TOSHIBA Transistor Silicon NPN Epitaxial Planar Type

2SC3099

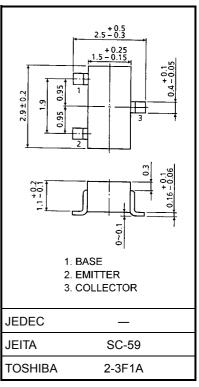
VHF~UHF Band Low Noise Amplifier Applications

Unit: mm

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

Maximum Ratings (Ta = 25°C)

Characteristics	Symbol	Rating	Unit
Collector-base voltage	V_{CBO}	20	V
Collector-emitter voltage	V _{CEO}	20	V
Emitter-base voltage	V _{EBO}	3	٧
Collector current	Ic	30	mA
Base current	Ι _Β	15	mA
Collector power dissipation	P _C	150	mW
Junction temperature	Tj	125	°C
Storage temperature range	T _{stg}	-55~125	°C



Weight: 0.012 g (typ.)

Microwave Characteristics (Ta = 25°C)

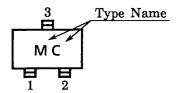
Characteristics	Symbol	Test Condition	Min	Тур.	Max	Unit
Transition frequency	f _T	$V_{CE} = 10 \text{ V}, I_{C} = 10 \text{ mA}$		4.0	_	GHz
Insertion gain	S _{21e} ² (1)	$V_{CE} = 10 \text{ V}, I_{C} = 10 \text{ mA}, f = 500 \text{ MHz}$	_	15.0	_	dB
	S _{21e} ² (2)	$V_{CE} = 10 \text{ V}, I_{C} = 10 \text{ mA}, f = 1 \text{ GHz}$		9.5	_	
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	_	

Electrical Characteristics (Ta = 25°C)

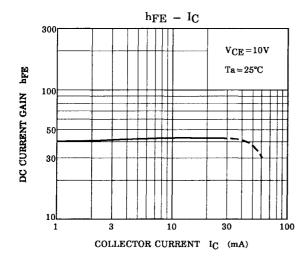
Characteristics	Symbol	Test Condition	Min	Тур.	Max	Unit
Collector cut-off current	I _{CBO}	$V_{CB} = 10 \text{ V}, I_{E} = 0$	_	_	0.1	μА
Emitter cut-off current	I _{EBO}	$V_{EB} = 1 \text{ V, } I_C = 0$	_	_	1.0	μА
DC current gain	h _{FE}	$V_{CE} = 10 \text{ V}, I_C = 5 \text{ mA}$	30	_	250	
Output capacitance	C _{ob}	V _{CB} = 10 V, I _E = 0, f = 1 MHz (Note)	_	0.9	_	pF
Reverse transfer capacitance	C _{re}	VCB - 10 V, IE - 0, I - 1 WILIZ (NOTE)	_	0.6	_	pF

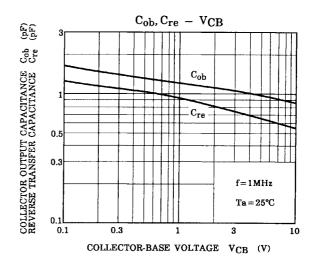
Note: C_{re} is measured by 3 terminal method with capacitance bridge.

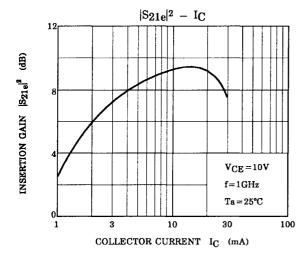
Marking

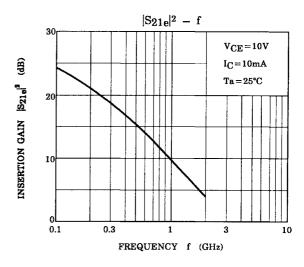


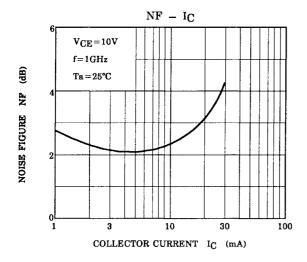
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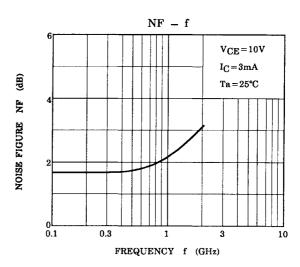








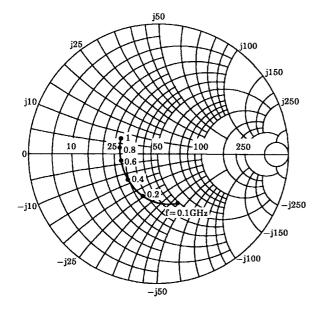


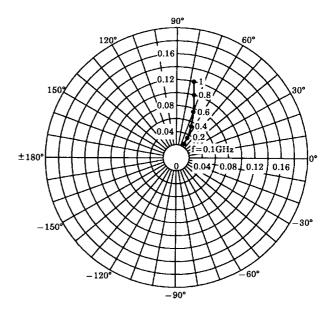


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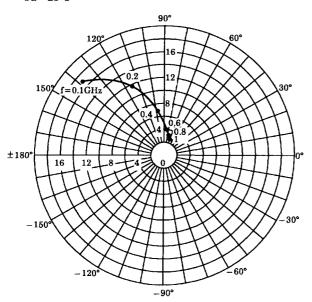
 $\begin{array}{l} S_{11e} \\ V_{CE} = 10V \\ I_{C} = 10mA \\ Ta = 25^{\circ}C \\ (UNIT:\Omega) \end{array}$



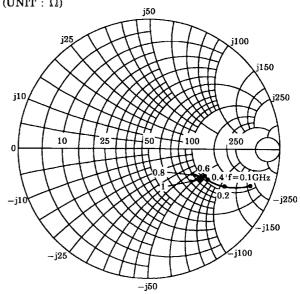




 $\begin{array}{l} S_{21e} \\ V_{CE} = 10V \\ I_{C} = 10 \text{mA} \\ Ta = 25^{\circ}C \end{array}$



 $\begin{array}{l} S_{22e} \\ V_{CE} = 10V \\ I_{C} = 10mA \\ T_{a} = 25^{\circ}C \\ (UNIT: \Omega) \end{array}$



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