isc Silicon NPN RF Transistor 2SC5086

DESCRIPTION

- Low Noise
  NF = 1.1dB TYP. @ f = 1GHz
- High Gain
  $|S_{21e}|^2$= 11dB TYP. @ f = 1GHz

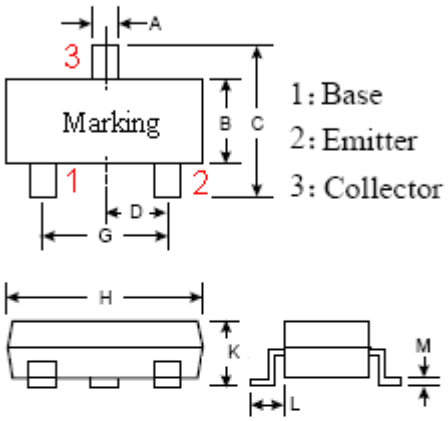
APPLICATIONS

- Designed for VHF~UHF band low noise amplifier applications

ABSOLUTE MAXIMUM RATINGS(T_a=25℃)

SYMBOL	PARAMETER	VALUE	UNIT
V_{CBO}	Collector-Base Voltage	20	V
V_{CEO}	Collector-Emitter Voltage	12	V
V_{EBO}	Emitter-Base Voltage	3	V
I_C	Collector Current-Continuous	80	mA
I_B	Base Current-Continuous	40	mA
P_C	Collector Power Dissipation @T_C=25℃	0.1	W
T_J	Junction Temperature	125	℃
T_{stg}	Storage Temperature Range	-55~125	℃

SOT-323 package



DIM	mm MIN	mm MAX
A	0.30	0.40
B	1.15	1.35
C	2.00	2.40
D	0.65	
H	1.80	2.20
K	0.80	1.00
M	0.10	0.25

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ELECTRICAL CHARACTERISTICS

T_C=25℃ unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP.	MAX	UNIT
I_{CBO}	Collector Cutoff Current	V_{CB}= 10V; I_E= 0			1	μA
I_{EBO}	Emitter Cutoff Current	V_{EB}= 1V; I_C= 0			1	μA
h_{FE}	DC Current Gain	I_C= 20mA ; V_{CE}= 10V	80		240	
$\|S_{21e}\|^2$	Insertion Power Gain	I_C= 20mA ; V_{CE}= 10V; f= 500MHz		16.5		dB
$\|S_{21e}\|^2$	Insertion Power Gain	I_C= 20mA ; V_{CE}= 10V; f= 1GHz	7.5	11		dB
f_T	Current-Gain—Bandwidth Product	I_C= 20mA ; V_{CE}= 10V	5	7		GHz
C_{OB}	Output Capacitance	V_{CB}= 10V; I_E= 0; f= 1.0MHz		1.0		pF
C_{re}	Feed-Back Capacitance	V_{CB}= 10V; I_E= 0; f= 1.0MHz		0.65	1.15	pF
NF	Noise Figure	I_C= 5mA ; V_{CE}= 10V; f= 500MHz		1		dB
NF	Noise Figure	I_C= 5mA ; V_{CE}= 10V; f= 1GHz		1.1	2	dB

◆ **h_{FE} Classification**

O	Y
80-160	120-240

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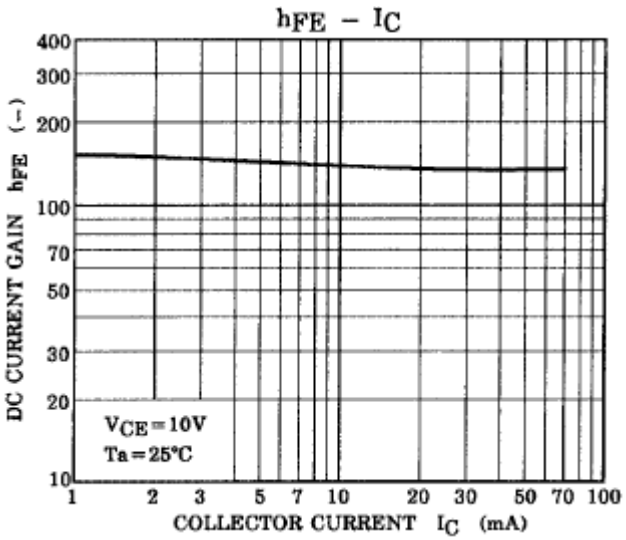

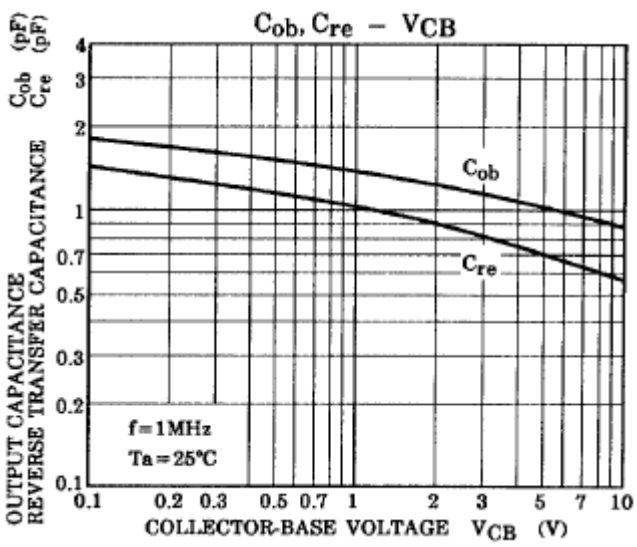

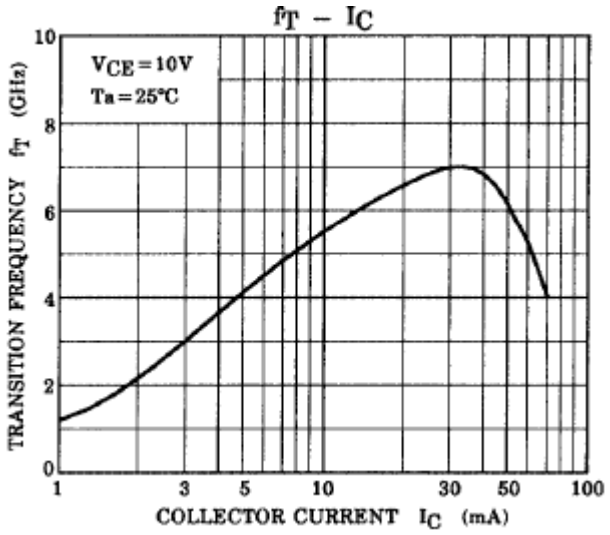

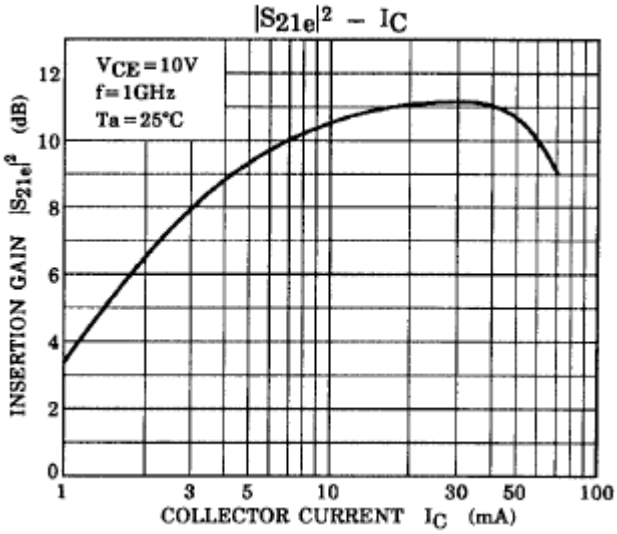

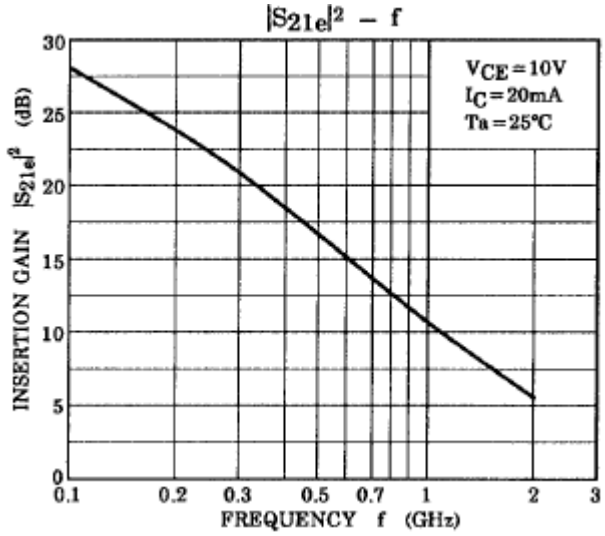

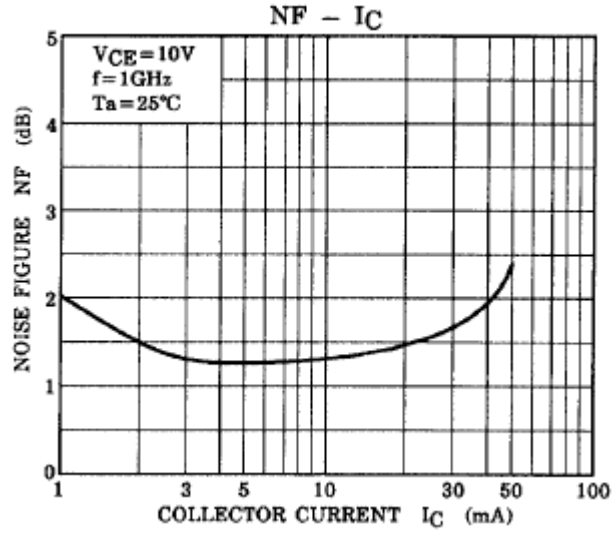

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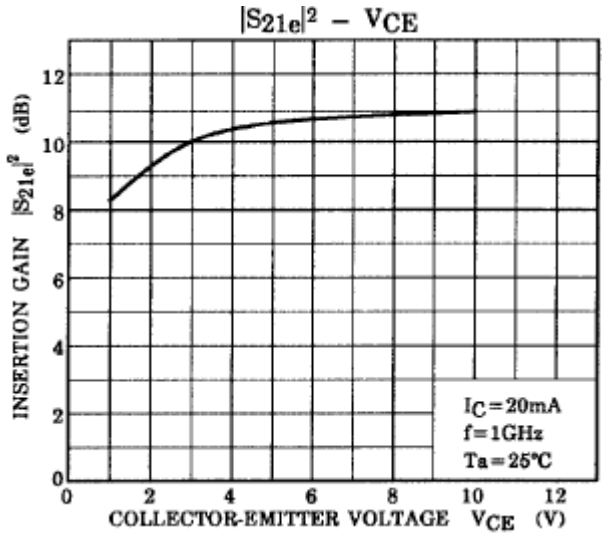

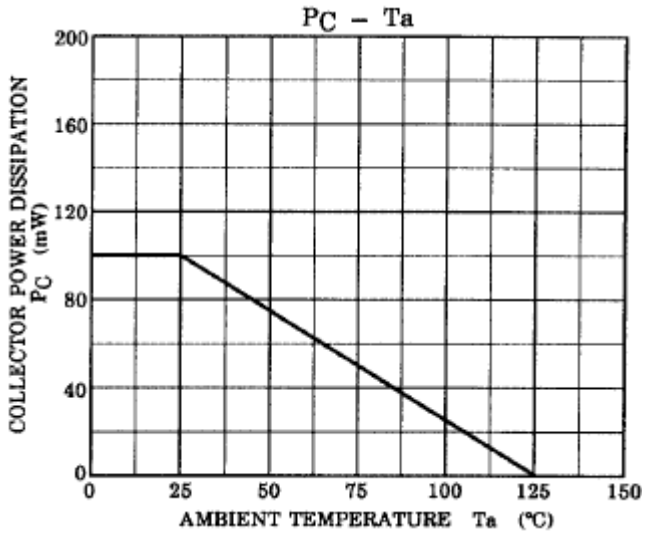

S-PARAMETER

V_{CE} = 10 V, I_C = 5 mA, Z_O = 50 Ω

f	S_{11}		S_{21}		S_{12}		S_{22}	
(MHz)	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
200	0.715	-69.3	9.495	132.1	0.051	55.2	0.747	-29.0
400	0.542	-112.4	6.482	108.5	0.068	46.8	0.555	-35.1
600	0.476	-137.7	4.717	95.8	0.077	47.9	0.478	-36.2
800	0.447	-154.4	3.691	87.1	0.086	51.6	0.442	-37.1
1000	0.435	-166.8	3.049	79.9	0.096	55.9	0.424	-38.9
1200	0.433	-176.6	2.611	73.9	0.108	60.4	0.418	-41.8
1400	0.435	174.8	2.294	68.3	0.123	64.2	0.411	-45.0
1600	0.439	167.3	2.050	63.2	0.140	66.9	0.407	-49.0
1800	0.444	160.6	1.860	58.7	0.159	68.7	0.406	-53.6
2000	0.454	154.2	1.713	53.9	0.180	70.5	0.404	-57.8

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V_{CE} = 10 V, I_C = 20 mA, Z_O = 50 Ω

f	S_{11}		S_{21}		S_{12}		S_{22}	
(MHz)	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
200	0.465	-107.8	16.512	113.2	0.035	56.7	0.484	-40.9
400	0.375	-145.6	9.090	96.5	0.052	62.2	0.331	-37.8
600	0.351	-164.4	6.252	88.1	0.070	66.5	0.291	-34.1
800	0.343	-176.7	4.762	81.9	0.089	68.9	0.277	-33.3
1000	0.338	174.8	3.875	76.6	0.109	70.2	0.273	-34.0
1200	0.337	167.9	3.285	71.8	0.130	70.8	0.274	-36.2
1400	0.343	161.6	2.874	67.2	0.152	70.6	0.274	-39.3
1600	0.343	156.2	2.553	62.9	0.173	69.8	0.274	-43.4
1800	0.348	151.2	2.317	58.8	0.195	68.9	0.273	-47.8
2000	0.354	146.2	2.113	55.0	0.218	68.2	0.272	-52.1

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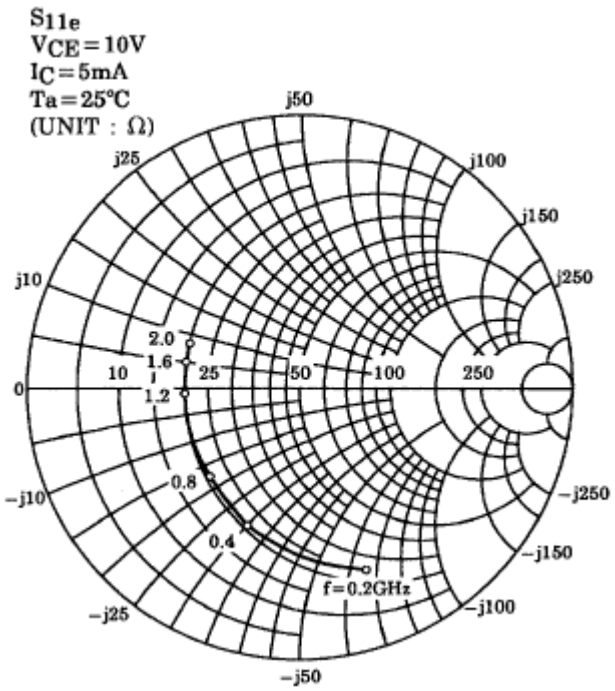

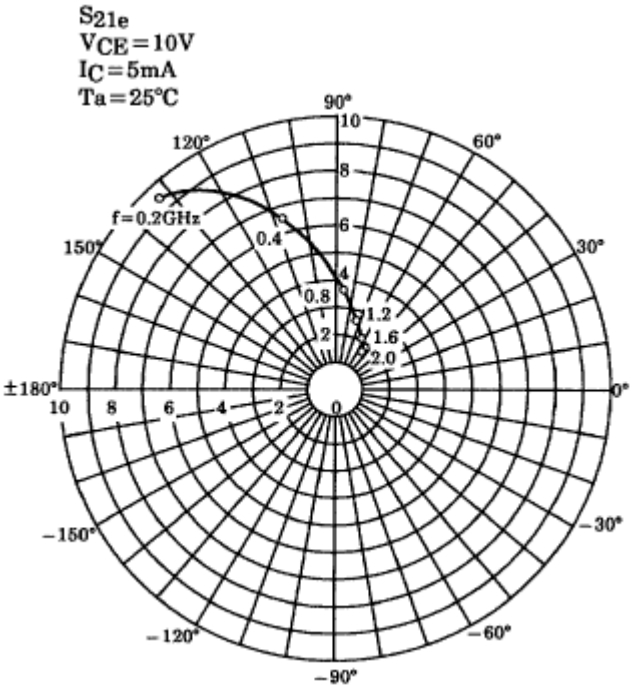

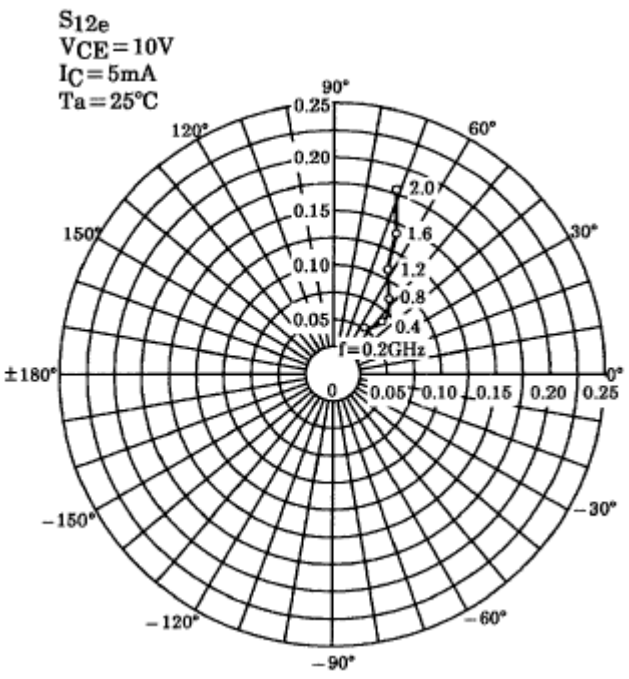

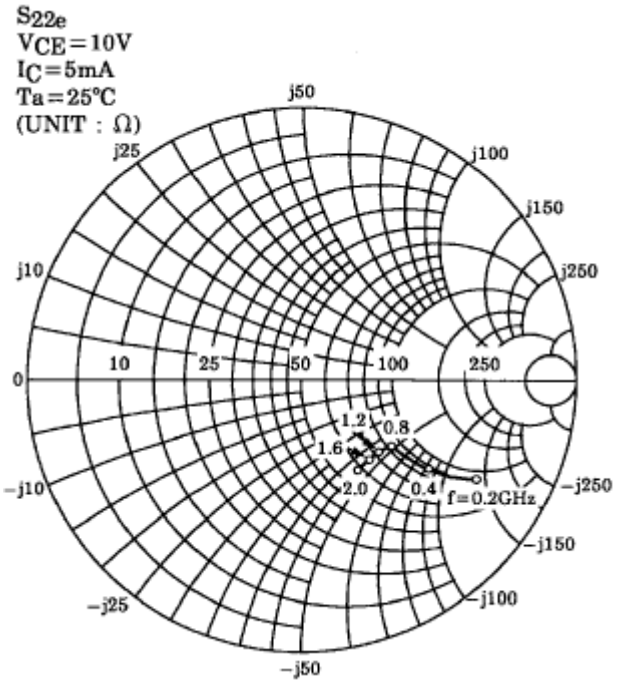

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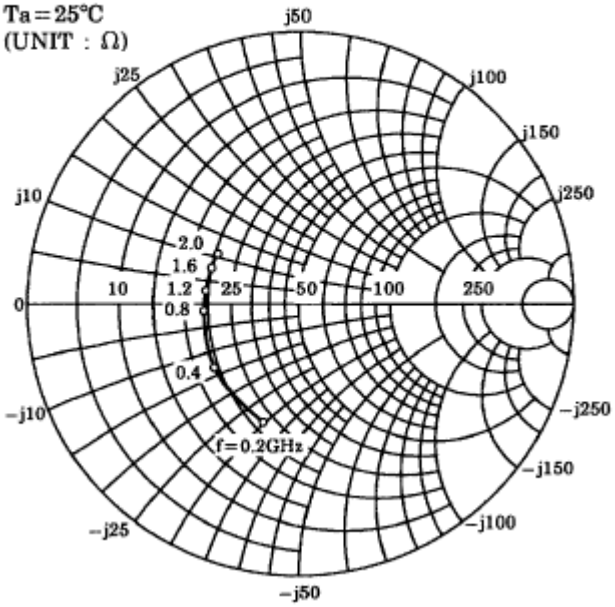
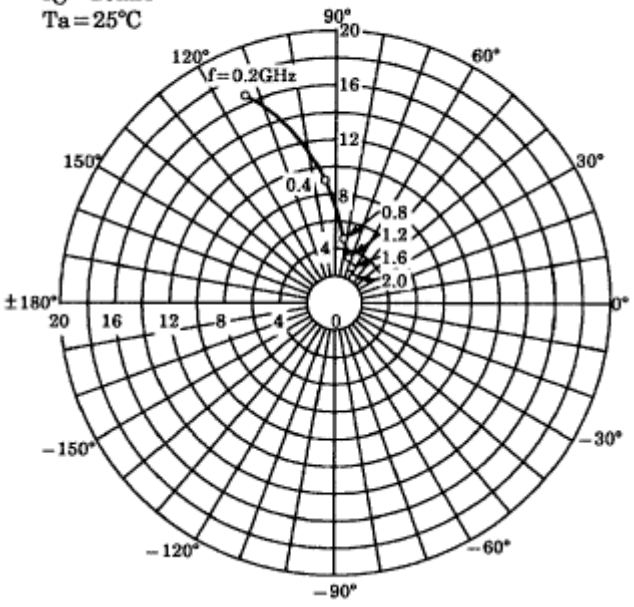
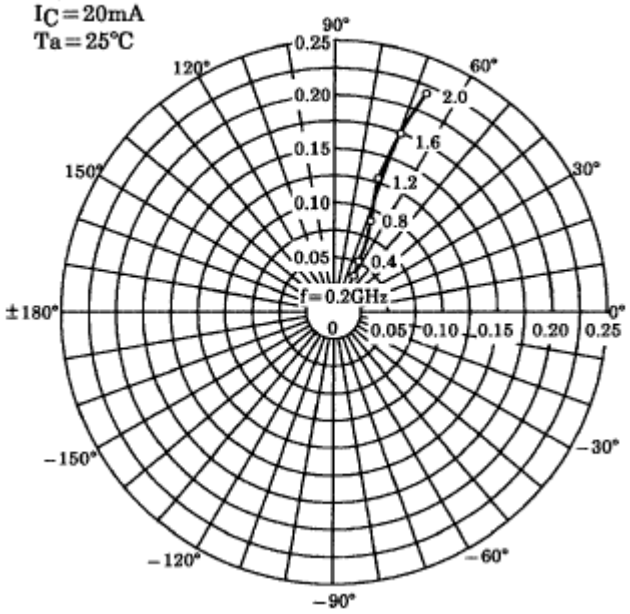
S_{11e}
$V_{CE}=10V$
$I_C=20mA$
$Ta=25°C$
(UNIT : Ω)



S_{21e}
$V_{CE}=10V$
$I_C=20mA$
$Ta=25°C$



S_{12e}
$V_{CE}=10V$
$I_C=20mA$
$Ta=25°C$



S_{22e}
$V_{CE}=10V$
$I_C=20mA$
$Ta=25°C$
(UNIT : Ω)