TOSHIBA TRANSISTOR SILICON NPN EPITAXIAL PLANAR TYPE

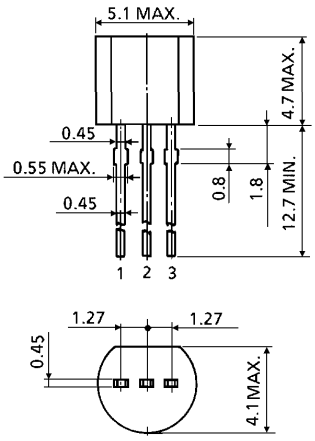
2SC2498

VHF~UHF BAND LOW NOISE AMPLIFIER APPLICATION

Unit in mm

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Collector-Base Voltage	V_{CBO}	30	V
Collector-Emitter Voltage	V_{CEO}	20	V
Emitter-Base Voltage	V_{EBO}	3	V
Collector Current	I_C	50	mA
Base Current	I_B	25	mA
Collector Power Dissipation	P_C	300	mW
Junction Temperature	T_j	125	°C
Storage Temperature Range	T_{stg}	−55~125	°C



1. BASE
2. EMITTER
3. COLLECTOR

JEDEC	TO-92
EIAJ	SC-43
TOSHIBA	2-5F1E

Weight : 0.21 g

000707EAA1

MICROWAVE CHARACTERISTICS (Ta = 25°C)

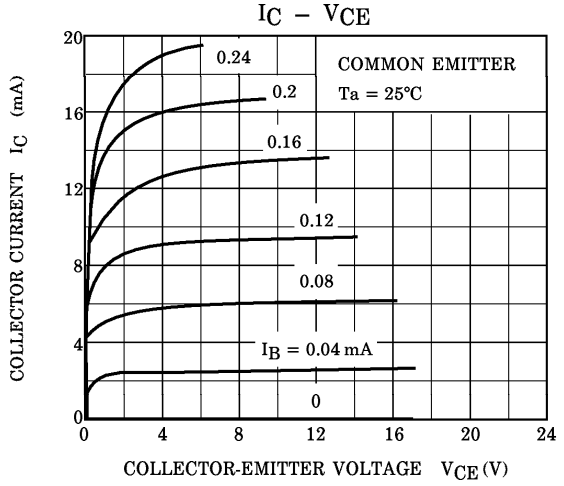
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Transition Frequency	f_T	V_{CE} = 10 V, I_C = 10 mA	—	3.5	—	GHz
Insertion Gain	$\|S_{21e}\|^2$ (1)	V_{CE} = 10 V, I_C = 10 mA, f = 500 MHz	—	14.5	—	dB
	$\|S_{21e}\|^2$ (2)	V_{CE} = 10 V, I_C = 10 mA, f = 1 GHz	—	9	—	
Noise Figure	NF (1)	V_{CE} = 10 V, I_C = 5 mA, f = 500 MHz	—	2.5	—	dB
	NF (2)	V_{CE} = 10 V, I_C = 5 mA, f = 1 GHz	—	4	—	

MICROWAVE CHARACTERISTICS (Ta = 25°C)

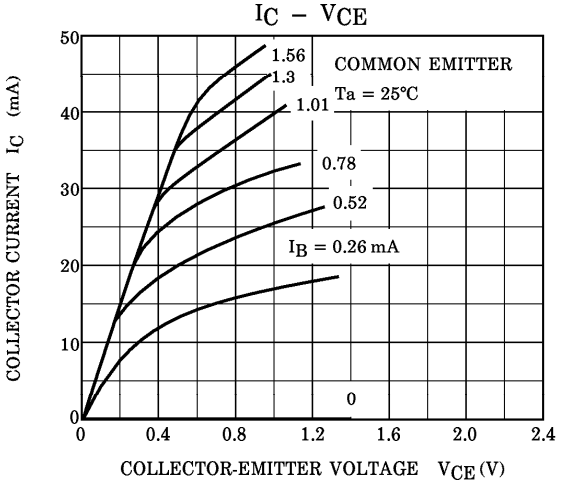
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current	I_{CBO}	V_{CB} = 10 V, I_E = 0	—	—	1	μA
Emitter Cut-off Current	I_{EBO}	V_{EB} = 1 V, I_C = 0	—	—	1	μA
DC Current Gain	h_{FE}	V_{CE} = 10 V, I_C = 10 mA	30	80	300	—
Collector Output Capacitance	C_{ob}	V_{CB} = 10 V, I_E = 0, f = 1 MHz (Note)	—	1.15	—	pF
Reverse Transfer Capacitance	C_{re}		—	0.75	—	

(Note) : Cre is measured by 3 terminal method with Capacitance Bridge.

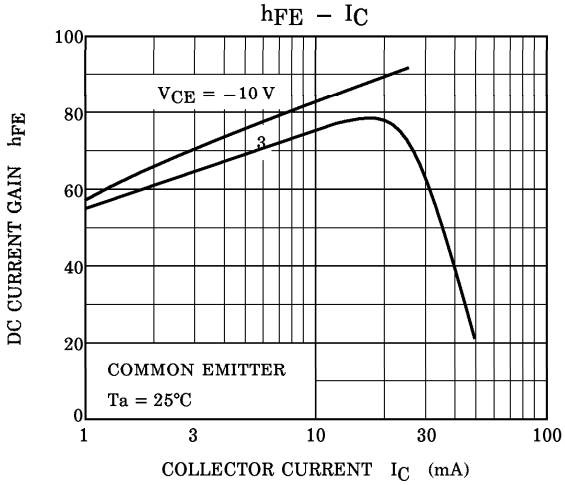
$I_C - V_{CE}$



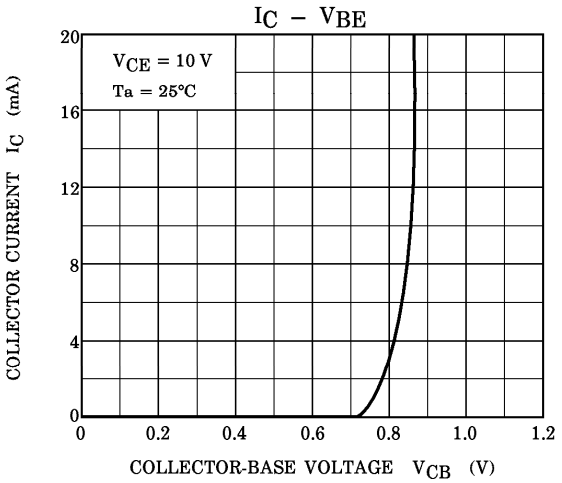
$I_C - V_{CE}$



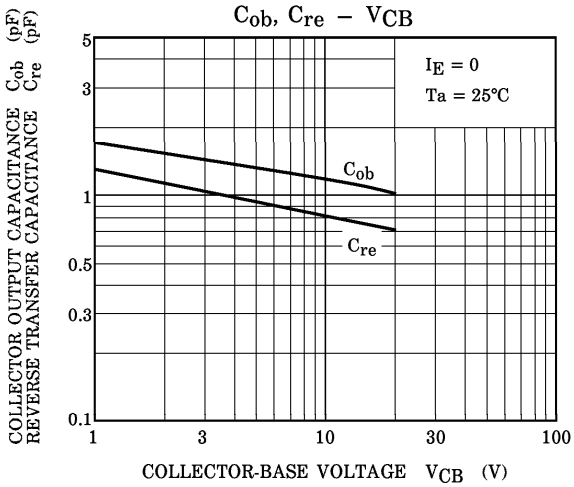
$h_{FE} - I_C$



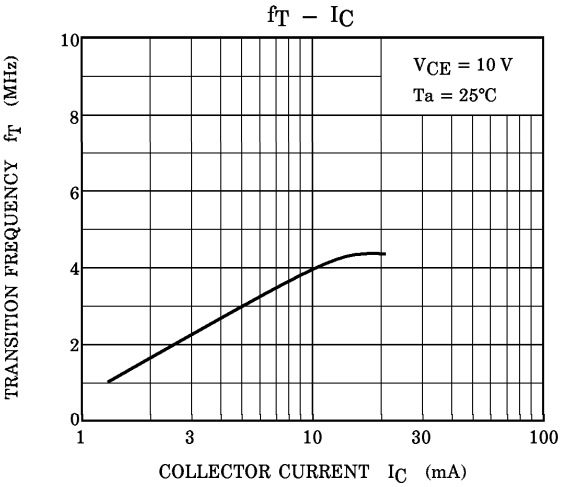
$I_C - V_{BE}$

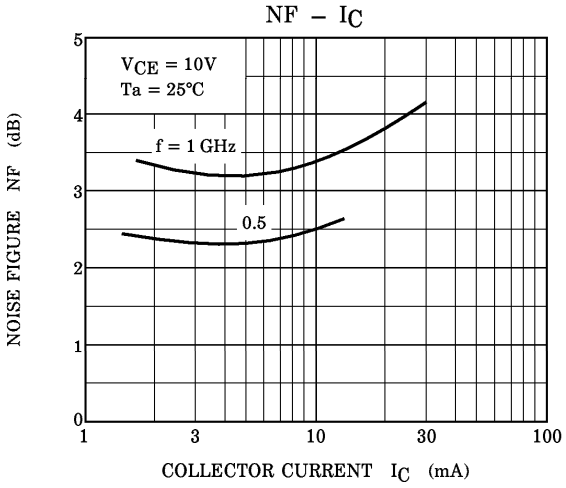


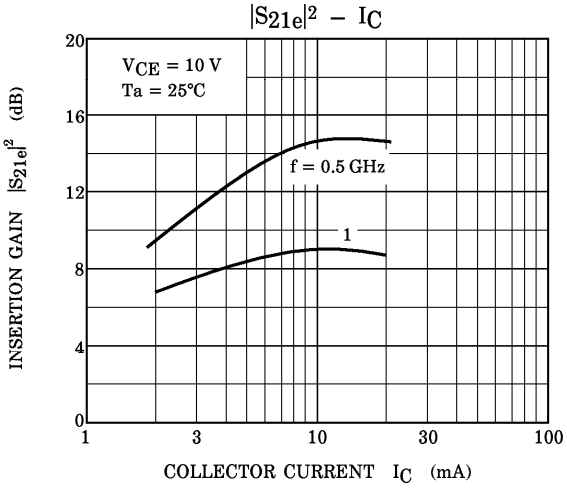
C_{ob}, C_{re} − V_{CB}

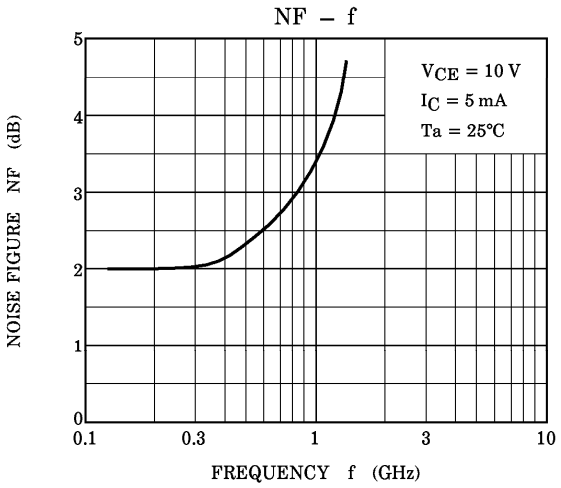


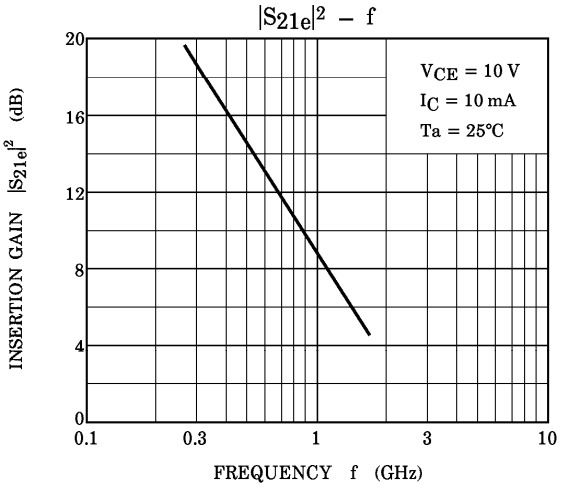
$f_T - I_C$




NF – IC
VCE = 10V
Ta = 25°C
f = 1 GHz
0.5
NOISE FIGURE NF (dB)
COLLECTOR CURRENT IC (mA)
0
1
2
3
4
5
1
3
10
30
100

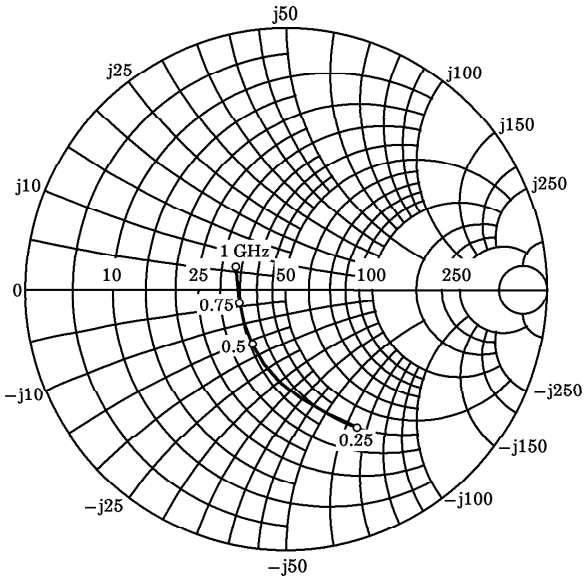

|S21e|2 – IC
VCE = 10 V
Ta = 25°C
f = 0.5 GHz
1
INSERTION GAIN |S21e|2 (dB)
COLLECTOR CURRENT IC (mA)
0
4
8
12
16
20
1
3
10
30
100


NF – f
VCE = 10 V
IC = 5 mA
Ta = 25°C
NOISE FIGURE NF (dB)
FREQUENCY f (GHz)
0
1
2
3
4
5
0.1
0.3
1
3
10

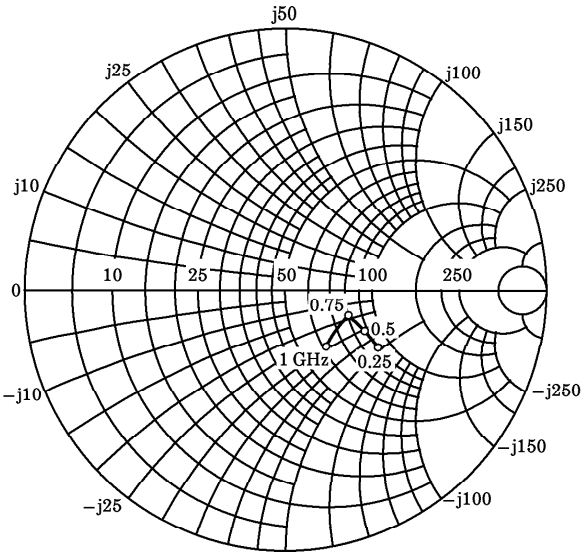

|S21e|2 – f
VCE = 10 V
IC = 10 mA
Ta = 25°C
INSERTION GAIN |S21e|2 (dB)
FREQUENCY f (GHz)
0
4
8
12
16
20
0.1
0.3
1
3
10

COMMON EMITTER SMALL SIGNAL S-PARAMETERS OF 2SC2498.

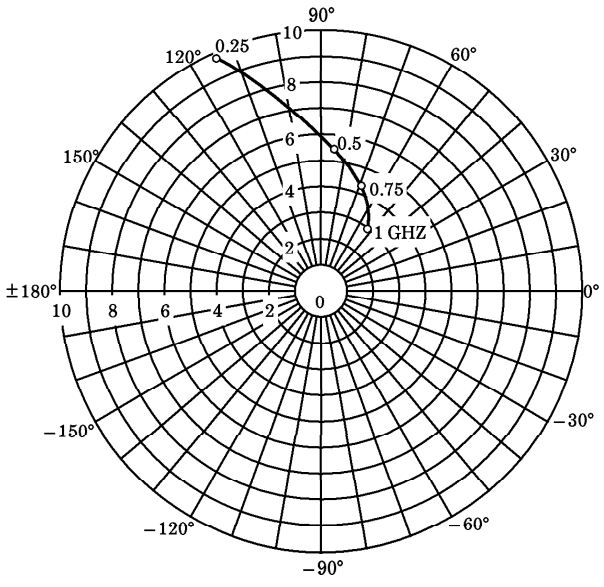
V_{CE} = 10 V, I_C = 10 mA



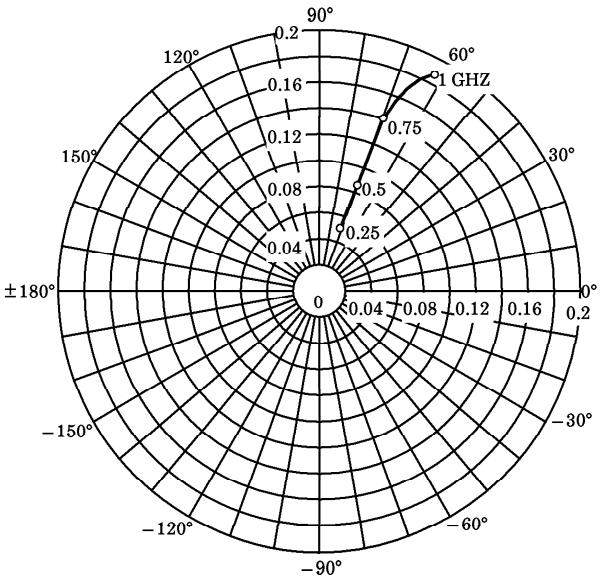
S_{11e} (UNIT : Ω)



S_{22e} (UNIT : Ω)



S_{21e}



S_{12e}