

isc Silicon NPN RF Transistor

2SC3356

DESCRIPTION

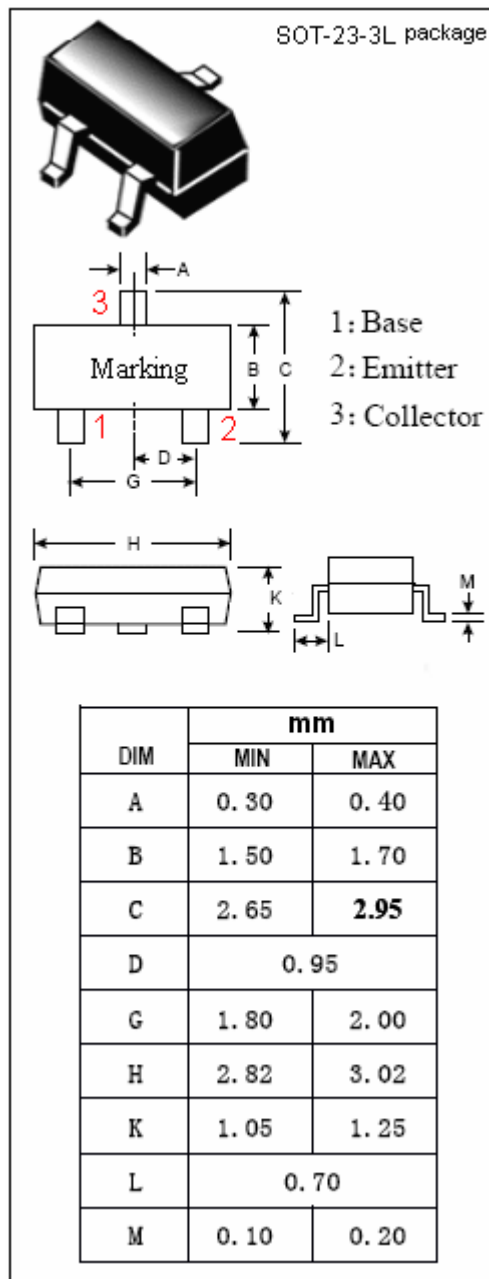
- Low Noise and High Gain
NF = 1.1 dB TYP., $G_a = 11$ dB TYP.
@ $V_{CE} = 10$ V, $I_C = 7$ mA, $f = 1.0$ GHz
- High Power Gain
MAG = 13 dB TYP.
@ $V_{CE} = 10$ V, $I_C = 20$ mA, $f = 1.0$ GHz

APPLICATIONS

- Designed for low noise amplifier at VHF, UHF and CATV band.

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

SYMBOL	PARAMETER	VALUE	UNIT
V_{CBO}	Collector-Base Voltage	20	V
V_{CEO}	Collector-Emitter Voltage	12	V
V_{EBO}	Emitter-Base Voltage	3.0	V
I_C	Collector Current-Continuous	0.1	A
P_C	Collector Power Dissipation @ $T_C=25^\circ\text{C}$	0.2	W
T_J	Junction Temperature	150	$^\circ\text{C}$
T_{stg}	Storage Temperature Range	-65~150	$^\circ\text{C}$



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ELECTRICAL CHARACTERISTICS

T_C=25°C unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP.	MAX	UNIT
I _{CBO}	Collector Cutoff Current	V _{CB} = 10V; I _E = 0			1.0	μ A
I _{EBO}	Emitter Cutoff Current	V _{EB} = 1V; I _C = 0			1.0	μ A
h _{FE}	DC Current Gain	I _C = 20mA ; V _{CE} = 10V	50		300	
f _T	Current-Gain—Bandwidth Product	I _C = 20mA ; V _{CE} = 10V		7		GHz
C _{re}	Feed-Back Capacitance	I _E = 0 ; V _{CB} = 10V;f= 1.0MHz		0.55	1.0	pF
S _{21e} ²	Insertion Power Gain	I _C = 20mA ; V _{CE} = 10V;f= 1.0GHz		11.5		dB
NF	Noise Figure	I _C = 7mA ; V _{CE} = 10V;f= 1.0GHz		1.1	2.0	dB

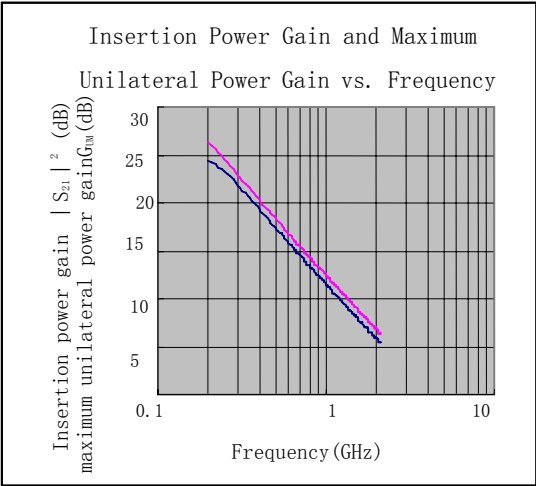
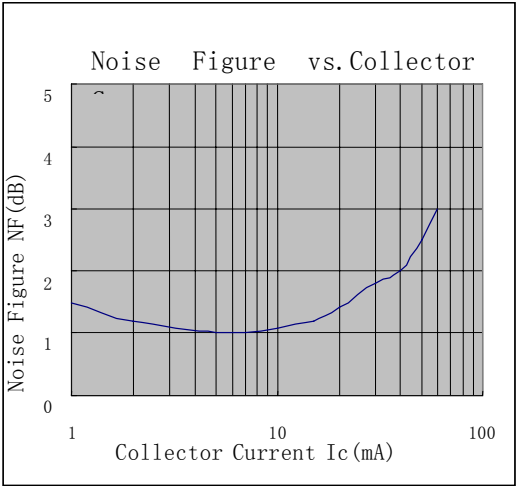
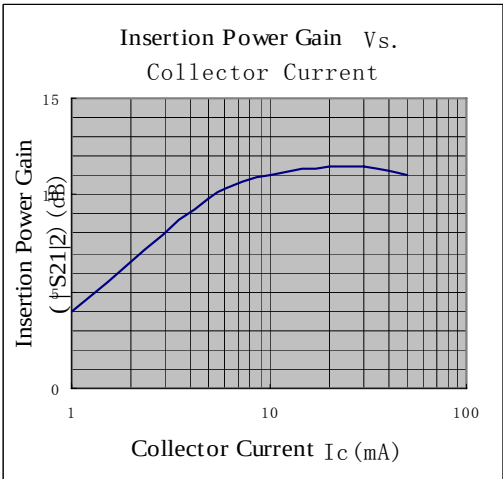
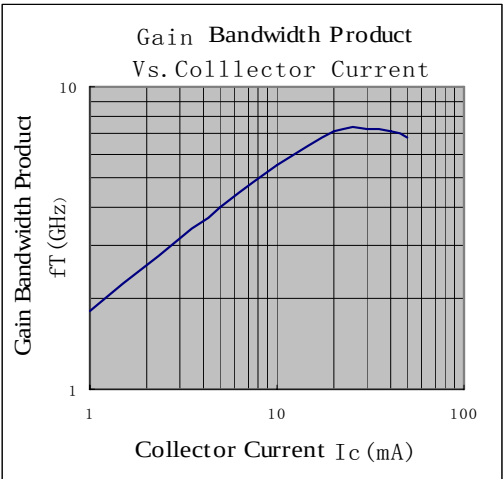
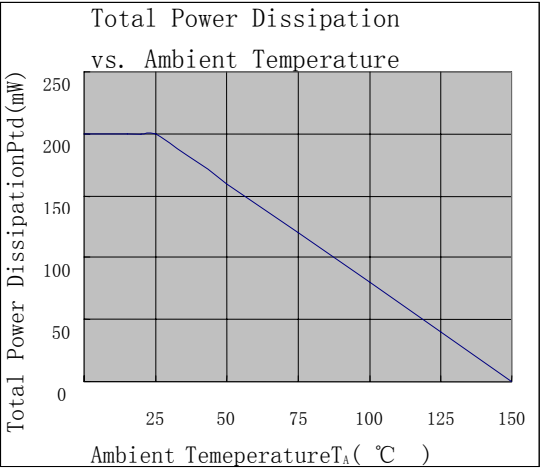
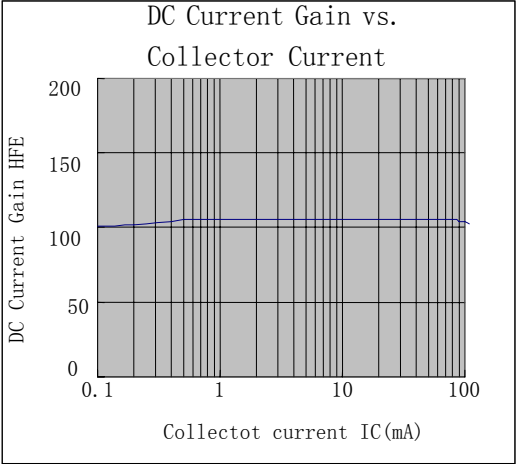
◆ h_{FE} Classification

Class	Q	R	S
Marking	R23	R24	R25
h _{FE}	50-100	80-160	125-250

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TYPICAL CHARACTERISTICS (T_a=25°C)



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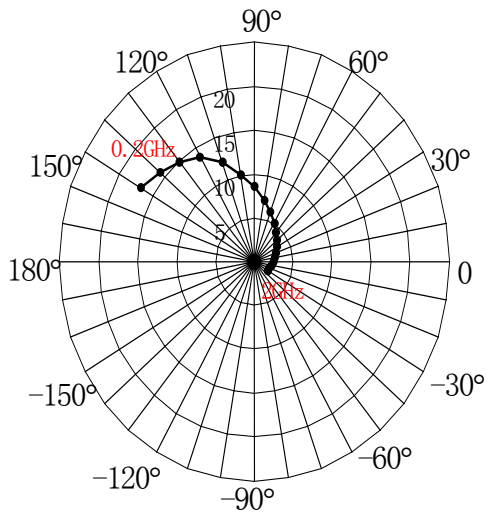
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SMITH CHART

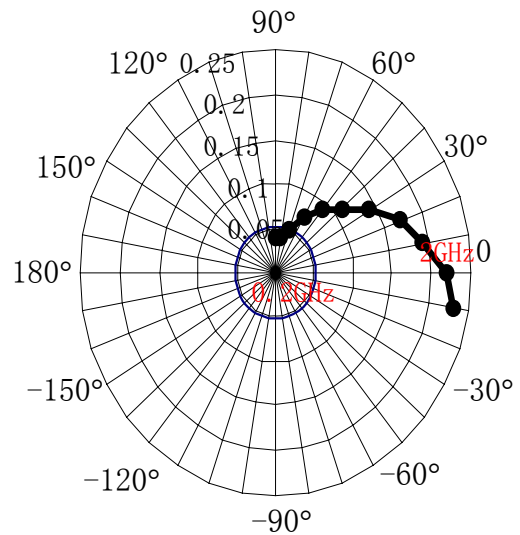
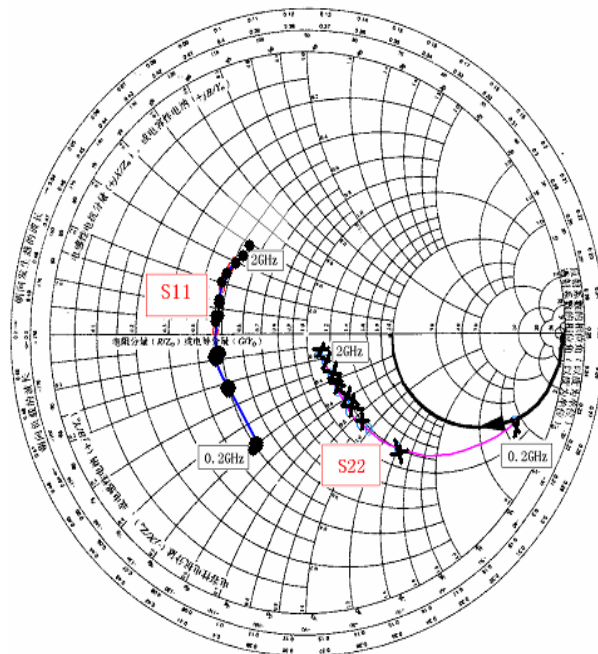
(Test Condition: $V_{CE}=10V$, $I_C=20mA$, $Z_0=50\Omega$, $f=0.2GHz-2.0GHz$)

 S_{21} -FREQUENCY

Condition: $V_{ce}=10V/I_C=20mA$

 S_{12} - FREQUENCY

Condition: $V_{ce}=10V, I_C=20mA$

 S_{11} 、 S_{22} -FREQUENCY

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S-PARAMETER

 $V_{CE} = 10\text{ V}$, $I_C = 20\text{ mA}$

Freque.	S_{11}		S_{21}		S_{12}		S_{22}	
GHz	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
0.2	0.45	-70.42	16.73	150.2	0.04	89.27	0.42	-12.05
0.4	0.4	-177.3	9.3	94.32	0.06	65.65	0.21	-53.52
0.6	0.41	150.4	6.2	72.41	0.07	55.63	0.17	-76.62
0.8	0.41	126.3	4.69	55.83	0.1	47.91	0.17	-97.1
1	0.42	104.6	3.75	40.65	0.12	38.96	0.17	-119
1.2	0.42	85.22	3.17	26.22	0.14	30.11	0.17	-138.9
1.4	0.42	65.91	2.74	13.54	0.17	21.39	0.18	-158.9
1.6	0.42	47.16	2.4	1.03	0.2	12.16	0.19	-177.5
1.8	0.41	27.84	2.13	-12.34	0.22	2.27	0.21	164.93
0.2	0.45	-70.42	16.73	150.2	0.04	89.27	0.42	-12.05

 $V_{CE} = 10\text{ V}$, $I_C = 5\text{ mA}$

Freque.	S_{11}		S_{21}		S_{12}		S_{22}	
GHz	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
0.2	0.77	-3.8	6.78	-177.5	0.06	99.12	0.8	6.86
0.4	0.62	-112.9	6.04	117.8	0.08	50.85	0.44	-48.92
0.6	0.52	-174.9	4.82	83	0.09	36.61	0.35	-73.18
0.8	0.49	150	3.81	61.86	0.1	30.36	0.32	-93.35
1	0.48	122.4	3.09	43.61	0.11	24.14	0.31	-113.7
1.2	0.48	99.54	2.64	27.16	0.12	18.43	0.31	-133.2
1.4	0.48	78.4	2.27	13.76	0.14	13.12	0.32	-153.3
1.6	0.48	58	1.97	0.66	0.17	6.97	0.32	-172.6
1.8	0.47	37.79	1.75	-13.71	0.18	0.2	0.34	168.78
0.2	0.46	17.69	1.66	-25.39	0.2	-9.01	0.36	150.36