TOSHIBA Transistor Silicon NPN Epitaxial Planar Type

2SC4315

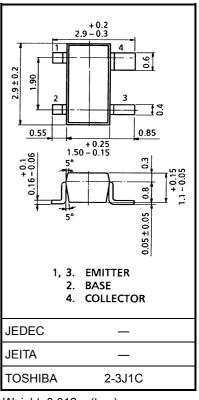
VHF~UHF Band Low Noise Amplifier Applications

Unit: mm

- Low noise figure, high gain.
- NF = 1.1dB, $|S_{21e}|^2 = 14dB$ (f = 1 GHz)

Maximum Ratings (Ta = 25°C)

Characteristics	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	Ic	80	mA
Base current	Ι _Β	40	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)

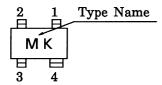
Characteristics	Symbol	Test Condition	Min	Тур.	Max	Unit
Transition frequency	f _T	V _{CE} = 10 V, I _C = 20 mA	5	7	_	GHz
Insertion gain -	S _{21e} ² (1)	V _{CE} = 10 V, I _C = 20 mA, f = 500 MHz	_	19.5	_	- dB
	S _{21e} ² (2)	V _{CE} = 10 V, I _C = 20 mA, f = 1 GHz	10.5	14	_	
Noise figure	NF (1)	$V_{CE} = 10 \text{ V}, I_{C} = 5 \text{ mA}, f = 500 \text{ MHz}$	_	1	_	- dB
	NF (2)	$V_{CE} = 10 \text{ V}, I_{C} = 5 \text{ mA}, f = 1 \text{ GHz}$	-	1.1	2	

Electrical Characteristics (Ta = 25°C)

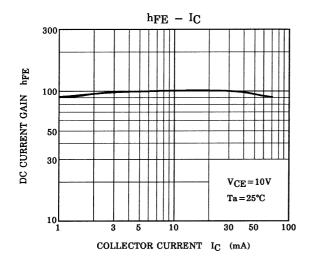
Characteristics	Symbol	Test Condition	Min	Тур.	Max	Unit
Collector cut-off current	I _{CBO}	V _{CB} = 10 V, I _E = 0	_	_	1	μА
Emitter cut-off current	I _{EBO}	V _{EB} = 1 V, I _C = 0	_	_	1	μА
DC current gain	h _{FE}	V _{CE} = 10 V, I _C = 20 mA	30	_	250	
Output capacitance	C _{ob}	V _{CB} = 10 V, I _E = 0, f = 1 MHz (Note)	_	1	_	pF
Reverse transfer capacitance	C _{re}		_	0.55	1	pF

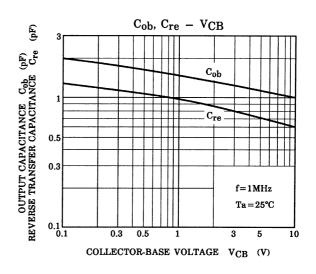
Note: C_{re} is measured by 3 terminal method with capacitance bridge.

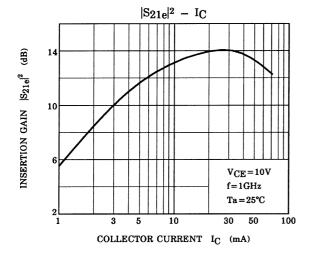
Marking

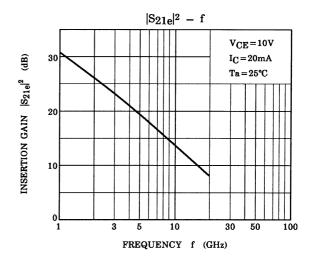


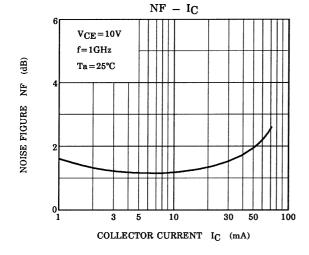
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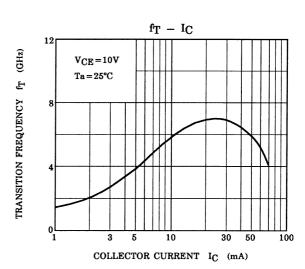




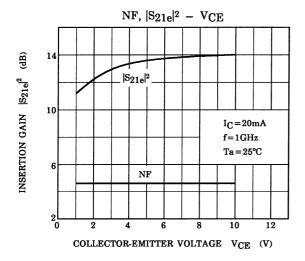


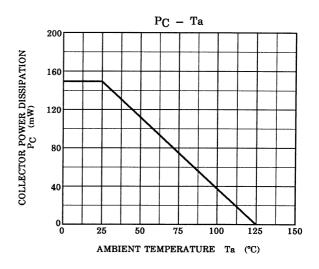






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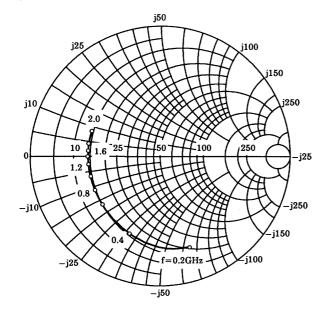


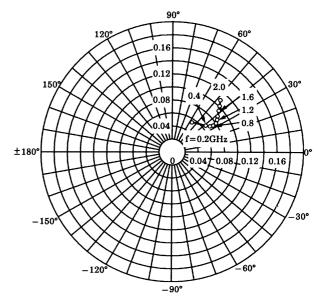


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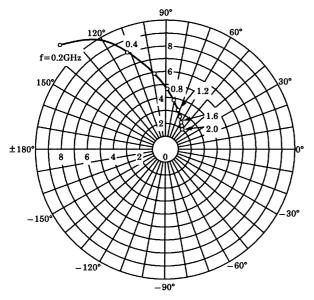
 S_{11e} $V_{CE}=10V$ $I_{C}=5mA$ $T_{a}=25^{\circ}C$ (UNIT: Ω)





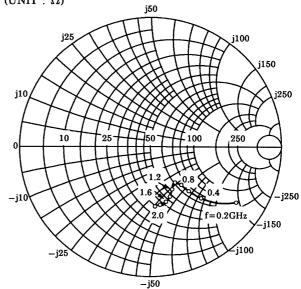


 $\begin{array}{l} S_{21e} \\ V_{CE} = 10V \\ I_{C} = 5 mA \\ Ta = 25 ^{\circ}C \end{array}$



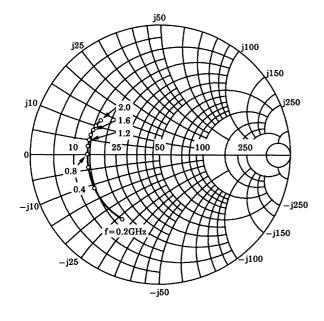
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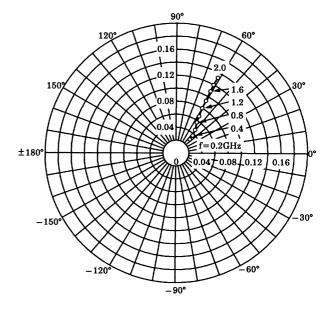
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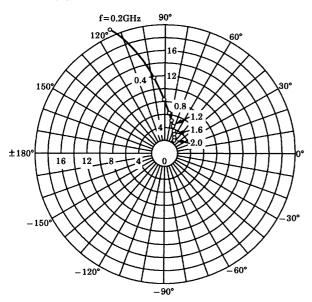
 $\begin{array}{l} S_{11e} \\ V_{CE} = 10V \\ I_{C} = 20 \text{mA} \\ Ta = 25 ^{\circ}C \\ (UNIT: \Omega) \end{array}$



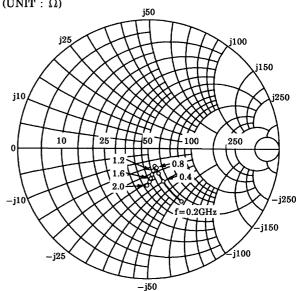




 S_{21e} $V_{CE} = 10V$ $I_{C} = 20 \text{mA}$ $T_{a} = 25 ^{\circ}C$



 $\begin{array}{l} S_{22e} \\ V_{CE} = 10V \\ I_{C} = 20 mA \\ Ta = 25 ^{\circ}C \\ (UNIT: \Omega) \end{array}$



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