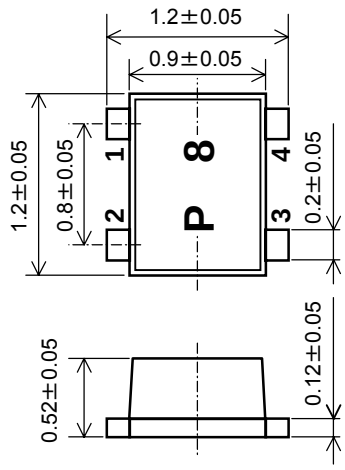
TOSHIBA Transistor Silicon-Germanium NPN Epitaxial Planer Type

MT4S102T

UHF-SHF Low Noise Amplifier Application

Unit:mm



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

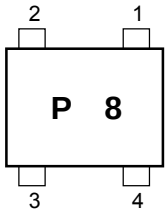
TESQ	
JEDEC	―
JEITA	―
TOSHIBA	2-1G1B

Weight: 0.0015 g

FEATURES

- Low Noise Figure :NF=0.58dB (@f=2GHz)
- High Gain:$|S21e|^2$=16.0dB (@f=2GHz)

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	20	mA
Base-Current	I_B	10	mA
Collector Power dissipation	P_C	60	mW
Junction temperature	T_j	150	°C
Storage temperature Range	T_{stg}	−55~150	°C

Microwave Characteristics (Ta = 25°C)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Transition Frequency	f_T	V_{CE}=2V, I_C=15mA, f=2GHz	21	25	—	GHz
Insertion Gain	$\|S21e\|^2$(1)	V_{CE}=2V, I_C=15mA, f=2GHz	13.5	16.0	—	dB
	$\|S21e\|^2$(2)	V_{CE}=2V, I_C=15mA, f=5.2GHz	—	9.0	—	dB
Noise Figure	NF(1)	V_{CE}=2V, I_C=10mA, f=2GHz	—	0.58	0.85	dB
	NF(2)	V_{CE}=2V, I_C=10mA, f=5.2GHz	—	1.4	—	dB

Electrical Characteristics (Ta = 25°C)

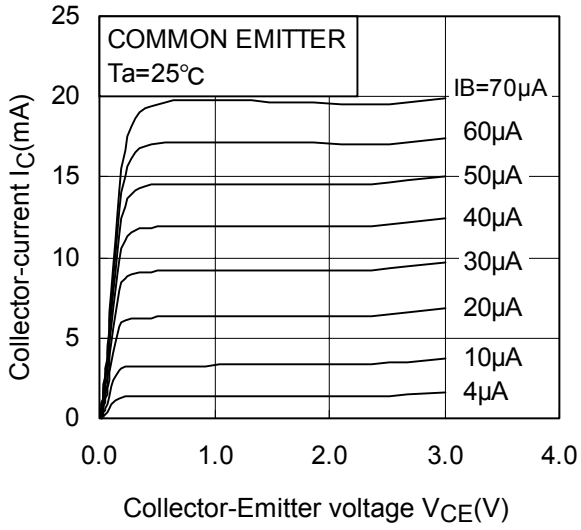
Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Collector Cut-off Current	I_{CBO}	V_{CB}=6V, I_E=0	—	—	1	μA
Emitter Cut-off Current	I_{EBO}	V_{EB}=1V, I_C=0	—	—	1	μA
DC Current Gain	hFE	V_{CE}=2V, I_C=15mA	200	—	400	-
Output Capacitance	C_{ob}	V_{CB}=2V, I_E=0, f=1MHz	—	0.43	0.6	pF
Reverse Transfer Capacitance	C_{re}	V_{CB}=2V, I_E=0, f=1MHz (Note 1)	—	0.17	0.25	pF

Note 1: Cre is measured by 3 terminal method with capacitance bridge.

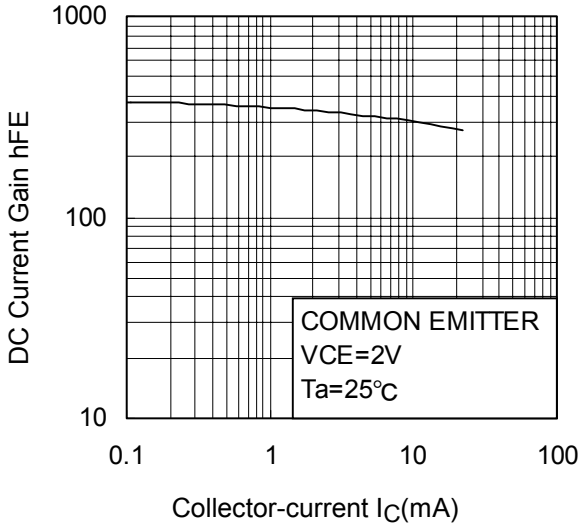
Caution: This device is sensitive to electrostatic discharge.

Please make enough tool and equipment earthed when you handle.

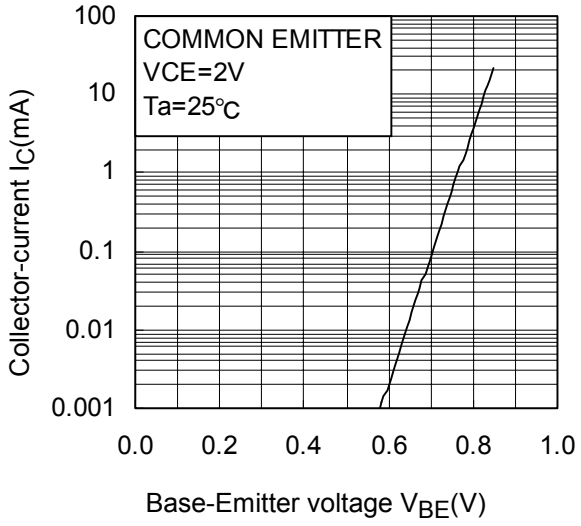
I_C-V_{CE}



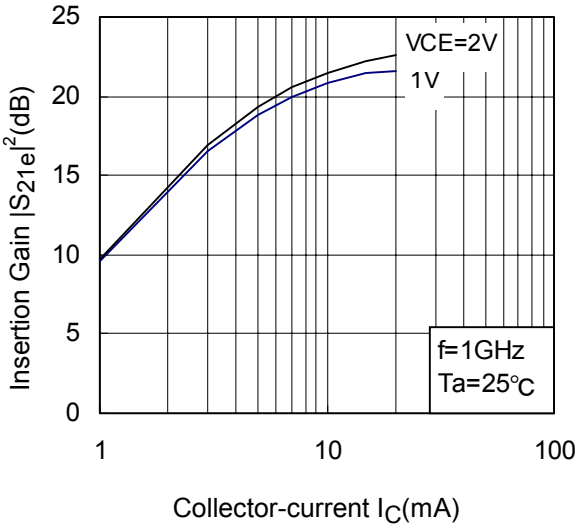
h_{FE}-I_C



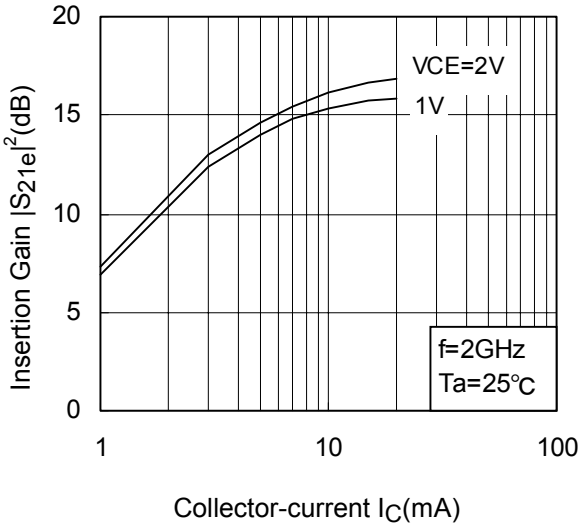
I_C-V_{BE}



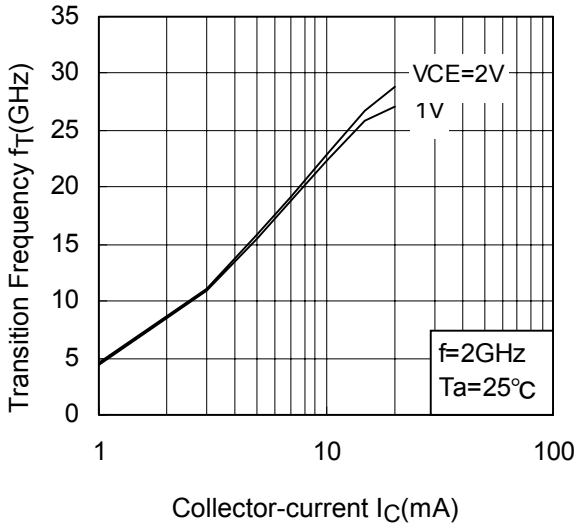
$|S_{21e}|^2$-I_C



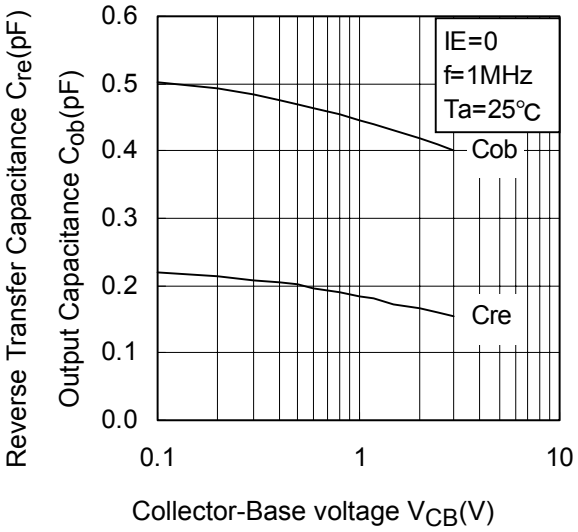
$|S_{21e}|^2$-I_C



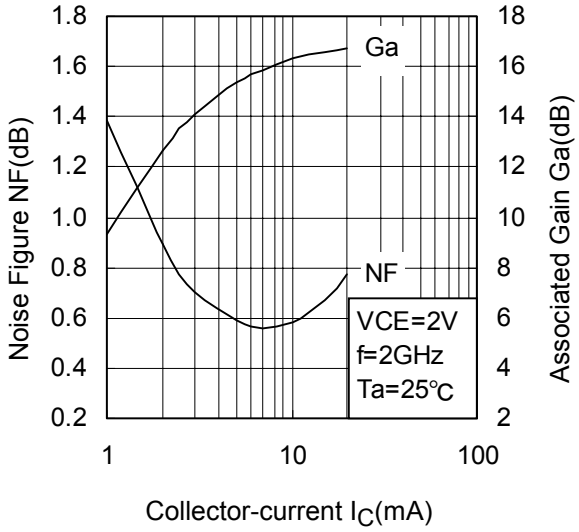
f_T-I_C



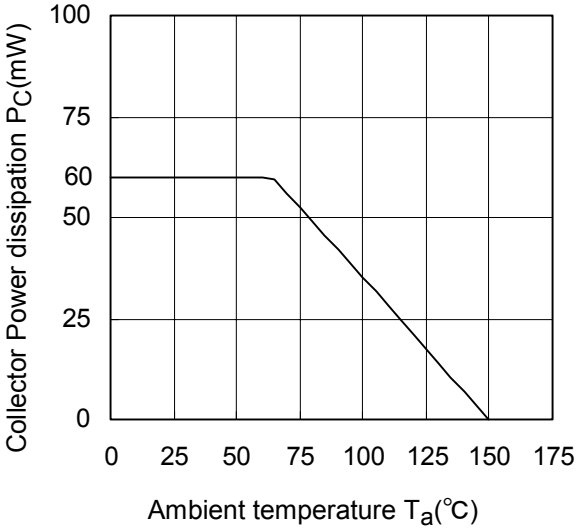
C_{re},C_{ob}-V_{CB}



NF,Ga-I_C



P_C-T_a



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