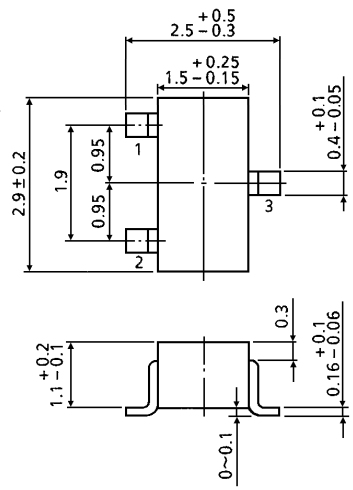
TOSHIBA TRANSISTOR SILICON NPN EPITAXIAL PLANAR TYPE

2SC5259

VHF~UHF BAND LOW NOISE AMPLIFIER APPLICATIONS

- Low Noise Figure : NF = 1.7dB (f = 2GHz)
- High Gain : Gain = 8.5dB (f = 2GHz)

Unit in mm



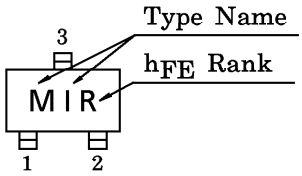
JEDEC	—
EIAJ	—
TOSHIBA	2-3F1A

Weight : 12mg

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Collector-Base Voltage	V_{CBO}	15	V
Collector-Emitter Voltage	V_{CEO}	7	V
Emitter-Base Voltage	V_{EBO}	1.5	V
Collector Current	I_C	15	mA
Base Current	I_B	7	mA
Collector Power Dissipation	P_C	150	mW
Junction Temperature	T_j	125	°C
Storage Temperature Range	T_{stg}	−55~125	°C

MARKING



MICROWAVE CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Transition Frequency	f_T	V_{CE} = 5V, I_C = 7mA	9	12	—	GHz
Insertion Gain	$\|S_{21e}\|^2$ (1)	V_{CE} = 5V, I_C = 7mA, f = 1GHz	11.5	14.5	—	dB
	$\|S_{21e}\|^2$ (2)	V_{CE} = 5V, I_C = 7mA, f = 2GHz	5.5	8.5	—	
Noise Figure	NF (1)	V_{CE} = 5V, I_C = 3mA, f = 1GHz	—	1.3	—	dB
	NF (2)	V_{CE} = 5V, I_C = 3mA, f = 2GHz	—	1.7	3	

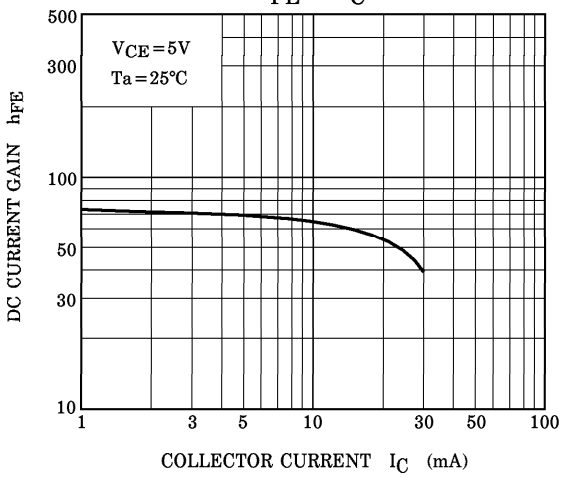
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current	I_{CBO}	V_{CB} = 10V, I_E = 0	—	—	1	μA
Emitter Cut-off Current	I_{EBO}	V_{EB} = 1V, I_C = 0	—	—	1	μA
DC Current Gain	h_{FE} (Note 1)	V_{CE} = 5V, I_C = 7mA	50	—	160	—
Output Capacitance	C_{ob}	V_{CB} = 5V, I_E = 0, f = 1MHz (Note 2)	—	0.4	—	pF
Reverse Transfer Capacitance	C_{re}		—	0.3	0.7	pF

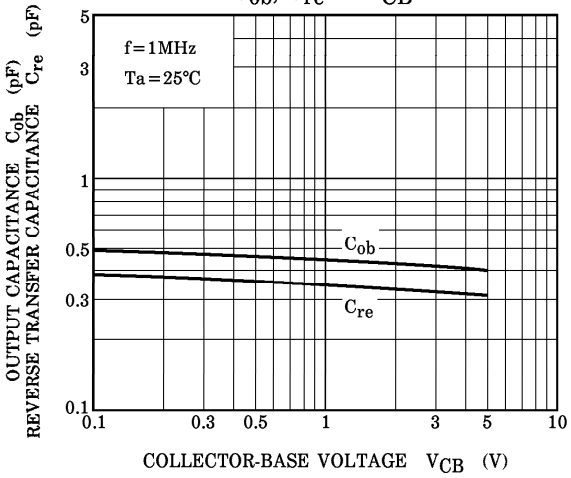
(Note 1) : h_{FE} Classification R : 50~100, O : 80~160

(Note 2) : C_{re} is measured by 3 terminal method with capacitance bridge.

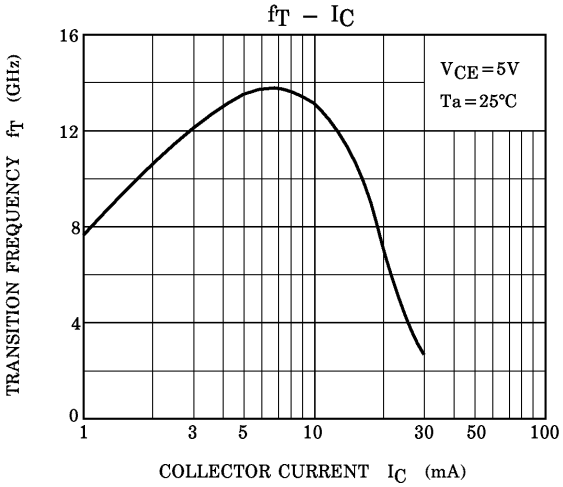
h_{FE} – I_C



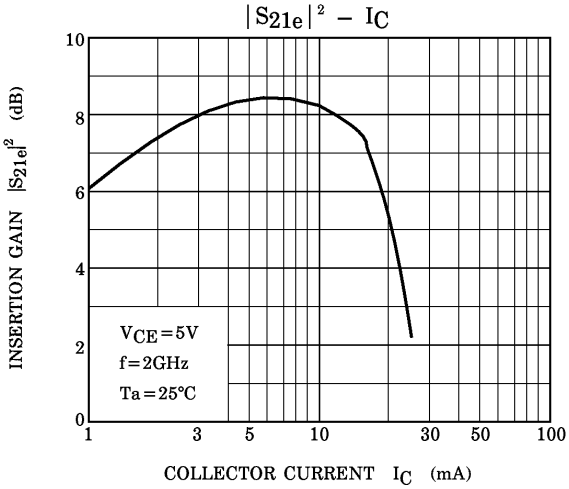
C_{ob}, C_{re} – V_{CB}



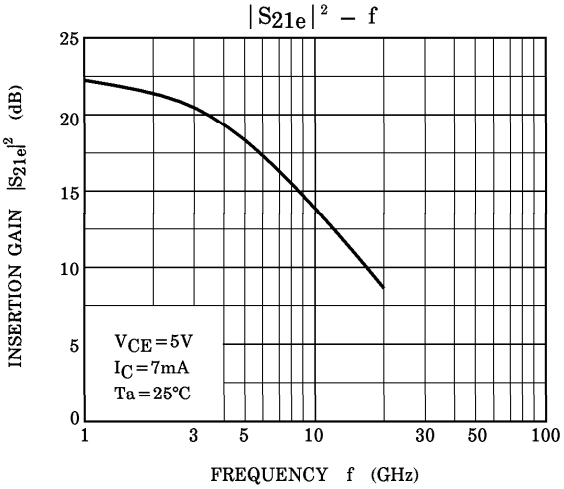
f_T – I_C



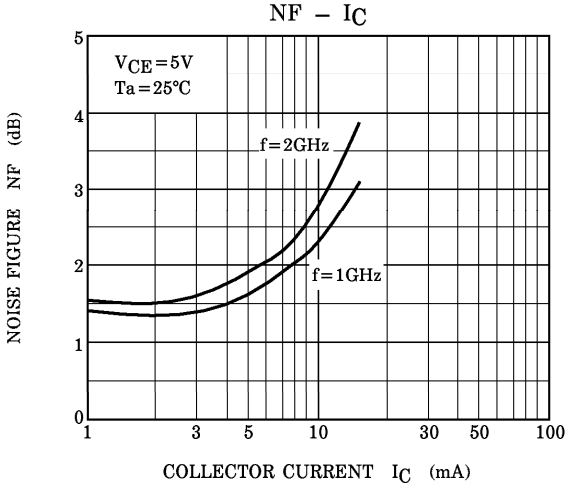
$|S_{21e}|^2$ – I_C

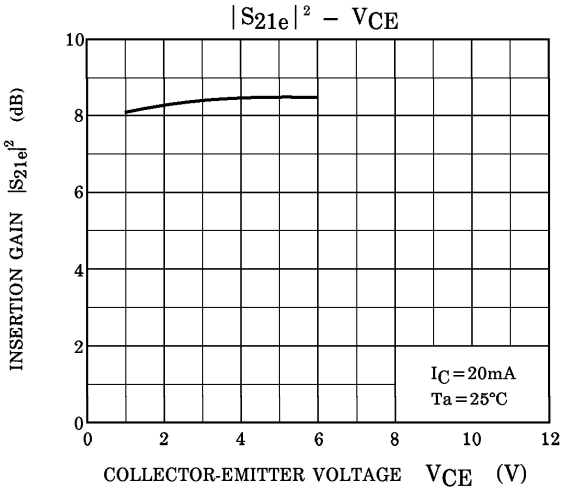


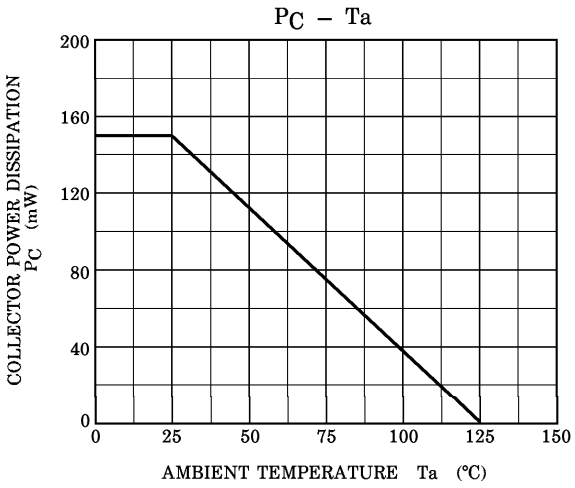
$|S_{21e}|^2$ – f



NF – I_C




$|S_{21e}|^2$ – V_{CE}
INSERTION GAIN $|S_{21e}|^2$ (dB)
10
8
6
4
2
0
0
2
4
6
8
10
12
I_C = 20mA
Ta = 25°C
COLLECTOR-EMITTER VOLTAGE V_{CE} (V)


P_C – Ta
COLLECTOR POWER DISSIPATION P_C (mW)
200
160
120
80
40
0
0
25
50
75
100
125
150
AMBIENT TEMPERATURE Ta (°C)

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000707EAA

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