

## 2SC3099

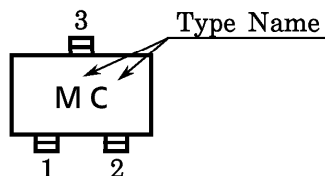
VHF ~ UHF BAND LOW NOISE AMPLIFIER APPLICATIONS

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

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

CHARACTERISTIC	SYMBOL	RATING	UNIT
Collector-Base Voltage	$V_{CB0}$	20	V
Collector-Emitter Voltage	$V_{CE0}$	20	V
Emitter-Base Voltage	$V_{EB0}$	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	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	$-55\sim 125$	$^\circ\text{C}$

Marking



Unit in mm

1. BASE
2. EMITTER
3. COLLECTOR

JEDEC	—
EIAJ	SC-59
TOSHIBA	2-3F1A

Weight : 0.012g

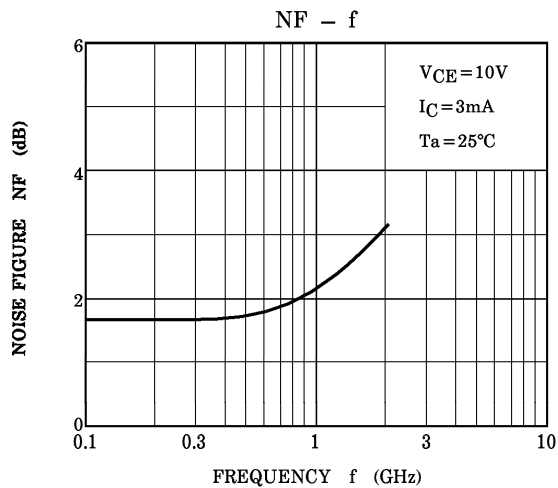
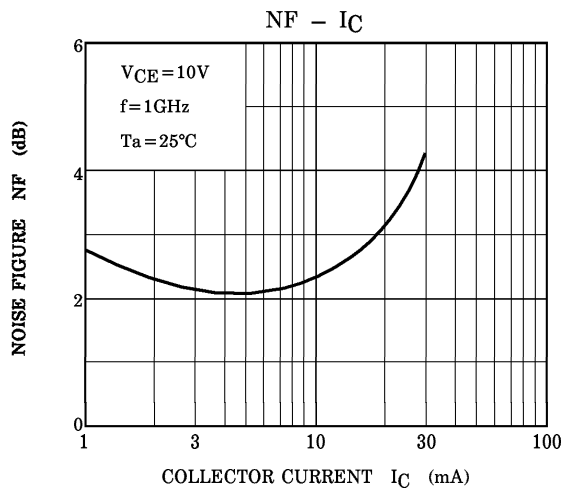
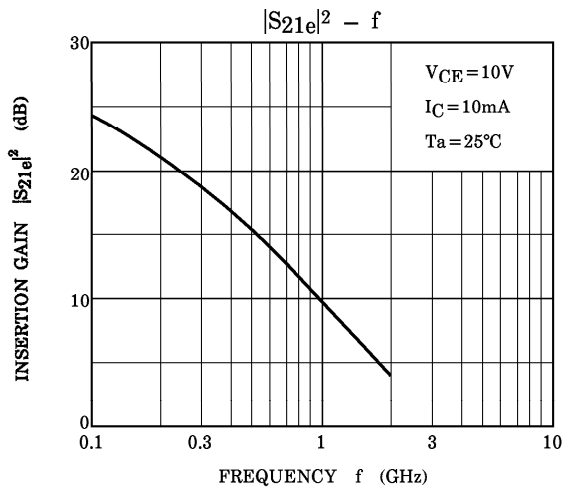
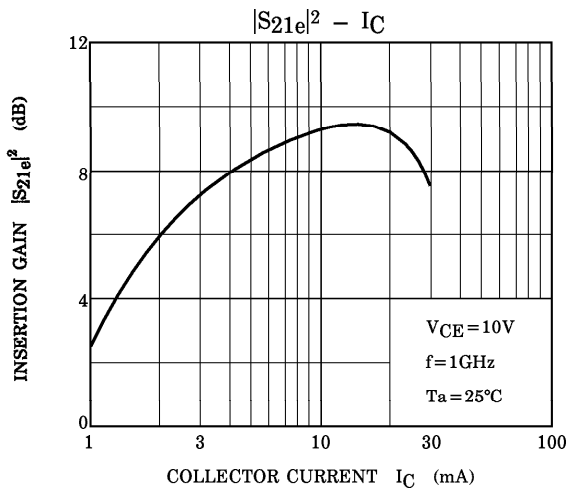
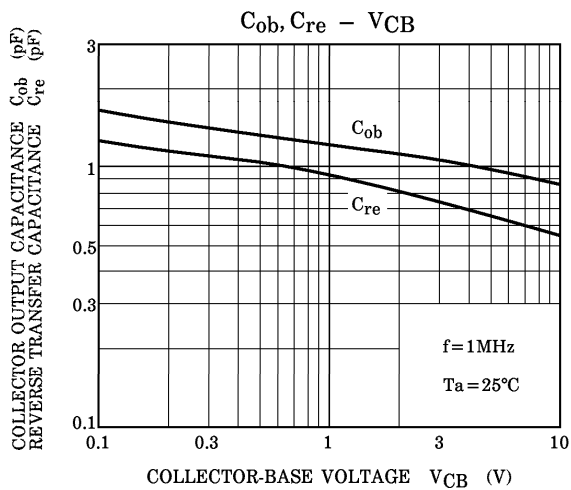
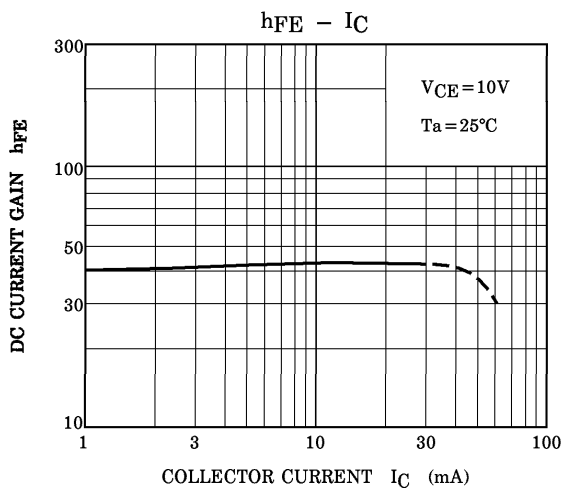
MICROWAVE CHARACTERISTICS ( $T_a = 25^\circ\text{C}$ )

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Transition Frequency	$f_T$	$V_{CE}=10\text{V}$ , $I_C=10\text{mA}$	—	4.0	—	GHz
Insertion Gain	$ S_{21e} ^2 (1)$	$V_{CE}=10\text{V}$ , $I_C=10\text{mA}$ , $f=500\text{MHz}$	—	15.0	—	dB
	$ S_{21e} ^2 (2)$	$V_{CE}=10\text{V}$ , $I_C=10\text{mA}$ , $f=1\text{GHz}$	—	9.5	—	dB
Noise Figure	NF (1)	$V_{CE}=10\text{V}$ , $I_C=3\text{mA}$ , $f=500\text{MHz}$	—	1.7	—	dB
	NF (2)	$V_{CE}=10\text{V}$ , $I_C=3\text{mA}$ , $f=1\text{GHz}$	—	2.5	—	dB

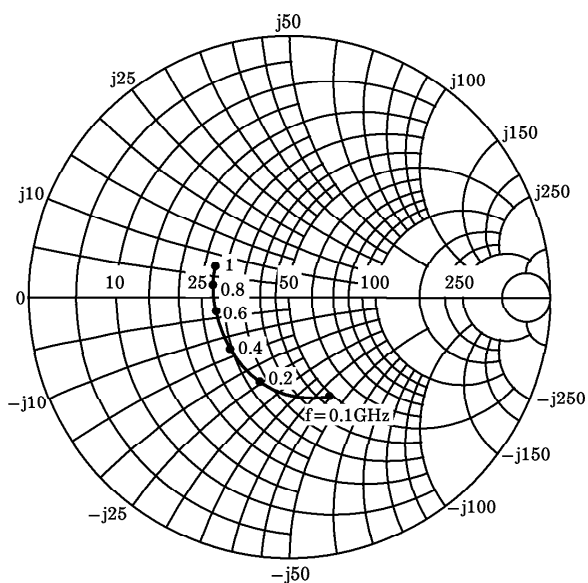
ELECTRICAL CHARACTERISTICS ( $T_a = 25^\circ\text{C}$ )

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current	$I_{CBO}$	$V_{CB}=10\text{V}$ , $I_E=0$	—	—	0.1	$\mu\text{A}$
Emitter Cut-off Current	$I_{EBO}$	$V_{EB}=1\text{V}$ , $I_C=0$	—	—	1.0	$\mu\text{A}$
DC Current Gain	$h_{FE}$	$V_{CE}=10\text{V}$ , $I_C=5\text{mA}$	30	—	250	—
Output Capacitance	$C_{ob}$	$V_{CB}=10\text{V}$ , $I_E=0$ , $f=1\text{MHz}$	—	0.9	—	pF
Reverse Transfer Capacitance	$C_{re}$	(Note)	—	0.6	—	pF

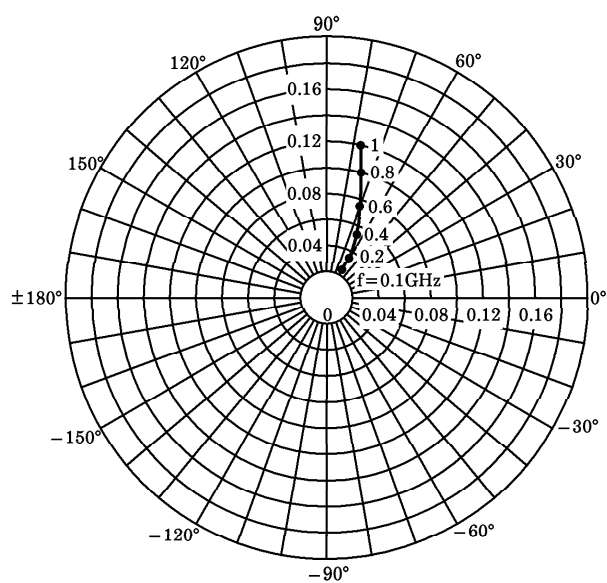
(Note)  $C_{re}$  is measured by 3 terminal method with Capacitance Bridge.



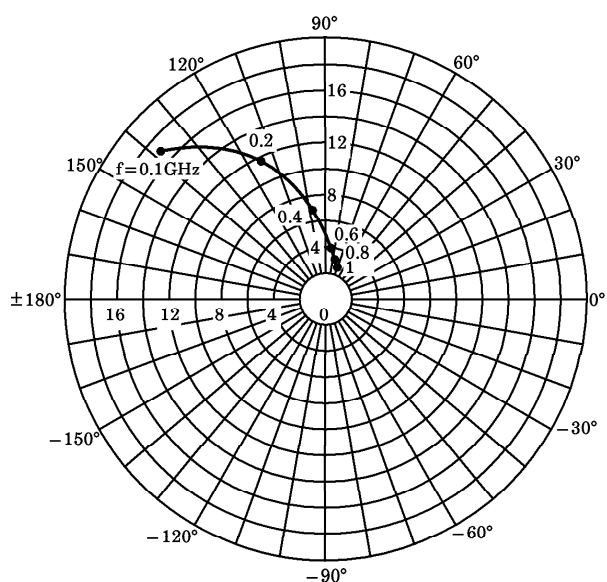
$S_{11e}$   
 $V_{CE} = 10V$   
 $I_C = 10mA$   
 $T_a = 25^\circ C$   
 (UNIT :  $\Omega$ )



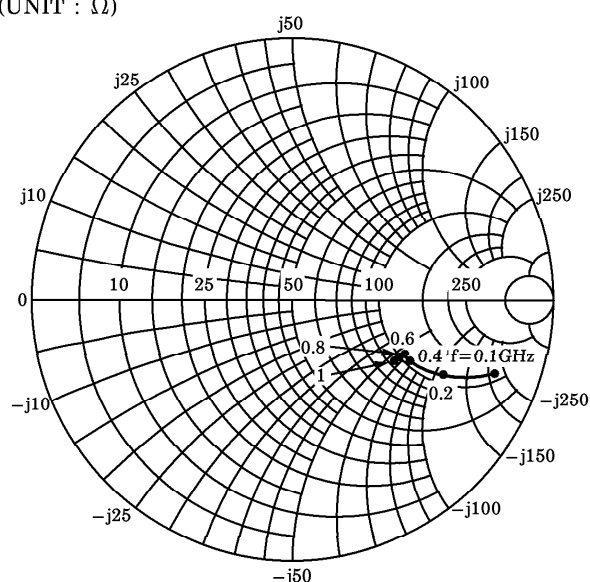
$S_{12e}$   
 $V_{CE} = 10V$   
 $I_C = 10mA$   
 $T_a = 25^\circ C$



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



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



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