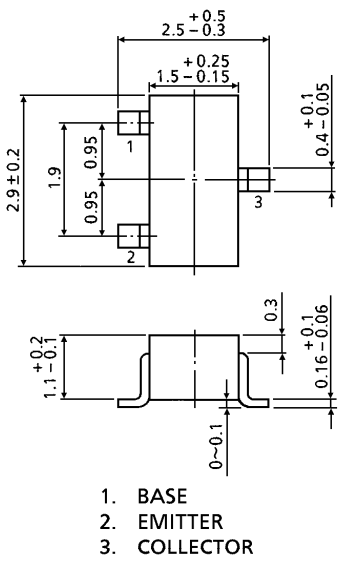
TOSHIBA TRANSISTOR SILICON NPN EPITAXIAL PLANAR TYPE

2SC3099

VHF ~ UHF BAND LOW NOISE AMPLIFIER APPLICATIONS

Unit in mm

- Low Noise Figure
- NF = 1.7dB, $|S_{21e}|^2$ = 15dB (f = 500MHz)
- NF = 2.5dB, $|S_{21e}|^2$ = 9.5dB (f = 1GHz)



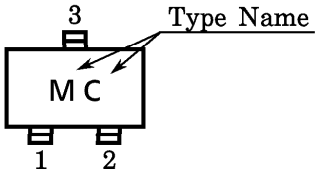
JEDEC	—
EIAJ	SC-59
TOSHIBA	2-3F1A

Weight : 0.012g

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Collector-Base Voltage	V_{CBO}	20	V
Collector-Emitter Voltage	V_{CEO}	20	V
Emitter-Base Voltage	V_{EBO}	3	V
Collector Current	I_C	30	mA
Base Current	I_B	15	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} = 10V, I_C = 10mA	—	4.0	—	GHz
Insertion Gain	$\|S_{21e}\|^2$ (1)	V_{CE} = 10V, I_C = 10mA, f = 500MHz	—	15.0	—	dB
	$\|S_{21e}\|^2$ (2)	V_{CE} = 10V, I_C = 10mA, f = 1GHz	—	9.5	—	dB
Noise Figure	NF (1)	V_{CE} = 10V, I_C = 3mA, f = 500MHz	—	1.7	—	dB
	NF (2)	V_{CE} = 10V, I_C = 3mA, f = 1GHz	—	2.5	—	dB

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	—	—	0.1	μA
Emitter Cut-off Current	I_{EBO}	V_{EB} = 1V, I_C = 0	—	—	1.0	μA
DC Current Gain	h_{FE}	V_{CE} = 10V, I_C = 5mA	30	—	250	—
Output Capacitance	C_{ob}	V_{CB} = 10V, I_E = 0, f = 1MHz	—	0.9	—	pF
Reverse Transfer Capacitance	C_{re}	(Note)	—	0.6	—	pF

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

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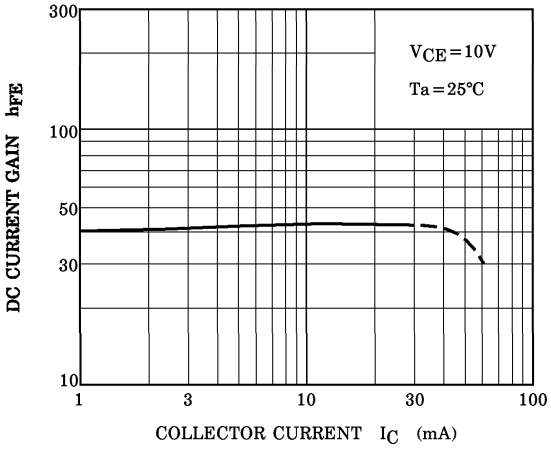
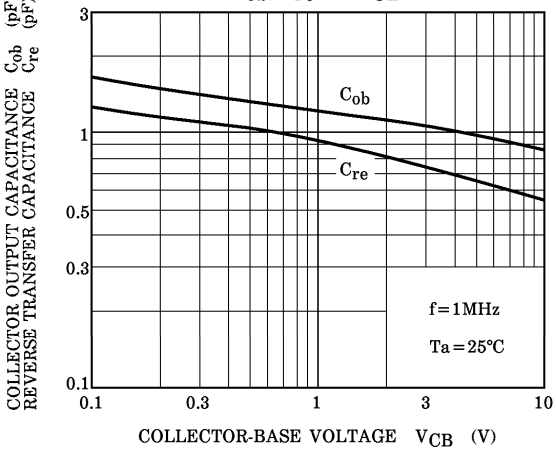
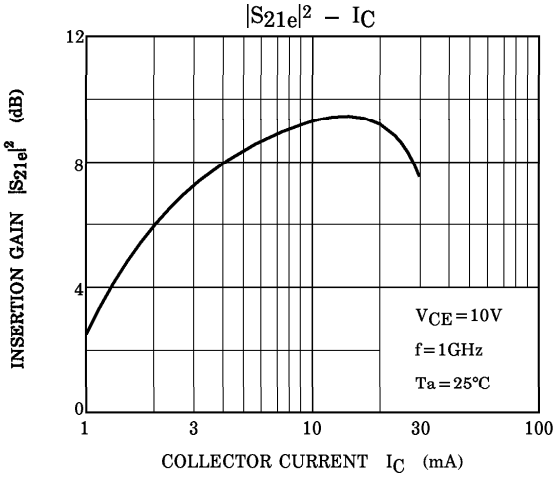
h_{FE} – I_C



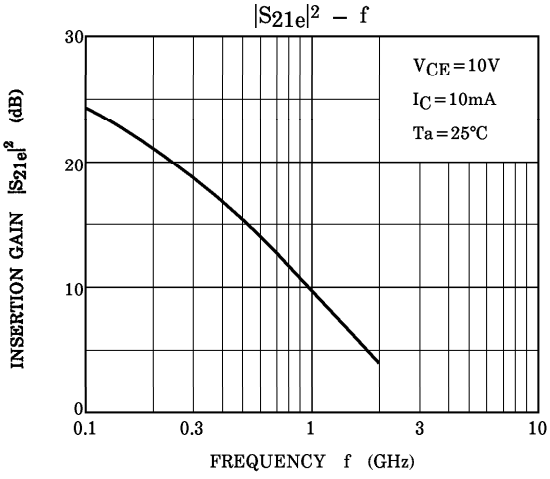
C_{ob}, C_{re} – V_{CB}



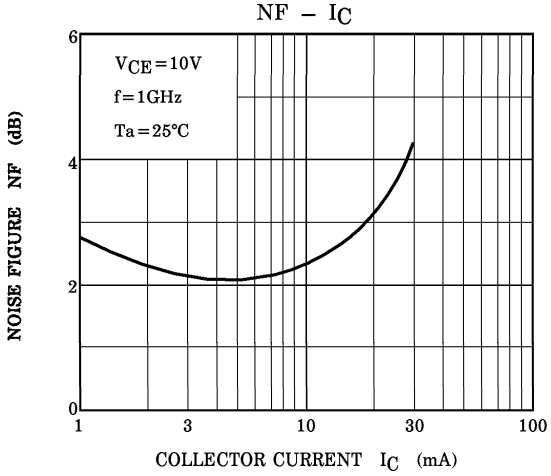
$|S_{21e}|^2$ – I_C



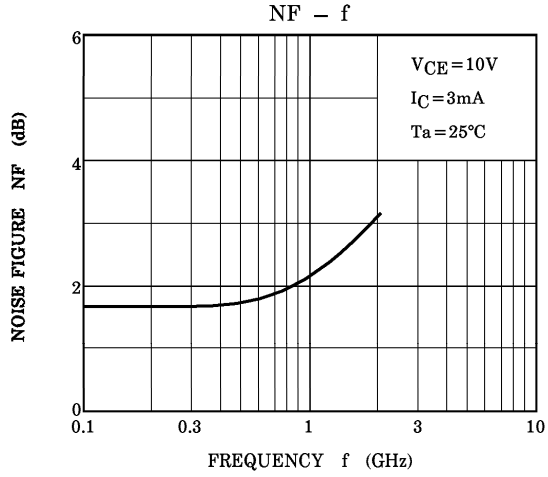
$|S_{21e}|^2$ – f



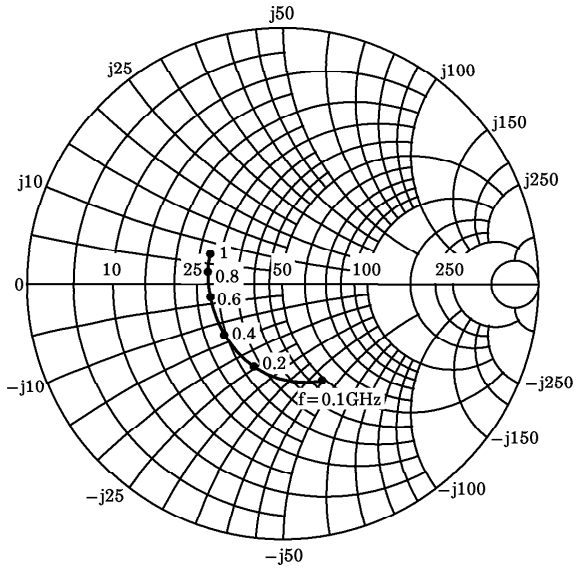
NF – I_C



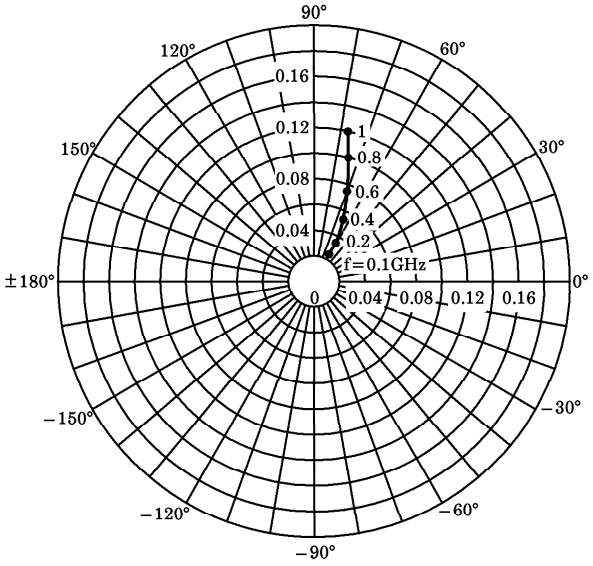
NF – f



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



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



S_{21e}
V_{CE} = 10V
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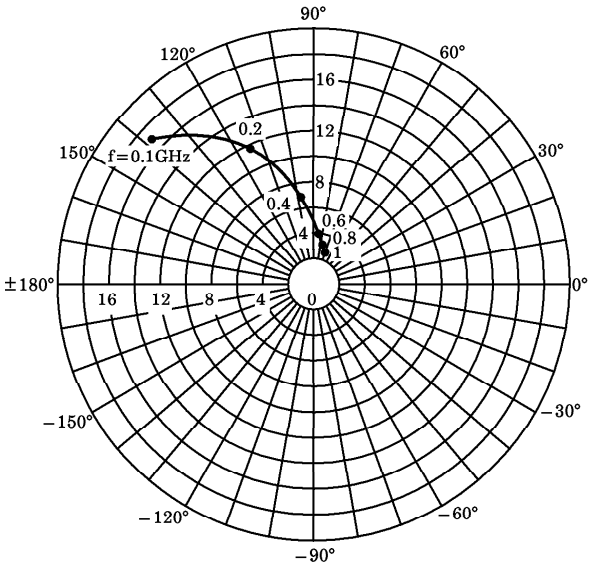

S_{22e}
V_{CE} = 10V
I_C = 10mA
Ta = 25°C
(UNIT : Ω)