

NPN High-frequency low-noise transistor.

Description

The 2SC3585 is an ultra-high-frequency low-noise transistor using planar NPN silicon epitaxial bipolar technology. It features high power gain, low noise figure, wide dynamic range, and ideal current characteristics. It comes in a SOT-23-3L surface-mount package and is primarily used in VHF, UHF, and CATV high-frequency broadband low-noise amplifiers.

Features

High gain: $ S_{21e} $ typical 5.5dB	@ $V_{CE}=6V$, $I_C=10mA$, $f=2GHz$
Low noise: NF typically 2.5dB	@ $V_{CE}=6V$, $I_C=5mA$, $f=2GHz$
Gain-bandwidth product: fT typically 10GHz	@ $V_{CE}=6V$, $I_C=10mA$, $f=1GHz$

Limit parameters (TA=25°C)

Parameter	Symbol	Value	Unit
Collector-base breakdown voltage.	VCBO	20	V
Collector-emitter breakdown voltage.	VCEO	10	V
Emitter-base breakdown voltage.	VEBO	1.5	V
Collector current.	IC	35	mA
Power dissipation.	PC	200	mW
Junction temperature.	Tj	150	°C
Storage temperature.	Tstg	-65 ~ +150	°C

HFE position

Binning	A	B	C	D
Label	R43	R44	R45	
HFE	60-100	90-140	120-180	170-250

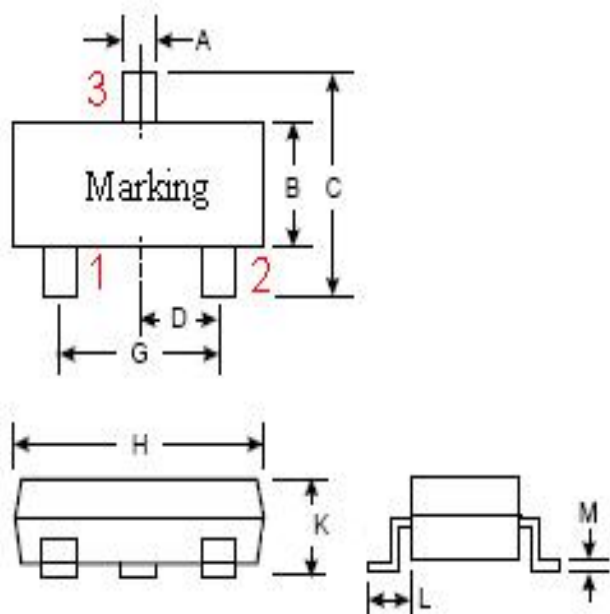
Electrical Characteristic (TA=25°C)

Parameter	Symbol	Min	Typ	Max	Unit	Text Condition
Collector-base breakdown voltage.	VCBO	20			V	IC=1.0μA
Collector-base leakage current.	ICBO			0.1	μA	VCB=10V
Emitter-base leakage current.	IEBO			0.1	μA	VEB=1V
DC gain.	HFE	60	150	250		VCE=6V, IC=10mA
Gain-bandwidth product.	f _T		10		GHz	VCE=6V, IC=10mA
Output feedback capacitor.	C _{re}		0.3	0.8	pF	VCB=10V, IE=0mA, f=1MHz
power gain.	S _{21e} ²		5.5		dB	VCE=6V, IC=10mA, f=2GHz
Noise figure.	NF		2.5	3.0	dB	VCE=6V, IC=5mA, f=2GHz

Package

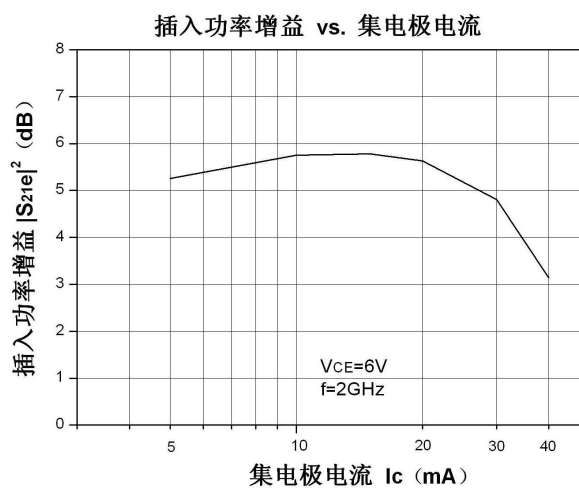
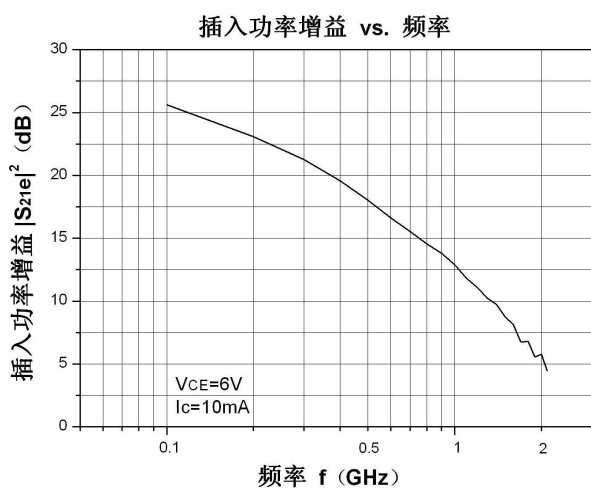
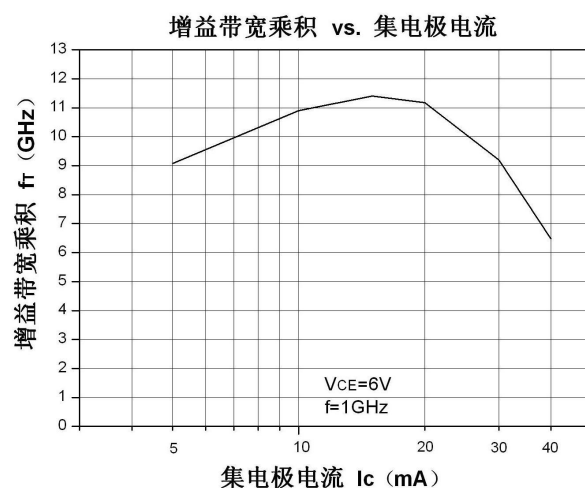
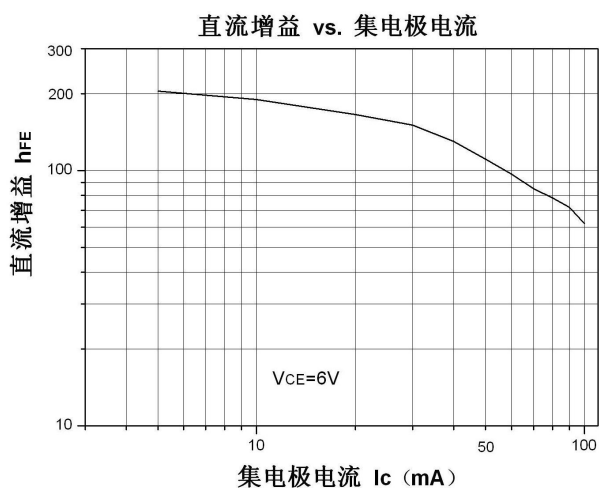
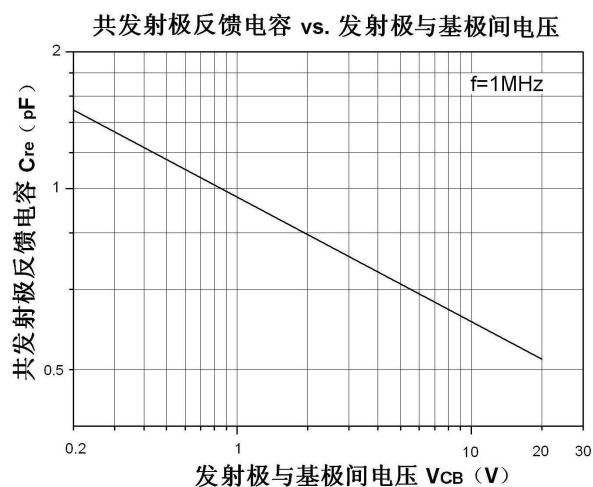
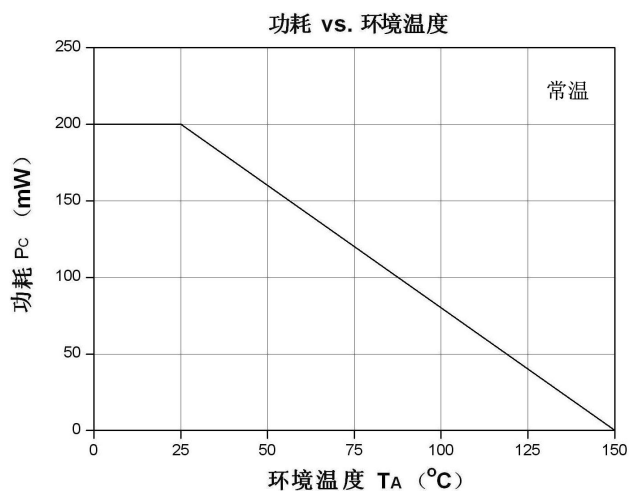
SOT-23-3L

Pin Definition: 1: Base 2: Emitter 3: Collector

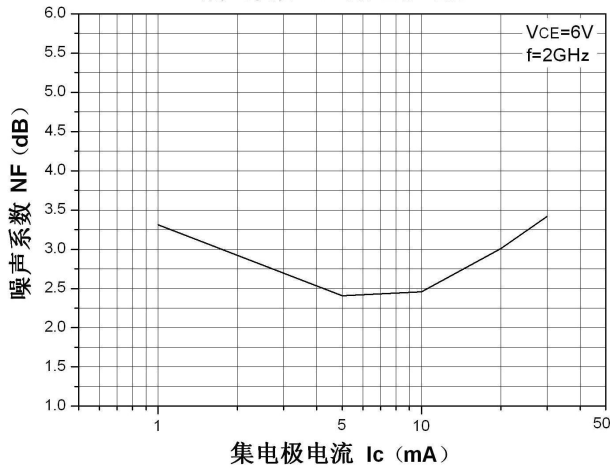


SOT-23-3L		
Symbol	Min (mm)	Max (mm)
A	0.35	0.5
B	1.4	1.7
C	2.7	3.1
D	0.95	
G	1.7	2.1
H	2.7	3.1
K	1	1.3
L	0.5	0.85
M	0.1	0.35

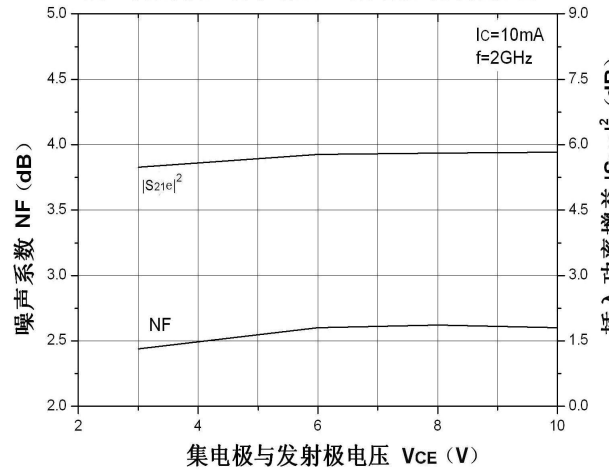
Typical characteristic curve (TA =25°C)



噪声系数 vs. 集电极电流

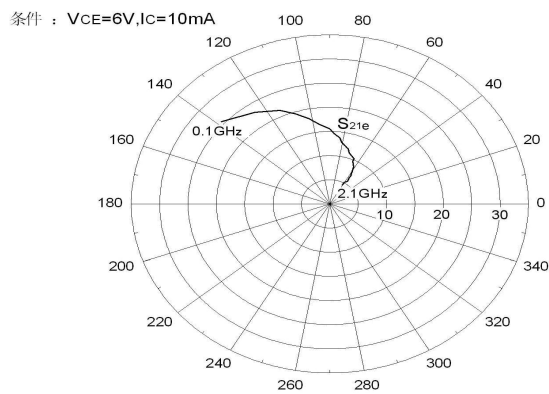


噪声系数, 插入功率增益 vs. 集电极与发射极电压

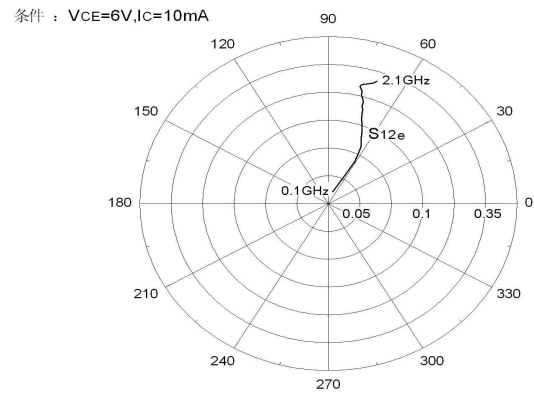


SMITH

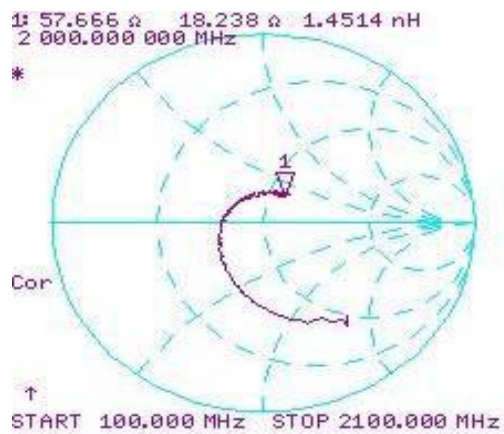
S21e -FREQUENCY



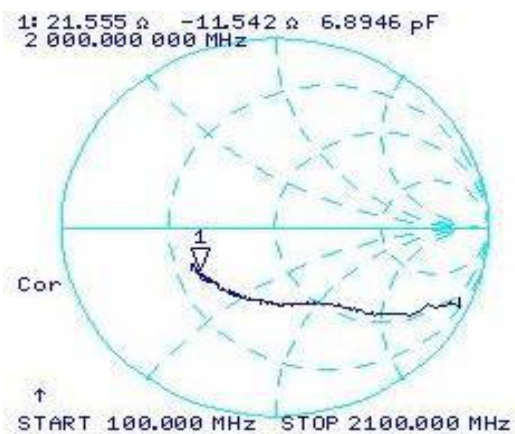
S12e -FREQUENCY



S11e -FREQUENCY



S22e -FREQUENCY



Scattering parameters (S-PARAMETER)

Text condition: $V_{CE}=6V$, $I_C=10mA$, $Z_0=50\Omega$

Test frequency	S ₁₁		S ₂₁		S ₁₂		S ₂₂	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
0.1	0.606	-51.368	19.070	138.27	0.023	70.41	0.908	-22.132
0.2	0.518	-77.739	14.243	124.69	0.034	70.41	0.727	-40.023
0.3	0.394	-99.576	11.550	114.38	0.048	70.41	0.586	-48.554
0.4	0.324	-117.74	9.522	108.01	0.057	70.41	0.510	-53.937
0.5	0.280	-132.78	7.968	101.63	0.067	70.41	0.474	-58.933
0.6	0.248	-147.46	6.768	96.468	0.078	70.41	0.443	-63.31
0.7	0.219	-161.53	5.979	90.103	0.089	70.41	0.434	-68.85
0.8	0.203	-173.71	5.342	86.881	0.096	70.41	0.418	-73.843
0.9	0.189	174.27	4.910	80.73	0.106	70.41	0.415	-79.324
1	0.176	162.27	4.425	80.638	0.112	70.41	0.409	-86.129
1.1	0.170	149.78	3.895	74.155	0.127	70.41	0.407	-91.361
1.2	0.166	139.57	3.577	72.048	0.136	70.41	0.392	-99.5
1.3	0.156	128.37	3.245	65.426	0.145	70.41	0.395	-103.49
1.4	0.162	117.71	3.071	65.638	0.160	70.41	0.393	-110.83
1.5	0.150	111.08	2.725	61.089	0.171	70.41	0.396	-113.86
1.6	0.158	97.675	2.562	63.587	0.181	70.41	0.400	-122.82
1.7	0.157	90.954	2.172	57.097	0.199	70.41	0.415	-125.46
1.8	0.173	79.571	2.182	57.936	0.217	70.41	0.415	-135.65
1.9	0.160	69.719	1.898	56.337	0.225	70.41	0.408	-136.44
2	0.181	58.602	1.940	60.143	0.245	70.41	0.428	-148.92