

TOSHIBA TRANSISTOR SILICON NPN EPITAXIAL PLANAR TYPE

2SC3605

VHF~UHF BAND LOW NOISE AMPLIFIER APPLICATIONS

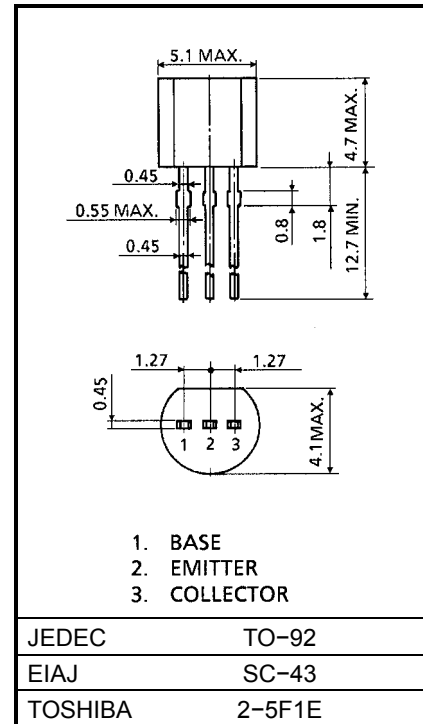
Unit in mm

FEATURES:

- Low Noise Figure, High Gain
- $NF = 1.1\text{dB}$, $|S_{21e}|^2 = 10\text{dB}$ ($f = 1\text{GHz}$)

MAXIMUM RATINGS ($T_a = 25^\circ\text{C}$)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Collector-Base Voltage	V_{CBO}	20	V
Collector-Emitter Voltage	V_{CEO}	12	V
Emitter-Base Voltage	V_{EBO}	3	V
Collector Current	I_C	80	mA
Base Current	I_B	40	mA
Collector Power Dissipation	P_C	600	mW
Junction Temperature	T_j	150	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-55~150	$^\circ\text{C}$



Weight: 0.21g

MICROWAVE CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN	TYP.	MAX	UNIT
Transition Frequency	f_T	$V_{CE} = 10\text{V}$, $I_C = 20\text{mA}$	5	6.5	—	GHz
Insertion Gain	$ S_{21e} ^2 (1)$	$V_{CE} = 10\text{V}$, $I_C = 20\text{mA}$, $f = 500\text{MHz}$	—	16	—	dB
	$ S_{21e} ^2 (2)$	$V_{CE} = 10\text{V}$, $I_C = 20\text{mA}$, $f = 1\text{GHz}$	7.5	10	—	
Noise Figure	NF (1)	$V_{CE} = 10\text{V}$, $I_C = 5\text{mA}$, $f = 1\text{GHz}$	—	1.1	—	dB
	NF (2)	$V_{CE} = 10\text{V}$, $I_C = 40\text{mA}$, $f = 1\text{GHz}$	—	1.8	3	

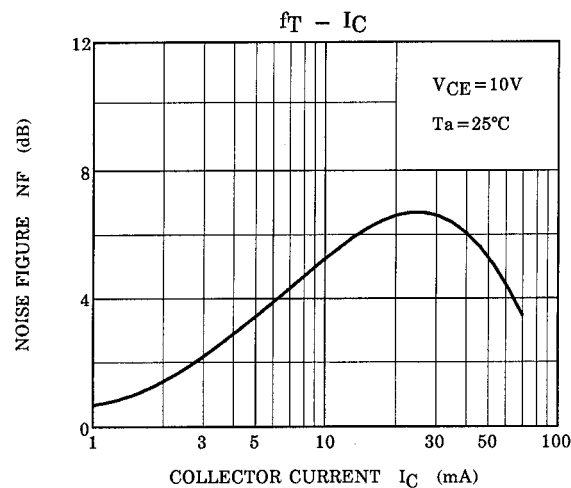
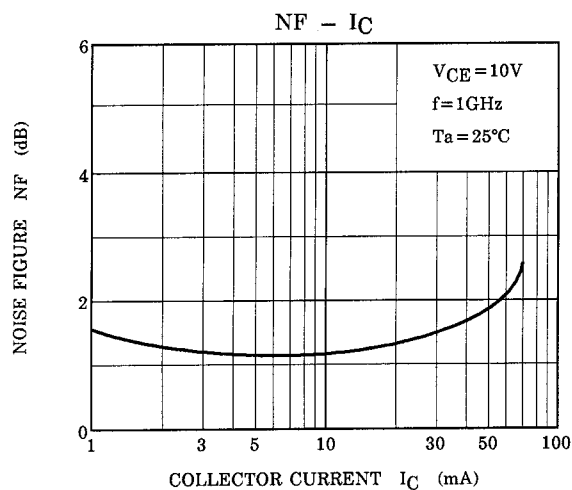
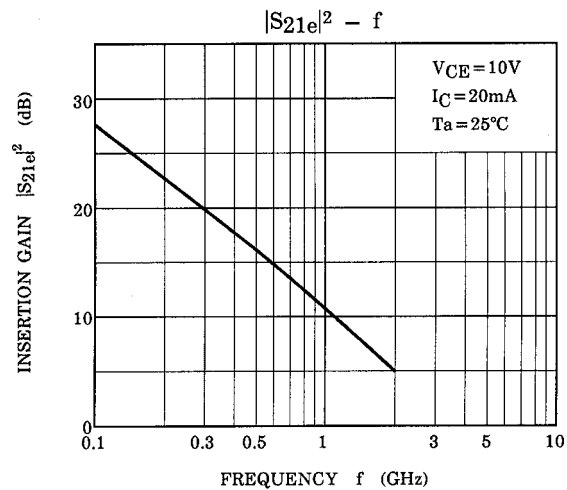
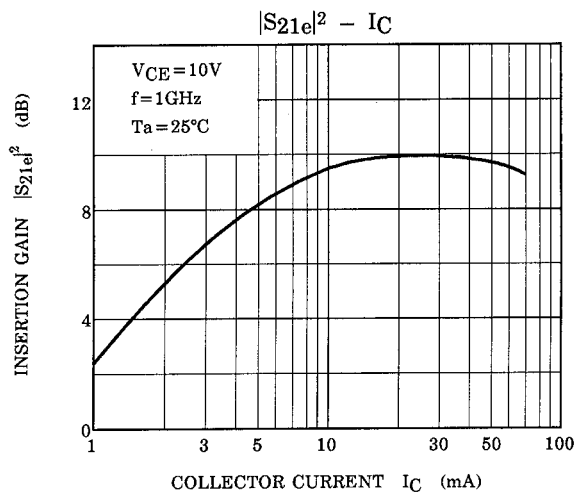
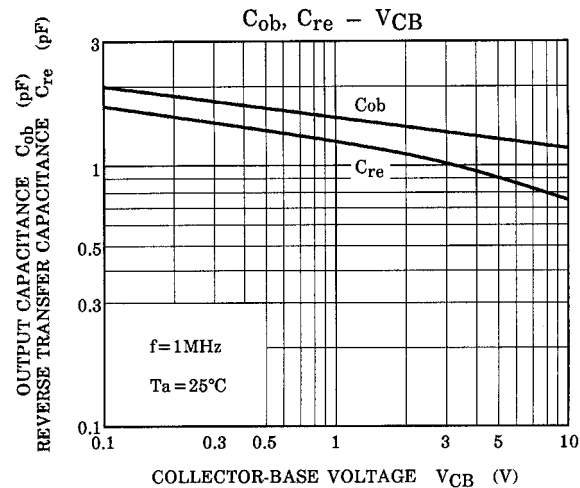
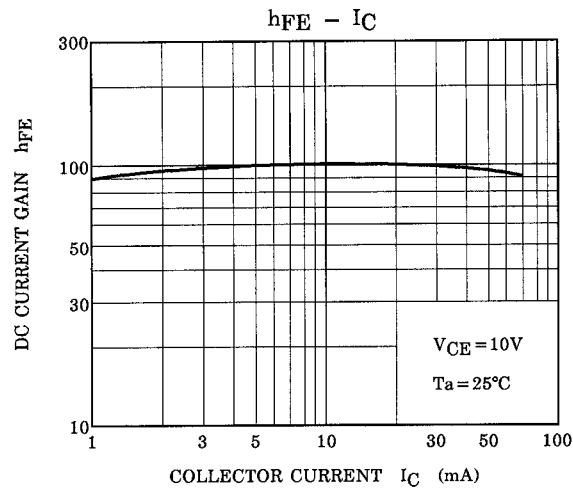
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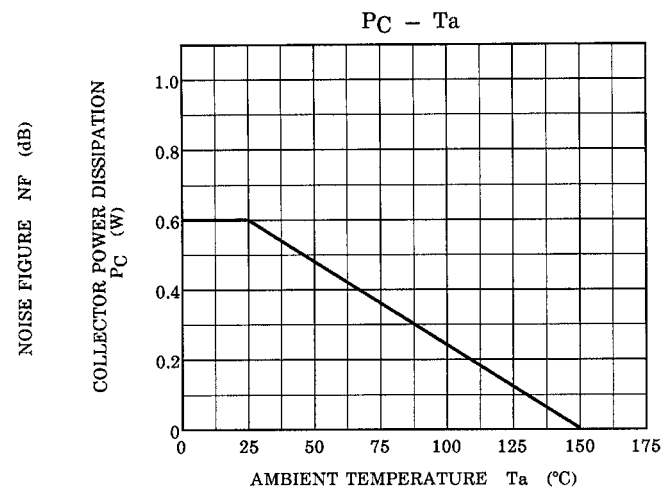
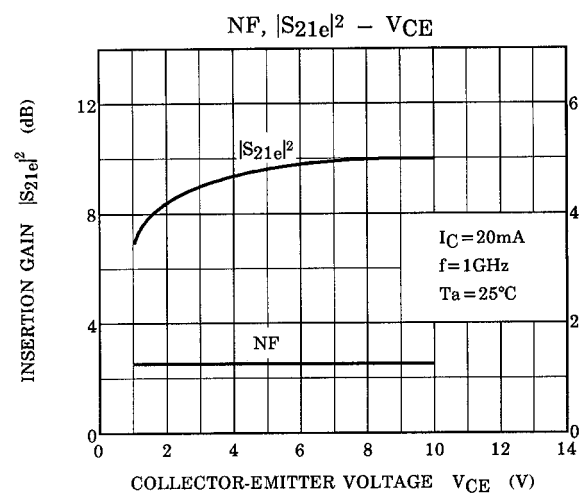
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ELECTRICAL CHARACTERISTICS (Ta=25°C)

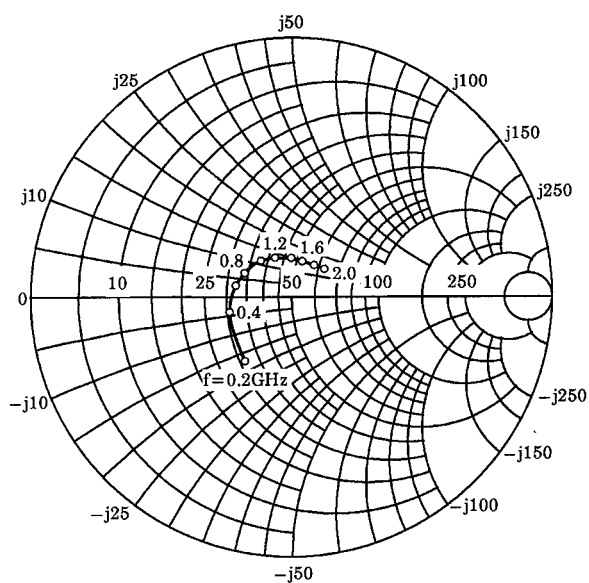
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN	TYP.	MAX	UNIT
Collector Cut-off Current	I_{CBO}	$V_{CE} = 10V, I_E = 0$	—	—	1	μA
Emitter Cut-off Current	I_{EBO}	$V_{EB} = 1V, I_E = 0$	—	—	1	μA
DC Current Gain	h_{FE}	$V_{CE} = 10V, I_C = 20mA$	30	—	250	—
Output Capacitance	C_{ob}	$V_{CB} = 10V, I_E = 0, f = 1MHz$ (Note)	—	1.2	—	pF
Reverse Transfer Capacitance	C_{re}		—	0.75	1.2	pF

Note: C_{re} is measured by 3-terminal method with Capacitance Bridge.

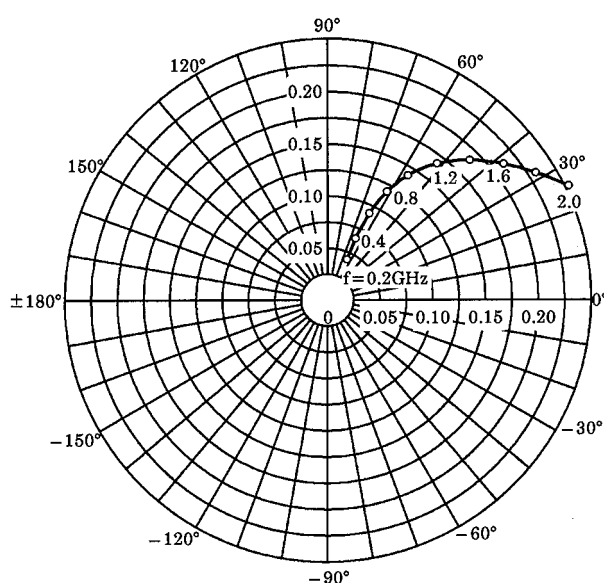




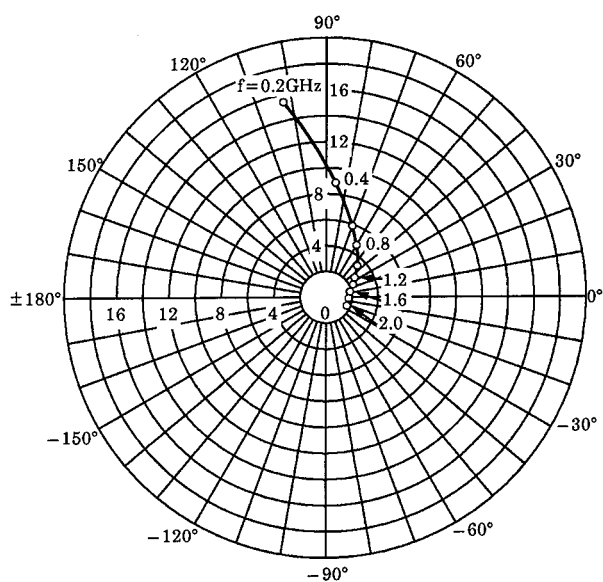
S_{11e}
V_{CE} = 10V
I_C = 20mA
T_a = 25°C
(UNIT : Ω)



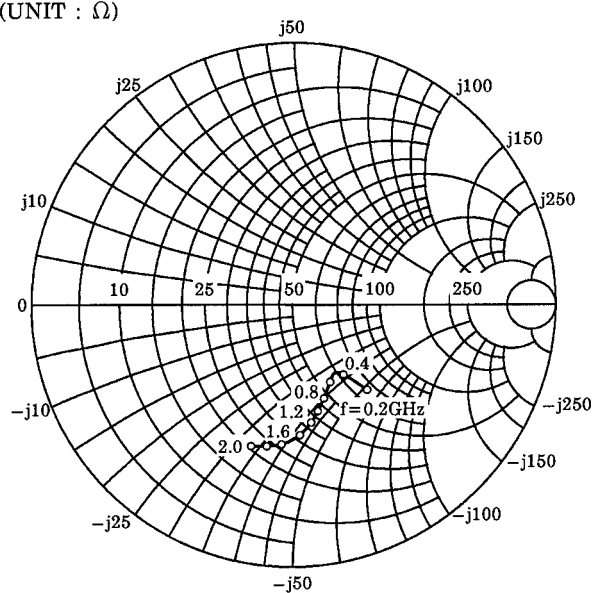
S_{12e}
V_{CE} = 10V
I_C = 20mA
T_a = 25°C



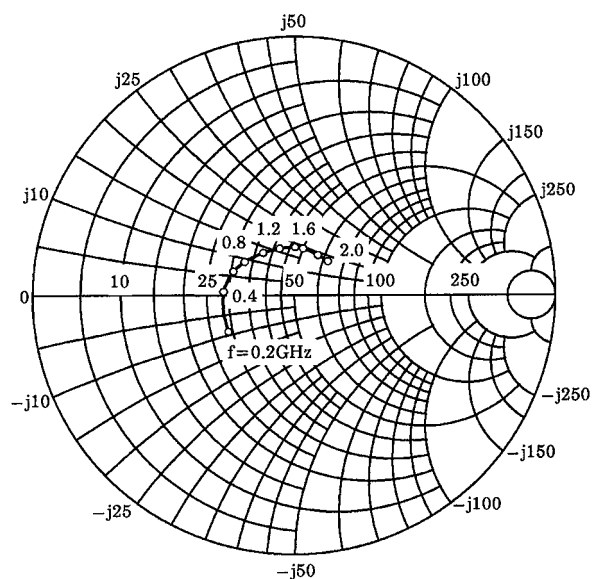
S_{21e}
V_{CE} = 10V
I_C = 20mA
T_a = 25°C



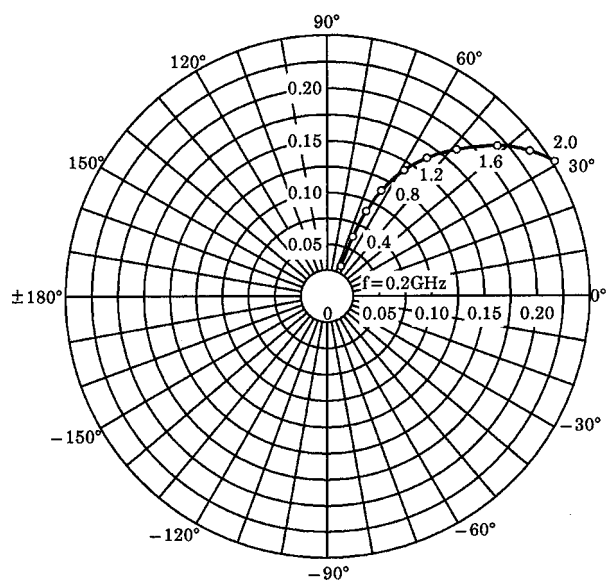
S_{22e}
V_{CE} = 10V
I_C = 20mA
T_a = 25°C
(UNIT : Ω)



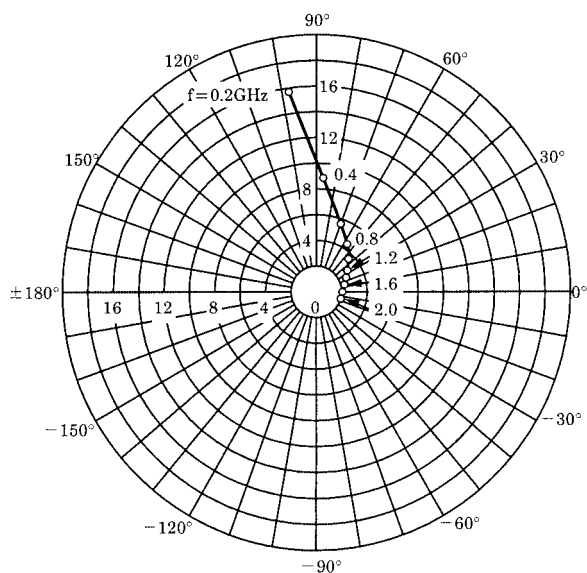
S_{11e}
 $V_{CE} = 10V$
 $I_C = 40mA$
 $T_a = 25^\circ C$
 (UNIT : Ω)



S_{12e}
 $V_{CE} = 10V$
 $I_C = 40mA$
 $T_a = 25^\circ C$



S_{21e}
 $V_{CE} = 10V$
 $I_C = 40mA$
 $T_a = 25^\circ C$



S_{22e}
 $V_{CE} = 10V$
 $I_C = 40mA$
 $T_a = 25^\circ C$
 (UNIT : Ω)

