



描述

FCR520B 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 SOT-23 贴片式封装，主要应用于 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 12dB
低噪声: NF 典型值为 1.6dB
增益带宽乘积: f_T 典型值为 8GHz

@ $V_{CE}=6V$, $I_C=20mA$, $f=0.9GHz$
@ $V_{CE}=6V$, $I_C=5mA$, $f=0.9GHz$
@ $V_{CE}=6V$, $I_C=20mA$, $f=1GHz$

订购信息

产品号	标准包装
FC520B	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	VCBO	20	V
集电极发射极击穿电压	VCEO	12	V
发射极基极击穿电压	VEBO	2.5	V
集电极电流	IC	70	mA
功耗	PC	200	mW
结温度	Tj	150	°C
存储温度	Tstg	-65 ~ +150	°C

HFE 档位

分档	B	C	D
标号	32W		
HFE	90-130	120-180	170-250

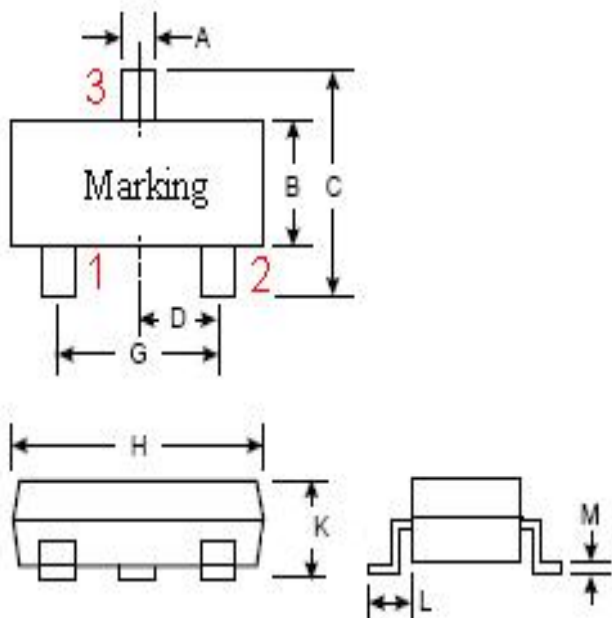
电学特性 (TA=25°C)

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	VCBO	20			V	IC=1.0μA
集电极基极漏电流	ICBO			0.1	μA	VCB=10V
发射极基极漏电流	IEBO			0.1	μA	VEB=1V
直流增益	HFE	90	150	250		VCE=6V, IC=20mA
增益带宽乘积	f _T		8		GHz	VCE=6V, IC=20mA, f=1GHz
输出反馈电容	C _{re}		0.65		pF	VCB=10V, IE=0mA, f=1MHz
功率增益	S _{21e} ²		12		dB	VCE=6V, IC=20mA, f=0.9GHz
噪声因子	NF		1.6		dB	VCE=6V, IC=5mA, f=0.9GHz

封装形式

SOT-23

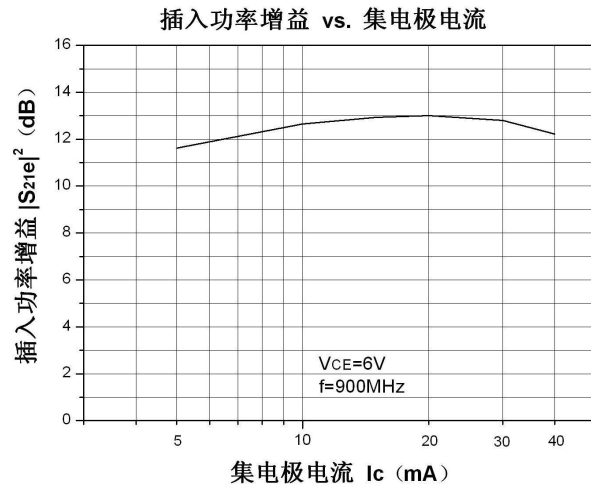
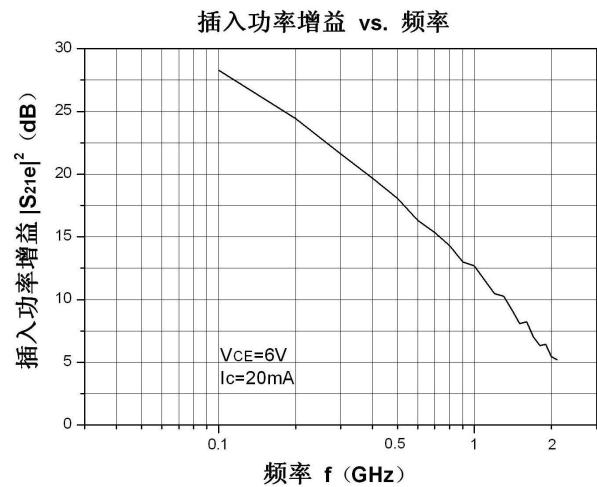
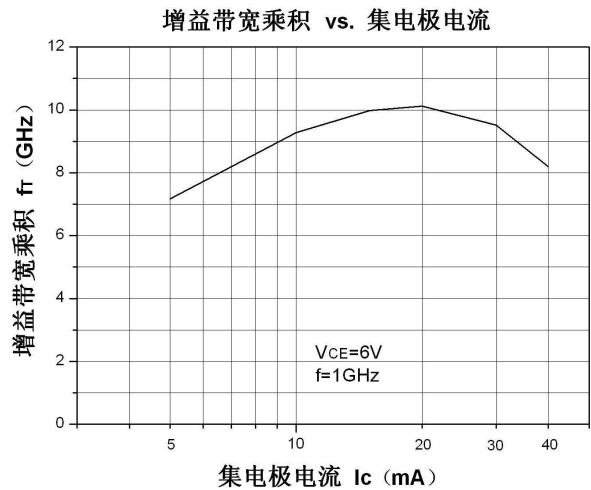
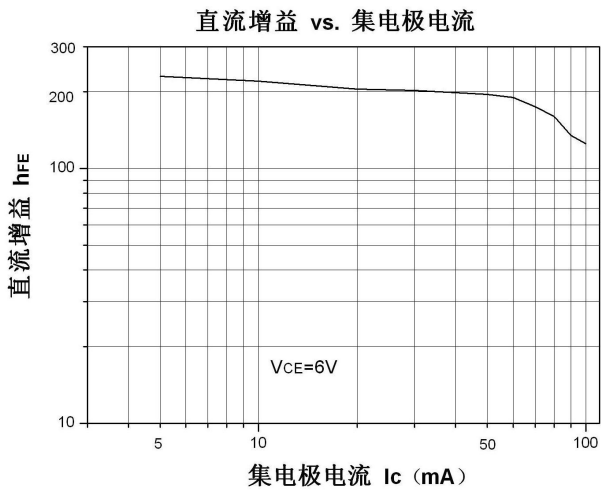
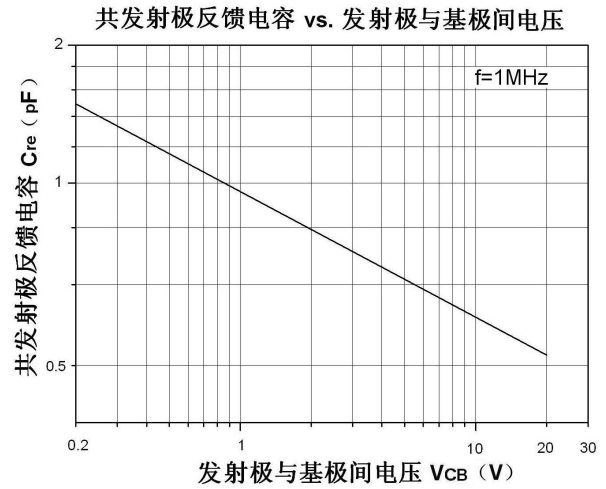
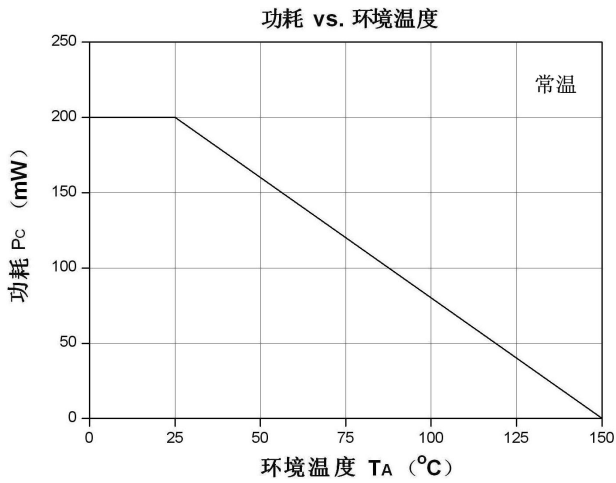
管脚定义：1：基极（Base） 2：发射极（Emitter） 3：集电极（Collector）



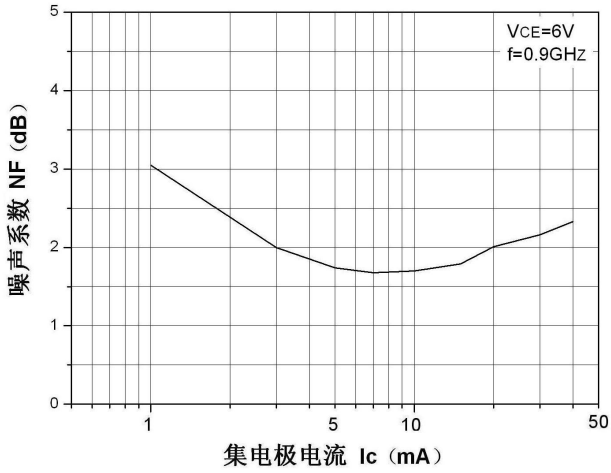
符号	SOT-23	
	最小值 (mm)	最大值 (mm)
A	0.3	0.5
B	1.2	1.4
C	2.25	2.55
D	0.95	
G	1.8	2
H	2.8	3
K	0.9	1.15
L	0.55	
M	0.08	0.15



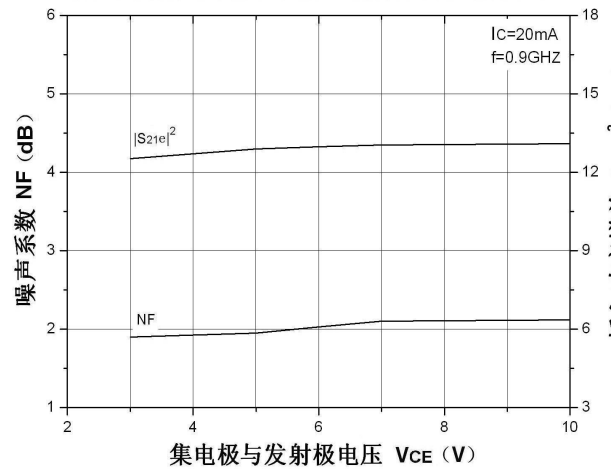
典型特性曲线 (TA = 25°C)



噪声系数 vs. 集电极电流



噪声系数, 插入功率增益 vs. 集电极与发射极电压

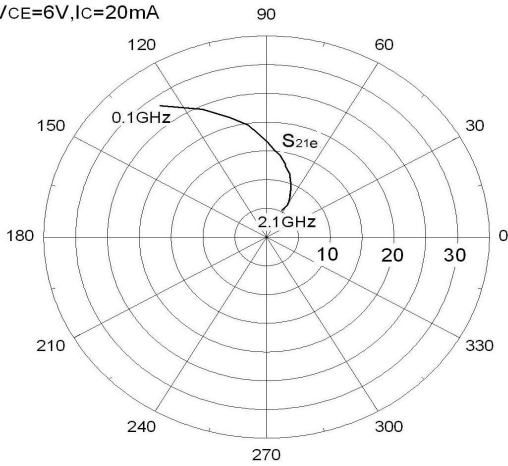


SMITH 图

测试条件: VCE=6V, IC=20mA

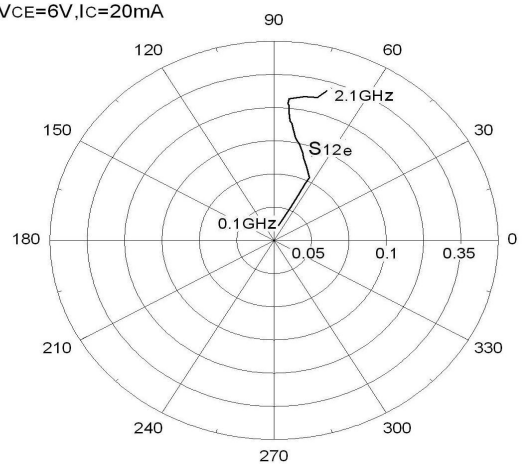
S_{21e} -FREQUENCY

条件: VCE=6V, IC=20mA

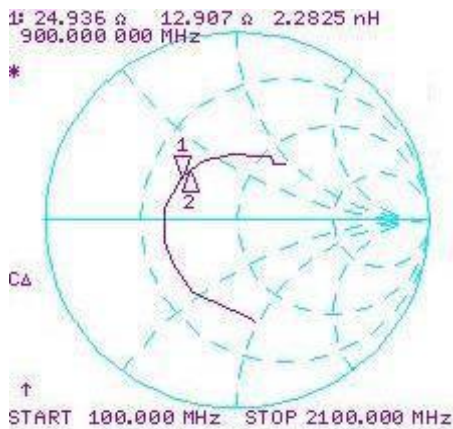


S_{12e} -FREQUENCY

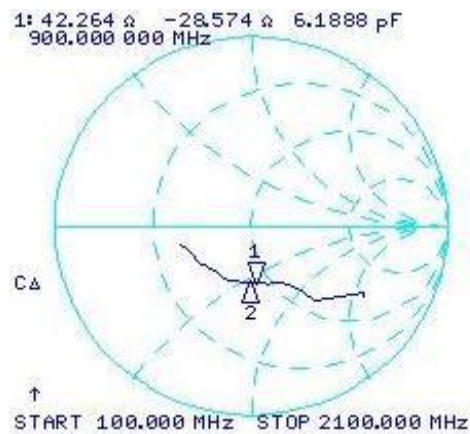
条件: VCE=6V, IC=20mA



S_{11e} -FREQUENCY



S_{22e} -FREQUENCY





散射参数 (S-PARAMETER)

测试条件: $V_{CE}=6V, I_c=20mA, Z_o=50\Omega$

测试频率	S11		S21		S12		S22	
	GHZ	MAG	ANG	MAG	ANG	MAG	ANG	MAG
0.1	-6.6832	-75.942	27.587	106.52	-34.626	46.456	-0.3502	-58.822
0.2	-8.106	-122.1	23.976	109.64	-29.938	61.289	-4.5171	-62.832
0.3	-8.8634	-148.15	21.374	102.67	-27.238	61.582	-6.5068	-63.78
0.4	-9.0018	-164.81	19.537	95.367	-25.771	61.377	-7.5613	-67.078
0.5	-9.2195	-178.95	17.973	90.93	-24.219	63.495	-8.3639	-70.665
0.6	-8.9875	167.51	16.174	85.379	-23.334	63.438	-8.9221	-77.929
0.7	-9.1156	158.93	15.292	81.803	-22.067	63.982	-9.1529	-80.92
0.8	-9.4357	147.51	14.187	76.701	-21.666	65.759	-9.3461	-88.687
0.9	-9.0235	137.54	12.837	73.29	-20.344	65.988	-9.5025	-95.79
1	-9.227	128.85	12.539	70.694	-19.609	66.434	-9.5448	-100.81
1.1	-9.6157	119.89	11.296	65.422	-19.49	70.351	-9.3952	-108.69
1.2	-9.339	111.27	10.203	63.235	-17.819	70.987	-9.5371	-117.01
1.3	-9.5573	101.97	10.051	62.093	-17.237	69.649	-9.1137	-124.08
1.4	-9.7465	93.767	8.7776	55.039	-17.119	69.022	-9.1546	-130.28
1.5	-9.6668	87.301	7.6636	56.394	-15.643	74.923	-9.1062	-137.6
1.6	-9.5077	76.181	8.014	56.537	-14.757	67.022	-8.6152	-146.77
1.7	-9.9487	71.561	6.3593	47.455	-14.927	68.696	-8.8371	-150.92
1.8	-9.8743	61.243	5.7907	54.124	-13.923	72.592	-8.1651	-154.64
1.9	-9.4727	50.258	6.0825	52.986	-12.602	61.886	-7.3306	-169
2	-10.258	47.821	4.7064	46.549	-13.192	62.409	-7.1995	-172.93
2.1	-9.7414	36.372	4.8961	55.076	-12.064	61.256	-6.4942	179.84