

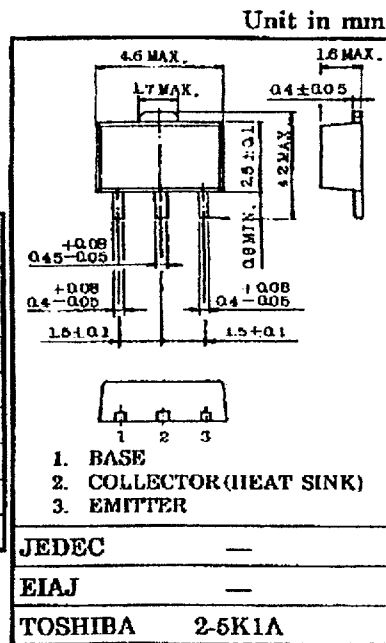
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(2SC4318)
VHF~UHF BAND LOW NOISE AMPLIFIER APPLICATIONS.

- Low Noise Figure, High Gain.
- $NF = 1.1\text{dB}$, $|S_{21e}|^2 = 11\text{dB}$ ($f = 1\text{GHz}$)

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

CHARACTERISTIC	SYMBOL	RATING	UNIT
Collector-Base Voltage	V_{CB0}	20	V
Collector-Emitter Voltage	V_{CE0}	10	V
Emitter-Base Voltage	V_{EB0}	1.5	V
Base Current	I_B	20	mA
Collector Current	I_C	40	mA
Collector Power Dissipation	P_C	300	mW
Junction Temperature	T_j	150	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-55~150	$^\circ\text{C}$



Weight : 0.05g

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

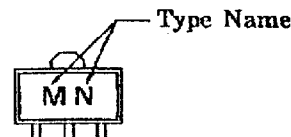
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Transition Frequency	f_T	$V_{CE} = 8\text{V}$, $I_C = 20\text{mA}$	6	9	—	GHz
Insertion Gain	$ S_{21e} ^2$ (1)	$V_{CE} = 8\text{V}$, $I_C = 20\text{mA}$, $f = 1\text{GHz}$	8	11	—	dB
	$ S_{21e} ^2$ (2)	$V_{CE} = 8\text{V}$, $I_C = 20\text{mA}$, $f = 2\text{GHz}$	—	5.5	—	
Noise Figure	NF (1)	$V_{CE} = 8\text{V}$, $I_C = 5\text{mA}$, $f = 1\text{GHz}$	—	1.1	2.5	dB
	NF (2)	$V_{CE} = 8\text{V}$, $I_C = 5\text{mA}$, $f = 2\text{GHz}$	—	1.7	—	

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

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current	I_{CB0}	$V_{CB} = 10\text{V}$, $I_E = 0$	—	—	1	μA
Emitter Cut-off Current	I_{EB0}	$V_{EB} = 1\text{V}$, $I_C = 0$	—	—	1	μA
DC Current Gain	h_{FE}	$V_{CE} = 8\text{V}$, $I_C = 20\text{mA}$	50	—	250	—
Output Capacitance	C_{ob}	$V_{CB} = 10\text{V}$, $I_E = 0$, $f = 1\text{MHz}$	—	0.75	—	pF
Reverse Transfer Capacitance	C_{re}	(Note)	—	0.55	1.0	pF

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

Marking



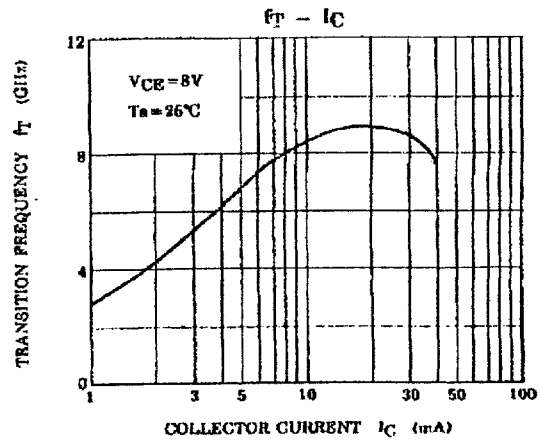
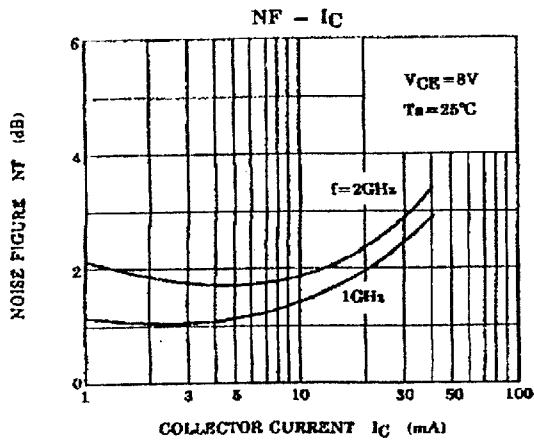
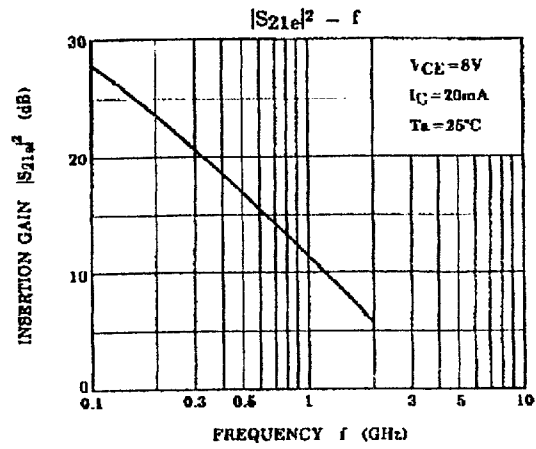
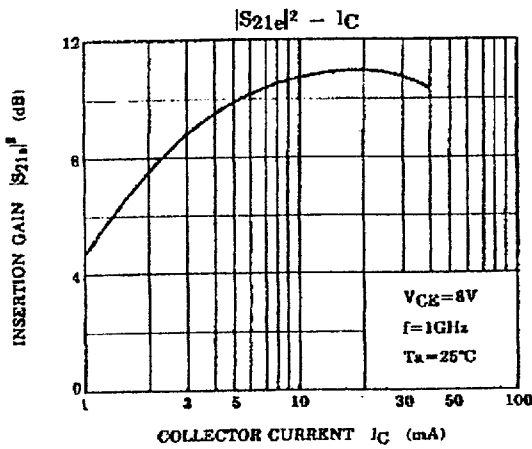
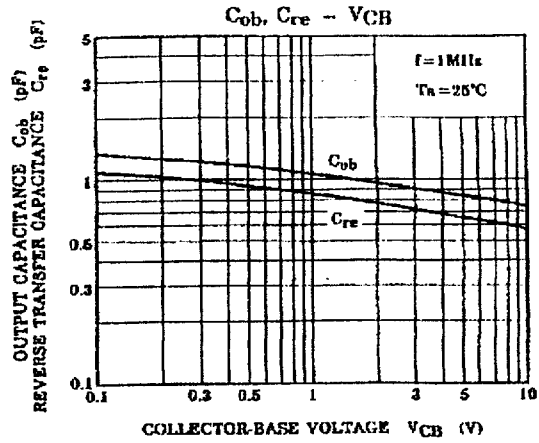
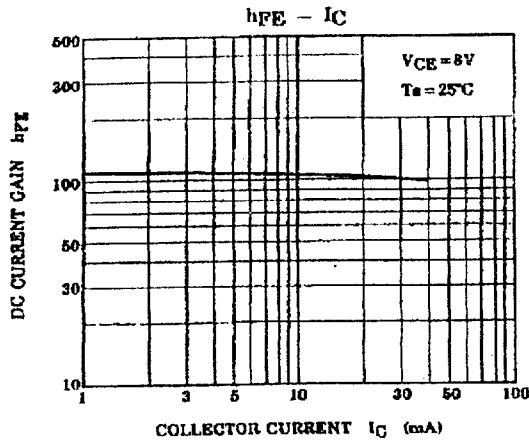
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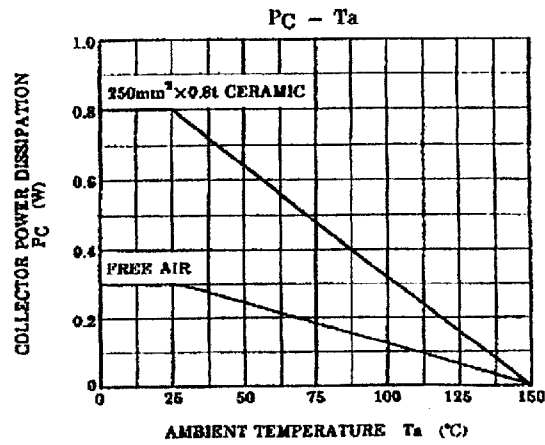
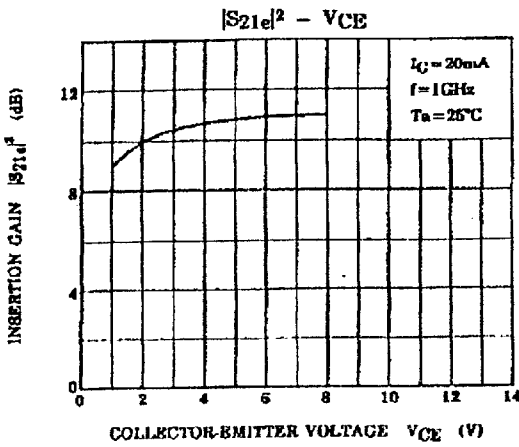
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S-PARAMETER Z₀ = 50Ω, T_a = 25°C
 V_{CE} = 8V, I_C = 5mA

FREQUENCY MHz	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
200	0.572	-48.7	10.244	131.4	0.055	66.6	0.752	-30.7
400	0.322	-70.6	6.610	108.6	0.085	62.8	0.542	-38.9
600	0.178	-79.2	4.777	95.9	0.111	63.9	0.451	-39.9
800	0.093	-74.0	3.743	86.8	0.137	64.7	0.412	-39.8
1000	0.055	-37.8	3.100	79.9	0.163	65.1	0.401	-40.2
1200	0.077	-6.5	2.659	73.7	0.189	64.6	0.403	-41.9
1400	0.099	-2.4	2.341	68.2	0.213	63.8	0.413	-44.4
1600	0.121	-2.0	2.116	63.7	0.236	63.2	0.428	-47.9
1800	0.133	-13.5	1.955	59.5	0.259	62.2	0.443	-62.5
2000	0.136	-19.4	1.799	56.8	0.275	60.5	0.459	-56.6

V_{CE} = 8V, I_C = 20mA

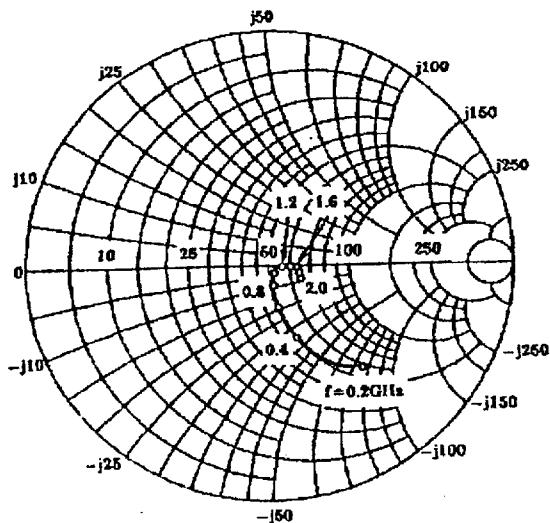
FREQUENCY MHz	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
200	0.202	-69.0	15.121	111.1	0.041	74.1	0.504	-35.3
400	0.054	-74.9	8.195	94.9	0.074	75.9	0.376	-31.6
600	0.034	36.2	6.632	86.2	0.108	75.6	0.348	-28.9
800	0.086	46.7	4.314	79.4	0.141	74.0	0.345	-28.8
1000	0.131	39.9	3.532	73.8	0.172	72.2	0.354	-30.4
1200	0.165	29.6	2.999	68.4	0.203	70.0	0.368	-33.6
1400	0.183	18.0	2.614	64.0	0.230	67.4	0.385	-37.6
1600	0.191	10.1	2.340	60.0	0.254	65.9	0.406	-42.4
1800	0.202	-1.8	2.121	56.5	0.279	63.9	0.423	-48.1
2000	0.195	-10.2	1.944	54.6	0.294	61.3	0.440	-53.0

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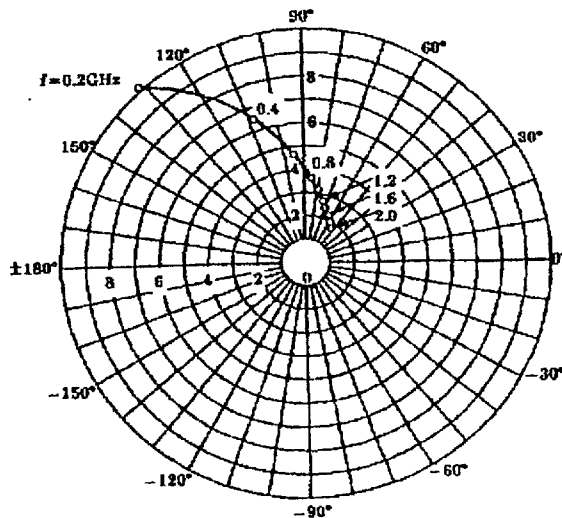
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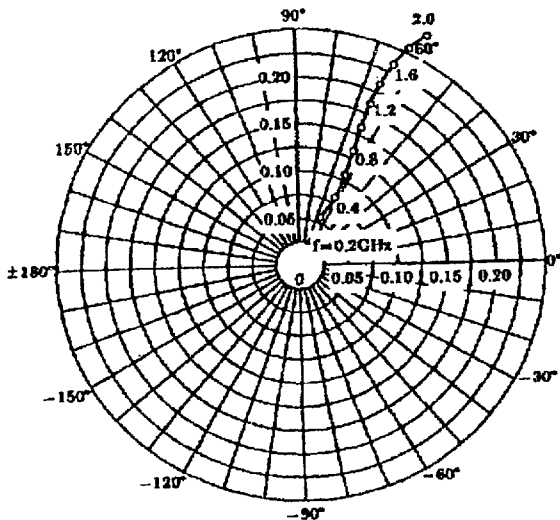
S_{11e}
 V_{CE} = 8V
 I_C = 5mA
 T_a = 25°C
 (UNIT : Ω)



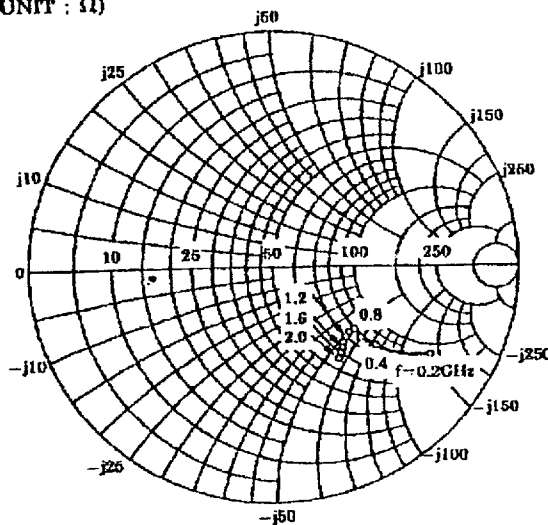
S_{21e}
 V_{CE} = 8V
 I_C = 5mA
 T_a = 25°C



S_{12e}
 V_{CE} = 8V
 I_C = 5mA
 T_a = 25°C



S_{22e}
 V_{CE} = 8V
 I_C = 5mA
 T_a = 25°C
 (UNIT : Ω)



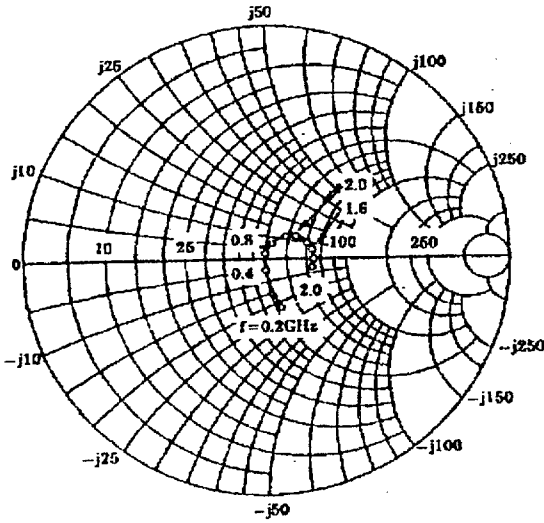
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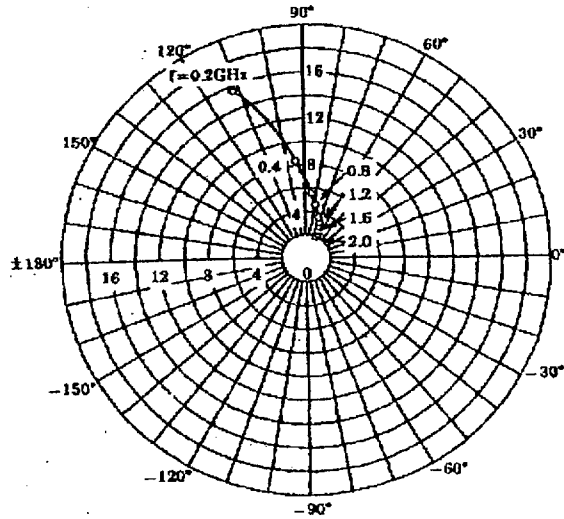
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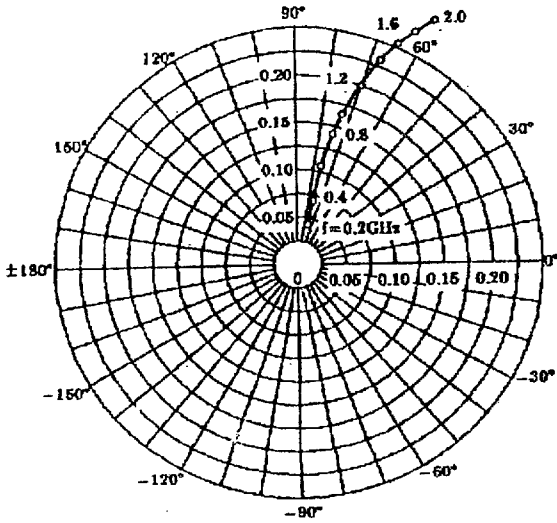
S11e
VCE=8V
IC=20mA
Ta=25°C
(UNIT : Ω)



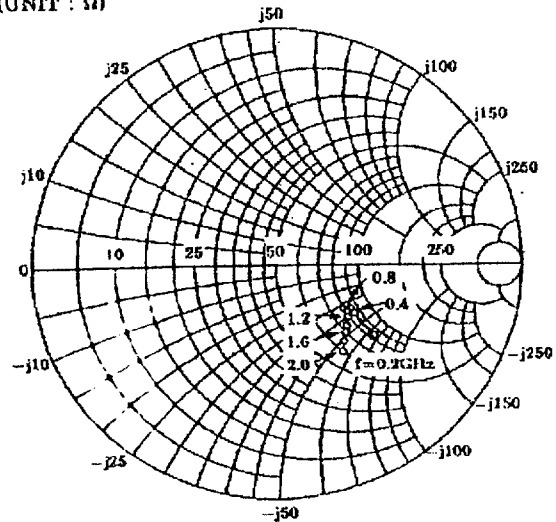
S21e
VCE=8V
IC=20mA
Ta=25°C



S12e
VCE=8V
IC=20mA
Ta=25°C



S22e
VCE=8V
IC=20mA
Ta=25°C
(UNIT : Ω)



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