

## 描述

FCG93A,FCG93A/X 是国芯佳品半导体有限公司生产的超高频低噪声晶体管，采用平面 NPN 硅外延双极型工艺，具有高功率增益、低噪声系数、大动态范围和理想的电流特性。采用了超小型的 4 引脚贴片 SOT-143B 封装，主要用于 VHF，UHF 和 CATV 高频宽带低噪声放大器。

## 主要特性

高增益:  $|S_{21e}|^2$  典型值为 14.5dB

低噪声: NF 典型值为 1.7dB

增益带宽乘积:  $f_T$  典型值为 6GHz

@  $V_{CE}=8V$ ,  $I_c=30mA$ ,  $f=1GHz$

@  $V_{CE}=8V$ ,  $I_c=5mA$ ,  $f=1GHz$

@  $V_{CE}=5V$ ,  $I_c=30mA$ ,  $f=0.5GHz$

## 订购信息

产品型号	封装形式	印章	标准包装	脚位排列
FCG93A	SOT-143B	R8	3K/盘	
FCG93A/X	SOT-143B	V15	3K/盘	

## 极限工作条件范围 (TA=25°C)

参数	符号	极值	单位
集电极基极击穿电压	$V_{CBO}$	20	V
集电极发射极击穿电压	$V_{CEO}$	10	V
发射极基极击穿电压	$V_{EBO}$	2	V
集电极电流	$I_c$	35	mA
功耗	$P_c$	200	mW
结温度	$T_j$	150	°C
存储温度	$T_{stg}$	-65 ~ +150	°C

## HFE 档位

分档		B	C	D
HFE		90-130	120-180	170-250
印章	FCG93A	R8		
	FCG93A/X	V15		

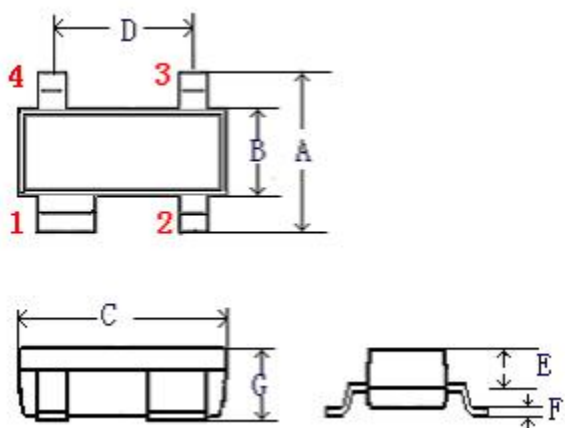
## 电学特性 (TA=25°C)

参数	符号	最小	典型	最大	单位	测试条件
集电极基极击穿电压	V <sub>CB0</sub>	20			V	I <sub>c</sub> =1.0μA
集电极基极漏电流	I <sub>CB0</sub>			0.1	μA	V <sub>CB</sub> =10V
发射极基极漏电流	I <sub>EBO</sub>			0.1	μA	V <sub>EB</sub> =1V
直流增益	h <sub>FE</sub>	90	150	250		V <sub>CE</sub> =5V, I <sub>c</sub> =30mA
特征频率	f <sub>r</sub>		6		GHz	V <sub>CE</sub> =5V, I <sub>c</sub> =30mA, f=0.5GHz
输出反馈电容	C <sub>re</sub>		0.65		pF	V <sub>CB</sub> =10V, I <sub>E</sub> =0mA, f=1MHz
功率增益	S <sub>21e</sub>   <sup>2</sup>		14.5		dB	V <sub>CE</sub> =8V, I <sub>c</sub> =30mA, f=1GHz
噪声系数	NF		1.7		dB	V <sub>CE</sub> =8V, I <sub>c</sub> =5mA, f=1GHz

## 封装形式

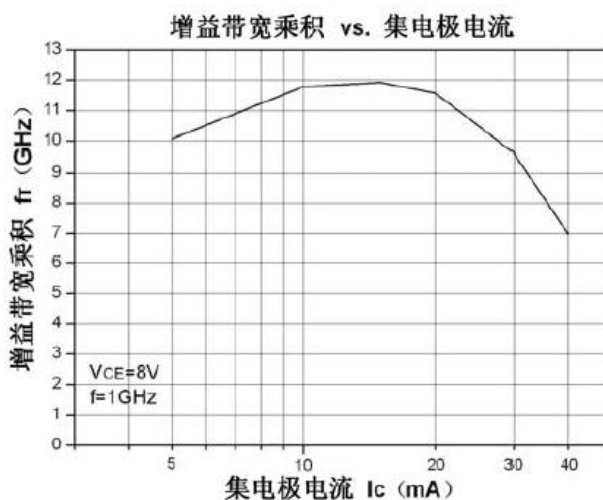
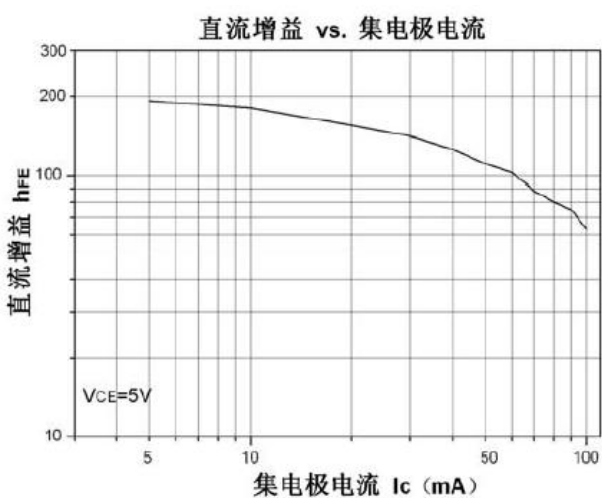
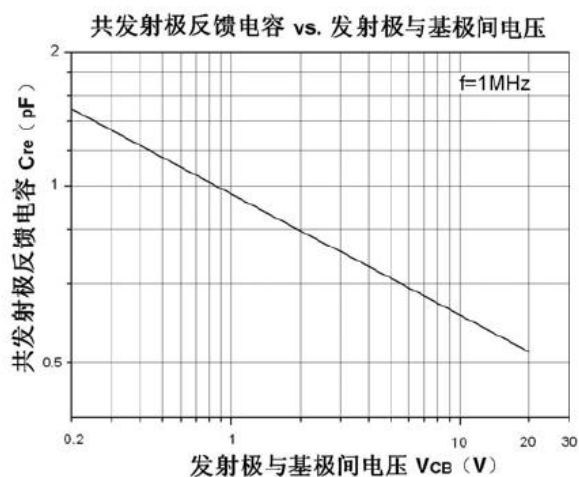
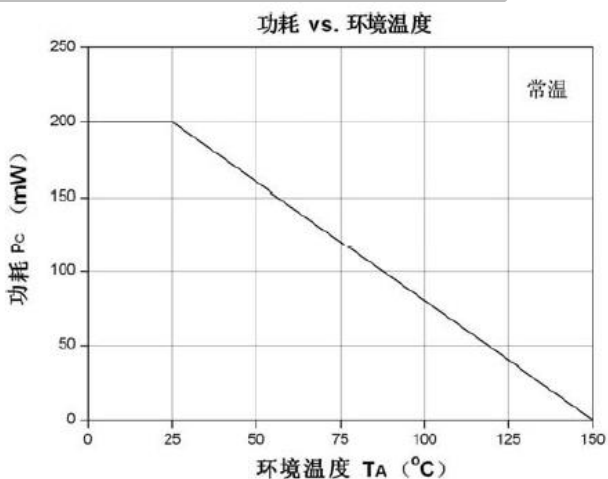
产品型号	封装形式	印章	脚位排列			
			1	2	3	4
FCG93A	SOT-143B	R8	集电极	基极	发射极	发射极
FCG93A/X	SOT-143B	V15	集电极	发射极	基极	发射极

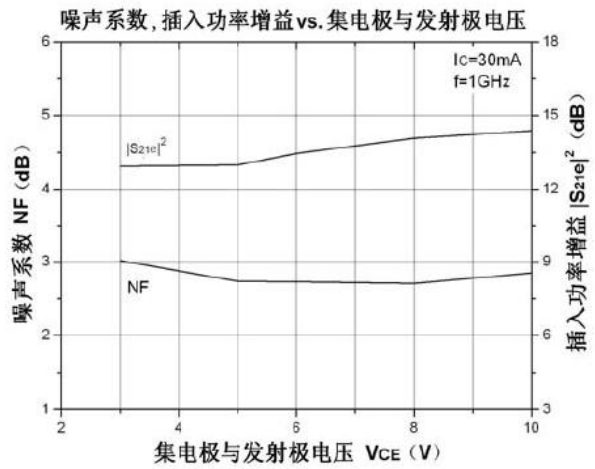
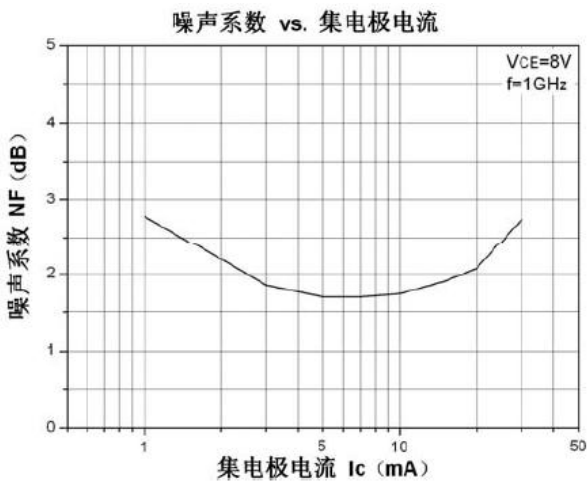
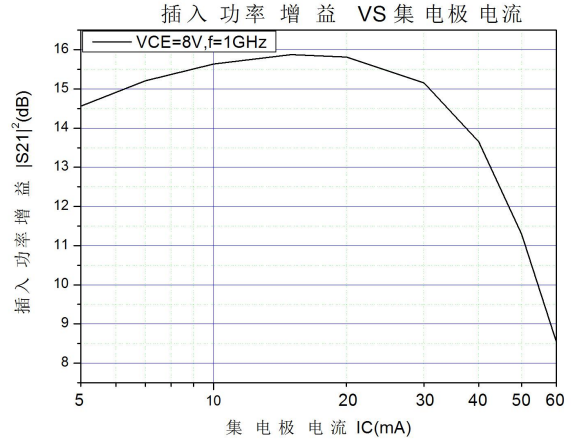
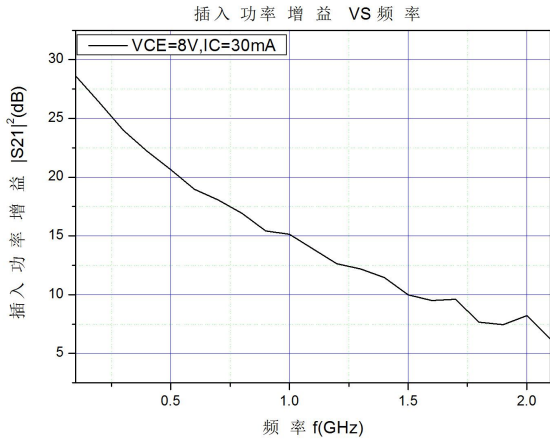
## SOT-143B



符号	最小值 (mm)	最大值 (mm)
A	2.4	2.5
B	1.2	1.4
C	2.8	3.0
D	1.9	
E	0.45	0.55
F	0.09	0.15
G	0.9	1.1
H	1.7	

## 典型特性曲线 (TA = 25°C)

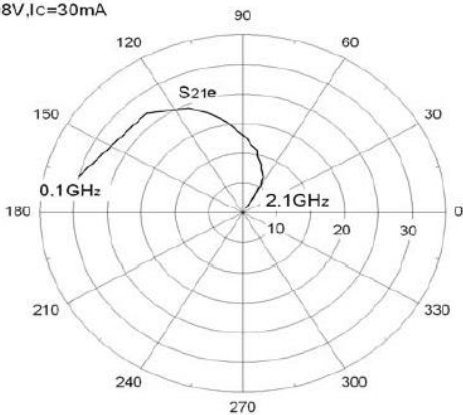




## SMITH 图

测试条件: VCE=8V, IC=30mA  
S21e -FREQUENCY

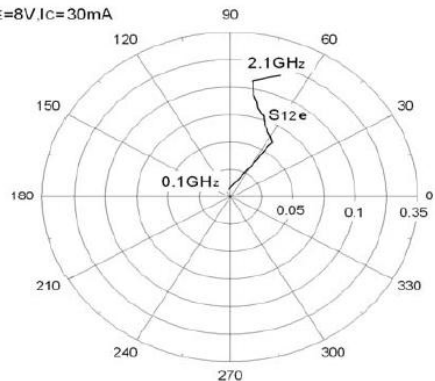
条件: VCE=8V, IC=30mA



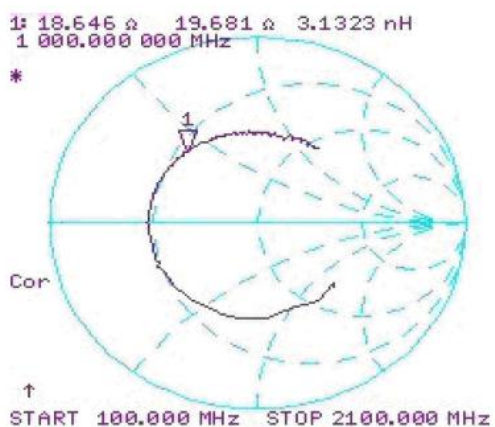
S12e -FREQUENCY

S12e -FREQUENCY

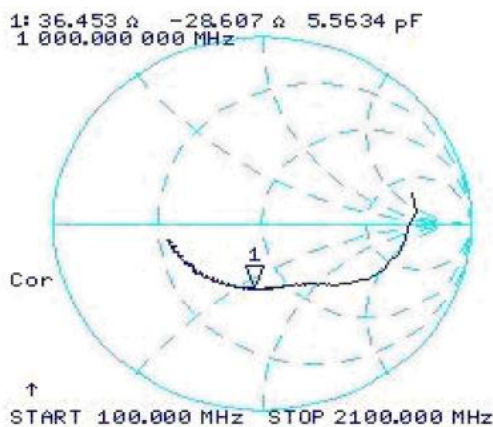
条件: VCE=8V, IC=30mA



S<sub>11e</sub> -FREQUENCY



S<sub>22e</sub> -FREQUENCY



## 散射参数 (S-PARAMETER)

测试条件: V<sub>CE</sub>=8V, I<sub>c</sub>=30mA, Z<sub>0</sub>=50Ω

测试频率	S <sub>11</sub>		S <sub>21</sub>		S <sub>12</sub>		S <sub>22</sub>	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
0.1	-4.0354	-88.105	28.609	126.61	-36.521	52.843	-2.4325	-57.545
0.2	-4.9731	-124.4	26.323	117.35	-32.539	47.254	-4.6846	-63.336
0.3	-5.1468	-148.35	23.973	108.85	-30.777	47.462	-6.5161	-69.274
0.4	-5.2499	-164.67	22.219	100.3	-30.197	44.1	-7.4964	-74.117
0.5	-5.2913	-178.37	20.637	95.414	-28.652	48.367	-8.2982	-79.489
0.6	-5.4001	170.58	18.964	90.596	-28.315	51.81	-8.6919	-85.482
0.7	-5.4672	160.68	18.075	86.682	-27.238	51.236	-8.8543	-91.154
0.8	-5.5529	150.85	16.916	81.502	-27.096	56.633	-8.97	-97.831
0.9	-5.5466	142.9	15.438	77.349	-25.926	58.178	-8.8976	-103.49
1	-5.5616	135.02	15.152	76.715	-25.548	57.192	-8.7017	-109.84
1.1	-5.8308	126.07	13.889	69.457	-25.319	70.152	-8.7005	-116.64
1.2	-5.754	118.5	12.632	67.066	-23.699	63.266	-8.5275	-122.43
1.3	-5.9179	110.55	12.176	69.607	-23.728	67.545	-8.3701	-128.92

1.4	-6.1025	102.4	11.469	60.697	-23.375	74.288	-8.2379	-134.68
1.5	-5.9085	96.132	9.986	59.61	-21.1	70.197	-7.9341	-140.36
1.6	-6.0501	87.502	9.4979	66.474	-21.757	69.001	-7.6659	-146.23
1.7	-6.2901	79.59	9.5994	55.309	-20.345	73.371	-7.5668	-152.41
1.8	-6.0481	73.803	7.6661	57.833	-19.042	69.423	-7.1377	-156.44
1.9	-5.7337	64.801	7.4349	64.26	-19.109	67.435	-6.7723	-164.64
2	-5.9975	55.894	8.2072	57.095	-17.855	68.774	-6.6719	-170.52
2.1	-5.7806	47.965	6.2249	58.933	-17.472	60.117	-6.33	-175.73

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