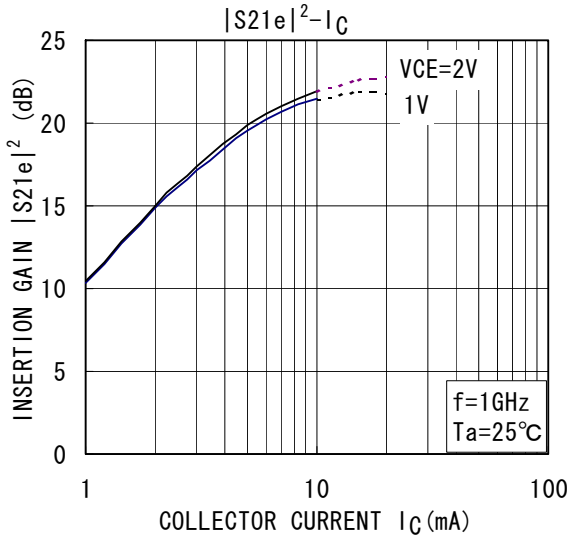

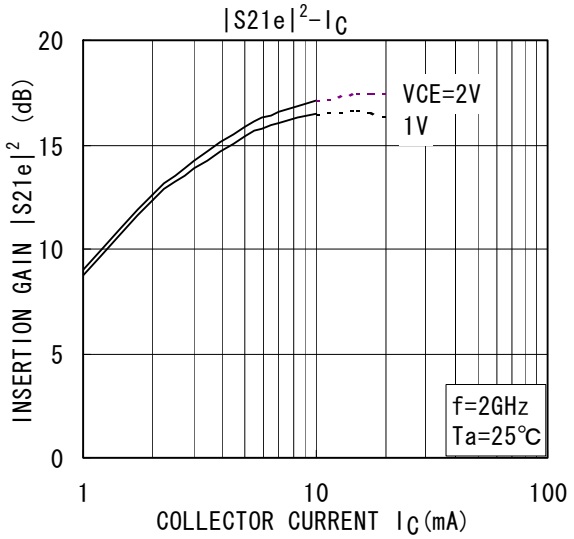

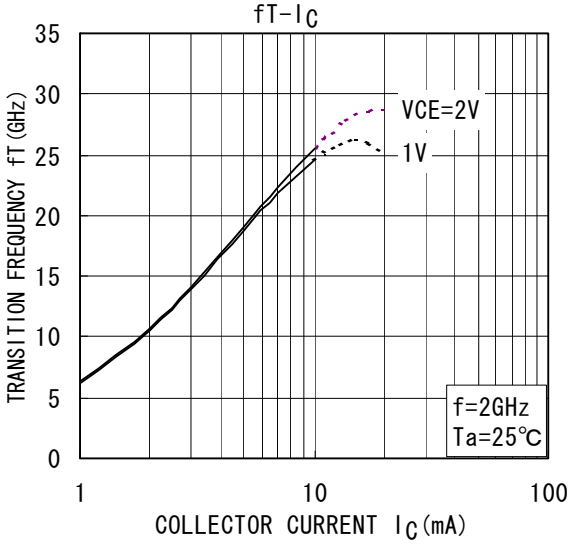

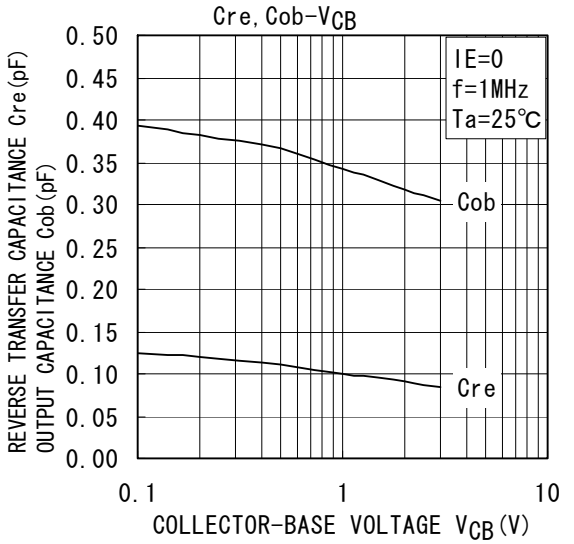

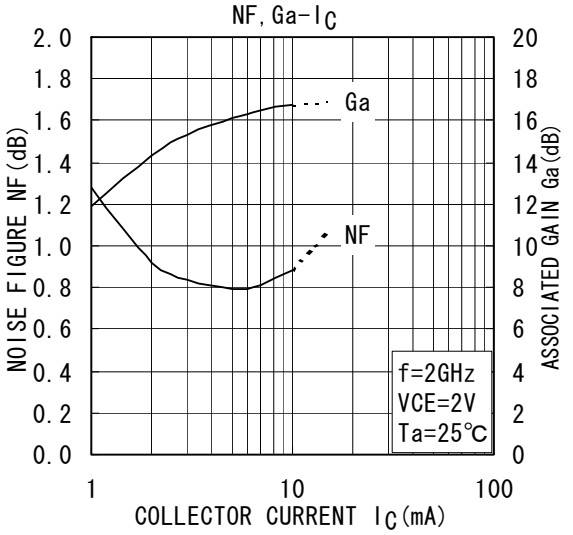

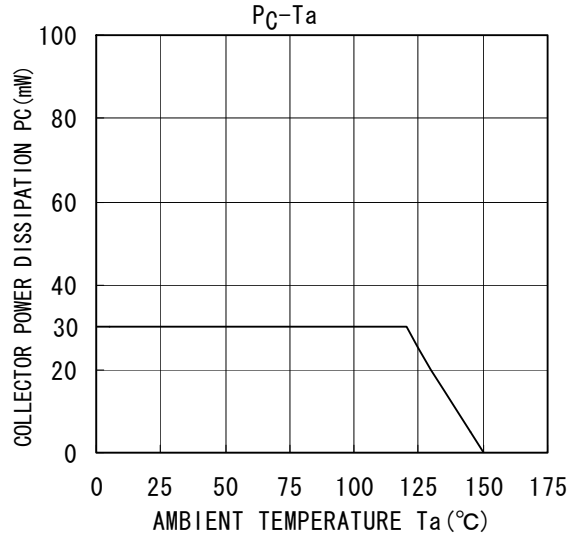

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20070701-EN GENERAL

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