

TOSHIBA TRANSISTOR SILICON NPN EPITAXIAL PLANAR TYPE

2SC3011

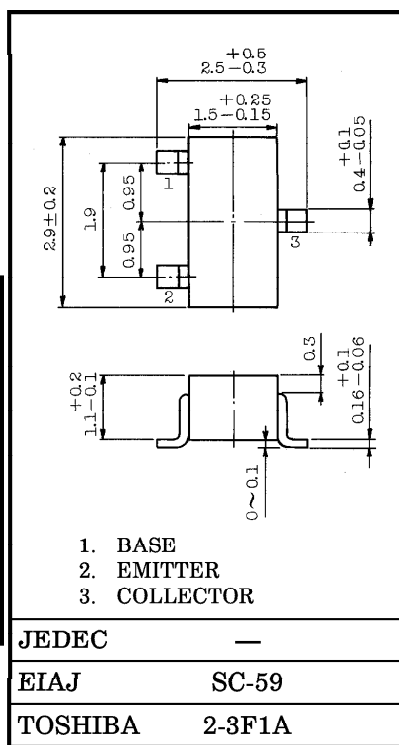
UHF~C BAND LOW NOISE AMPLIFIER APPLICATIONS.

Unit in mm

- High Gain : $|S_{21e}|^2 = 12\text{dB}$ (Typ.)
- Low Noise Figure : $NF = 2.3\text{dB}$ (Typ.), $f = 1\text{GHz}$
- High f_T : $f_T = 6.5\text{GHz}$

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

CHARACTERISTIC	SYMBOL	RATING	UNIT
Collector-Base Voltage	V_{CB0}	20	V
Collector-Emitter Voltage	V_{CE0}	7	V
Emitter-Base Voltage	V_{EB0}	3	V
Collector Current	I_C	30	mA
Base Current	I_B	10	mA
Collector Power Dissipation	P_C	150	mW
Junction Temperature	T_j	125	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	$-55 \sim 125$	$^\circ\text{C}$

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

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Transition Frequency	f_T	$V_{CE} = 5\text{V}, I_C = 10\text{mA}$	—	6.5	—	GHz
Insertion Gain	$ S_{21e} ^2$	$V_{CE} = 5\text{V}, I_C = 10\text{mA}, f = 1\text{GHz}$	—	12	—	dB
Noise Figure	NF	$V_{CE} = 5\text{V}, I_C = 5\text{mA}, f = 1\text{GHz}$	—	2.3	—	dB

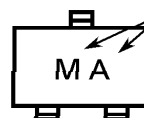
ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current	I_{CBO}	$V_{CB} = 10\text{V}, I_E = 0$	—	—	1.0	μA
Emitter Cut-off Current	I_{EBO}	$V_{EB} = 1.0\text{V}, I_C = 0$	—	—	1.0	μA
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 0.5\text{mA}, I_B = 0$	7	—	—	V
DC Current Gain	h_{FE}	$V_{CE} = 5\text{V}, I_C = 10\text{mA}$	30	120	—	—
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 10\text{mA}, I_B = 1\text{mA}$	—	0.1	—	V
Base-Emitter Saturation Voltage	$V_{BE(sat)}$		—	0.87	—	V
Collector Output Capacitance	C_{ob}	$V_{CB} = 5\text{V}, I_E = 0, f = 1\text{MHz}$ (Note)	—	0.7	0.9	pF
Reverse Transfer Capacitance	C_{re}		—	0.5	—	pF
Input Capacitance	C_{ib}	$V_{EB} = 0, I_C = 0, f = 1\text{MHz}$	—	0.8	—	pF

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

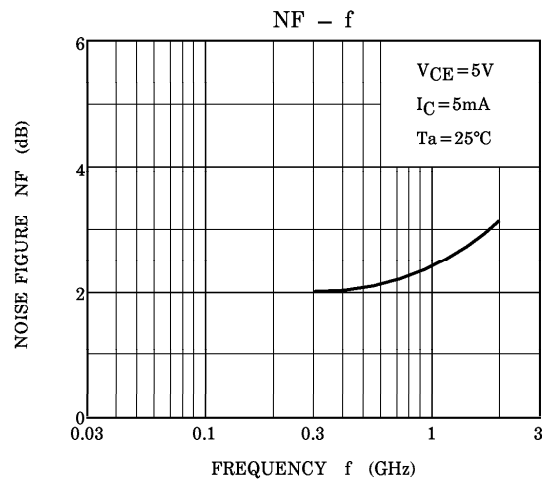
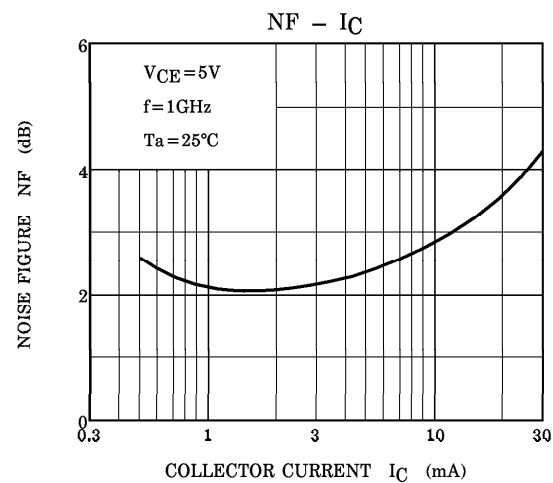
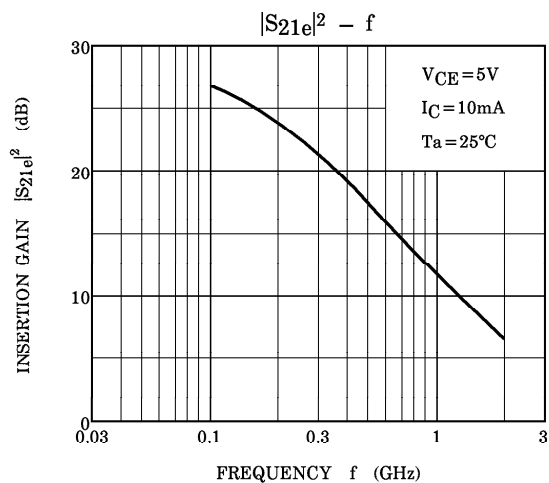
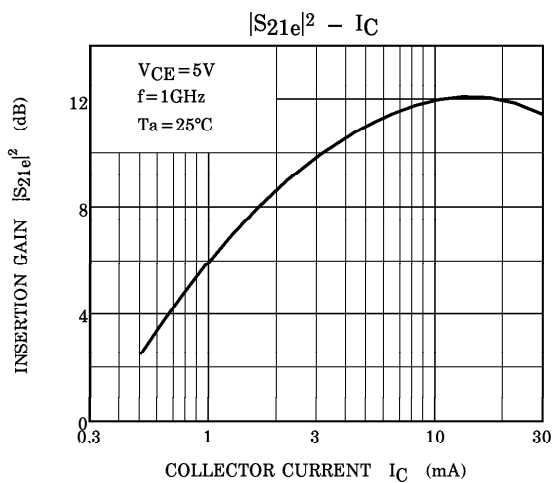
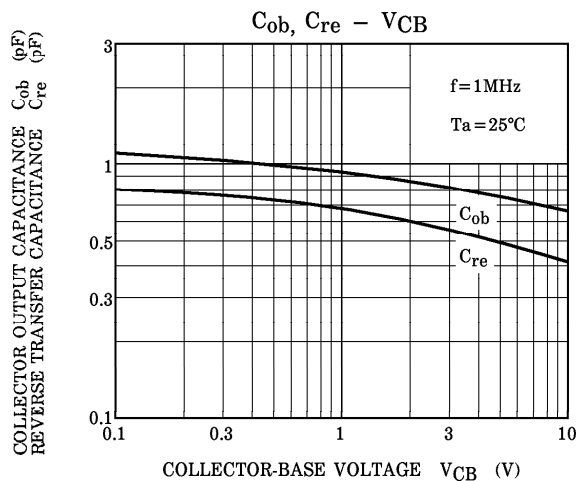
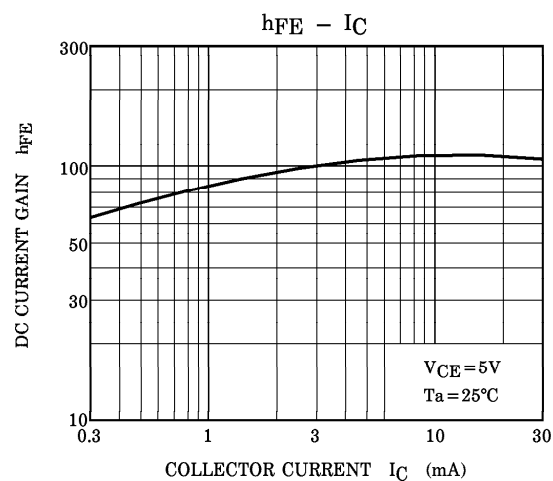
Marking

Type Name



961001EAA2

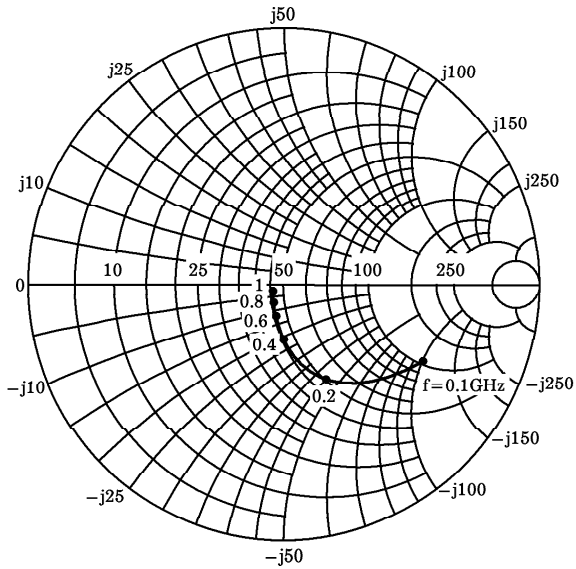
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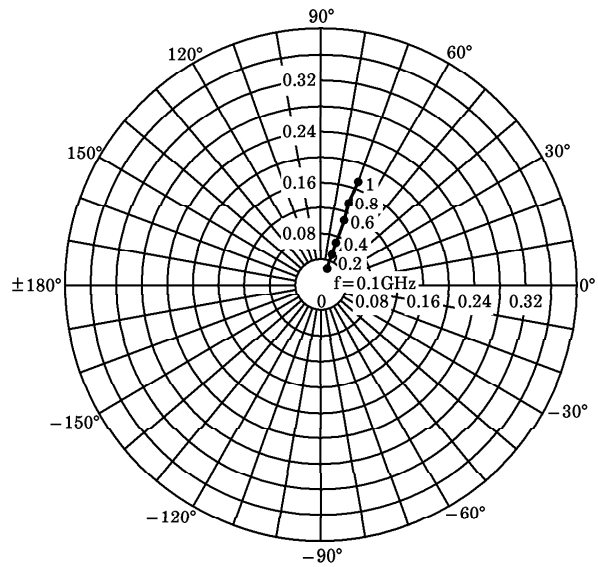
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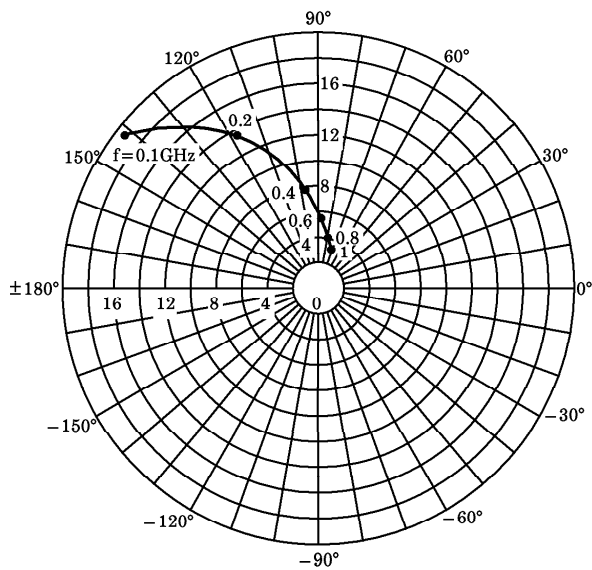
S_{11e}
 $V_{CE} = 5V$
 $I_C = 10mA$
 $T_a = 25^\circ C$
 (UNIT: Ω)



S_{12e}
 $V_{CE} = 5V$
 $I_C = 10mA$
 $T_a = 25^\circ C$



S_{21e}
 $V_{CE} = 5V$
 $I_C = 10mA$
 $T_a = 25^\circ C$



S_{22e}
 $V_{CE} = 5V$
 $I_C = 10mA$
 $T_a = 25^\circ C$
 (UNIT: Ω)

