isc Silicon NPN RF Transistor 2SC5090

DESCRIPTION

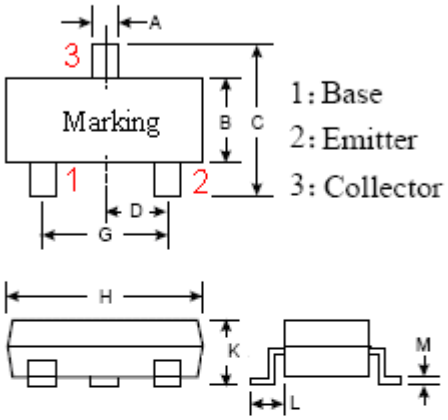
- High Gain Bandwidth Product
  f_T = 10 GHz TYP.
- High Gain, Low Noise Figure
  $|S_{21e}|^2$ = 13 dB TYP., NF = 1.1 dB TYP @ f = 1 GHz

APPLICATIONS

- Designed for VHF~UHF band low noise amplifier applications.

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

ABSOLUTE MAXIMUM RATINGS(T_a=25℃)

SYMBOL	PARAMETER	VALUE	UNIT
V_{CBO}	Collector-Base Voltage	20	V
V_{CEO}	Collector-Emitter Voltage	10	V
V_{EBO}	Emitter-Base Voltage	1.5	V
I_C	Collector Current-Continuous	40	mA
I_B	Base Current-Continuous	20	mA
P_C	Collector Power Dissipation @T_C=25℃	0.1	W
T_J	Junction Temperature	125	℃
T_{stg}	Storage Temperature Range	-55~125	℃

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ELECTRICAL CHARACTERISTICS

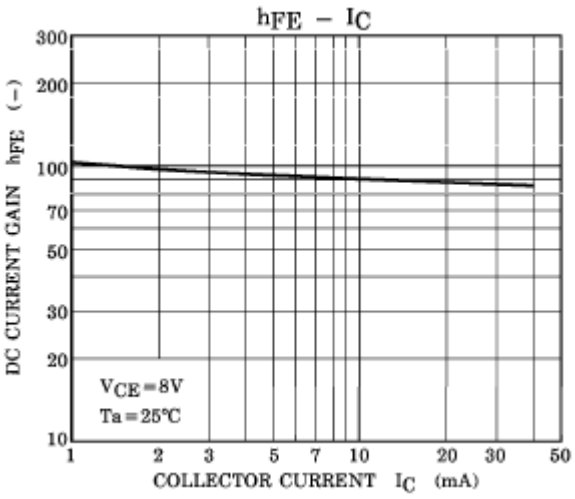
T_C=25℃ unless otherwise specified

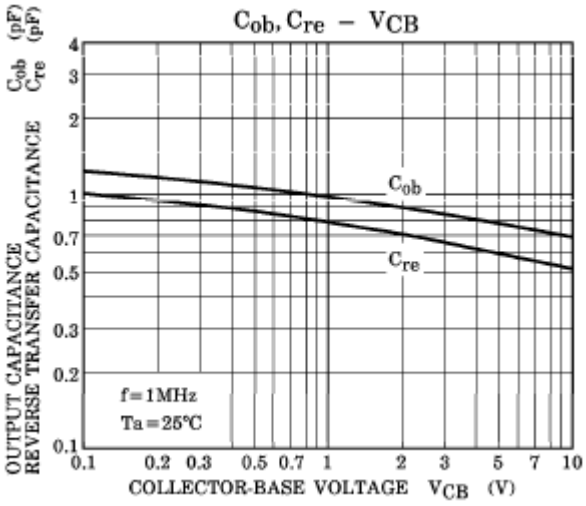
SYMBOL	PARAMETER	CONDITIONS	MIN	TYP.	MAX	UNIT
I_{CBO}	Collector Cutoff Current	V_{CB}= 10V; I_E= 0			1	μA
I_{EBO}	Emitter Cutoff Current	V_{EB}= 1V; I_C= 0			1	μA
h_{FE}	DC Current Gain	I_C= 20mA ; V_{CE}= 8V	50		160	
$\|S_{21e}\|^2$	Insertion Power Gain	I_C= 20mA;V_{CE}= 8V; f= 1GHz	10	13		dB
$\|S_{21e}\|^2$	Insertion Power Gain	I_C= 20mA;V_{CE}= 8V; f= 2GHz		7		dB
f_T	Current-Gain—Bandwidth Product	I_C= 20mA ; V_{CE}= 8V	7	10		GHz
C_{OB}	Output Capacitance	I_E= 0 ; V_{CB}= 10V;f= 1.0MHz		0.7		pF
C_{re}	Feedback Capacitance	I_E= 0 ; V_{CB}= 10V;f= 1.0MHz		0.5	0.95	pF
NF	Noise Figure	I_C= 5mA ; V_{CE}= 8V; f= 1GHz		1.1	2.5	dB
NF	Noise Figure	I_C= 5mA ; V_{CE}= 8V; f= 2GHz		1.7		dB

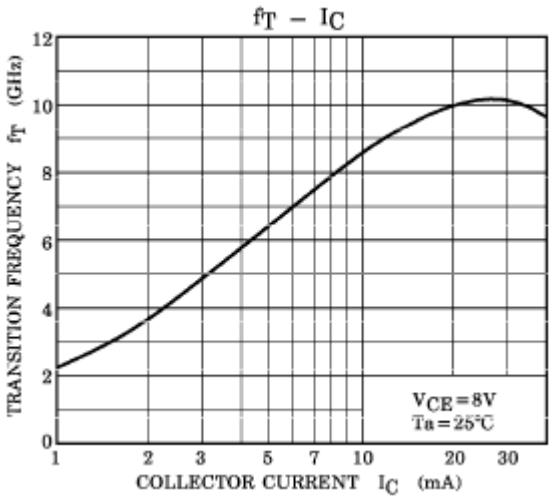
◆ **h_{FE} Classification**

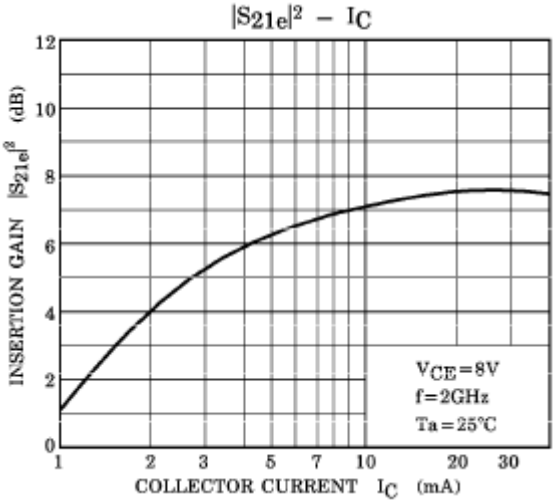
R	O
50-100	80-160

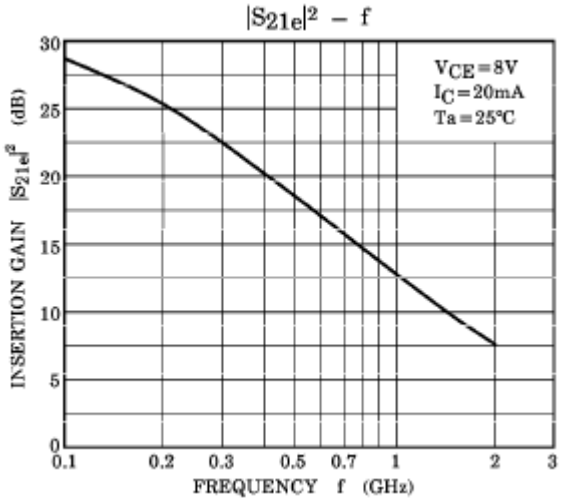
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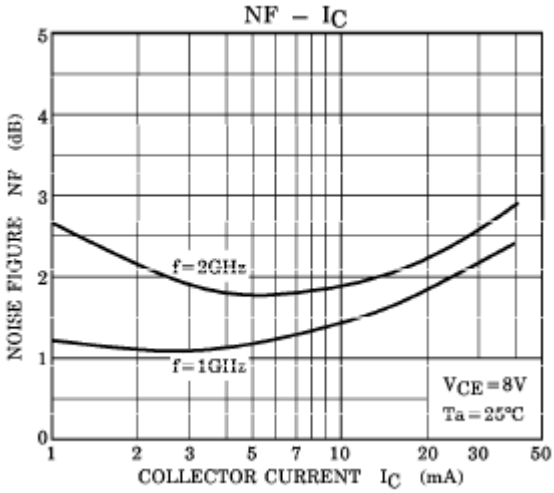




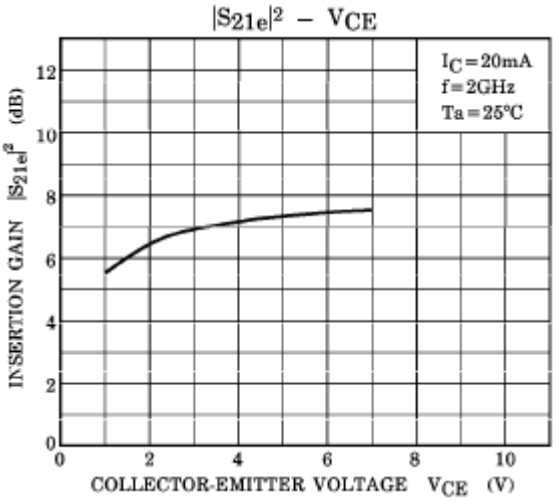


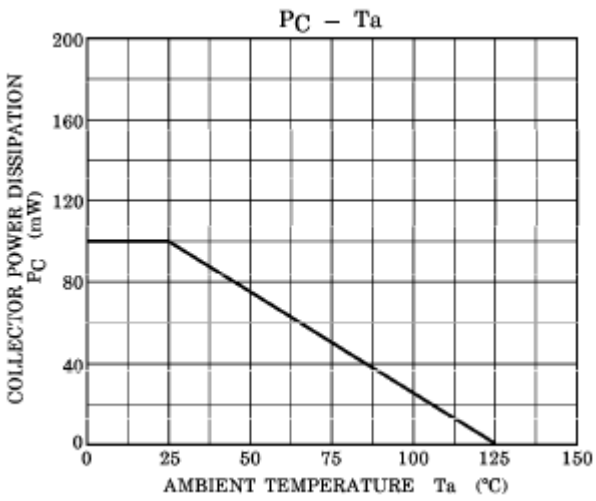






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S-PARAMETER

V_{CE} = 8 V, I_C = 5 mA, Z_O = 50 Ω

Freque.	S_{11}		S_{21}		S_{12}		S_{22}	
MHz	MAG.	ANG.	MAG.	ANG.	MAG.	ANG.	MAG.	ANG.
200	0.683	-50.1	10.186	138.3	0.049	62.0	0.773	-30.0
400	0.462	-86.9	7.472	114.6	0.071	54.3	0.556	-39.6
600	0.343	-113.1	5.618	100.9	0.086	53.8	0.448	-41.7
800	0.282	-133.6	4.407	91.7	0.101	55.3	0.392	-41.6
1000	0.249	-151.0	3.663	84.7	0,115	57.2	0.360	-41.7
1200	0.236	-166.6	3.128	78.7	0,131	58.9	0.339	-41.7
1400	0.233	179.7	2.759	73.1	0.150	60.1	0.330	-42.8
1600	0.234	168.3	2.457	68.2	0,168	60.0	0.319	-45.0
1800	0.238	158.6	2.224	63.4	0.185	60.0	0.311	-47.9
2000	0.251	149.6	2.038	59.4	0,203	60.4	0.302	-50.2

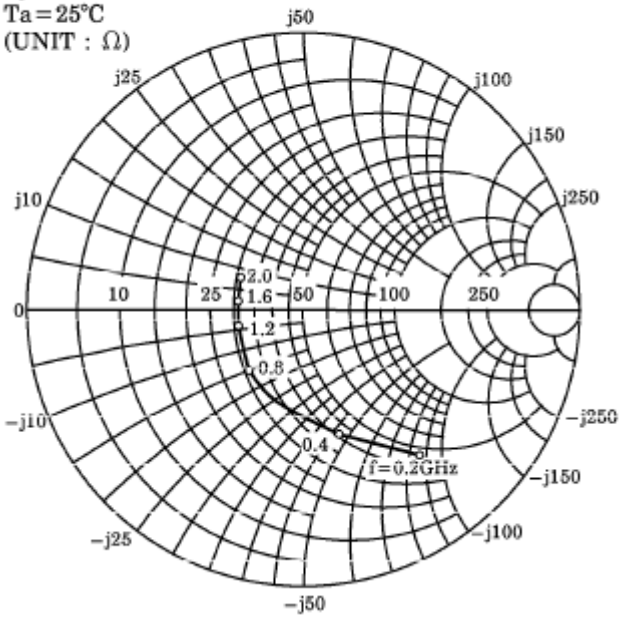
isc Silicon NPN RF Transistor 2SC5090

V_{CE} = 8 V, I_C = 20 mA, Z_O = 50 Ω

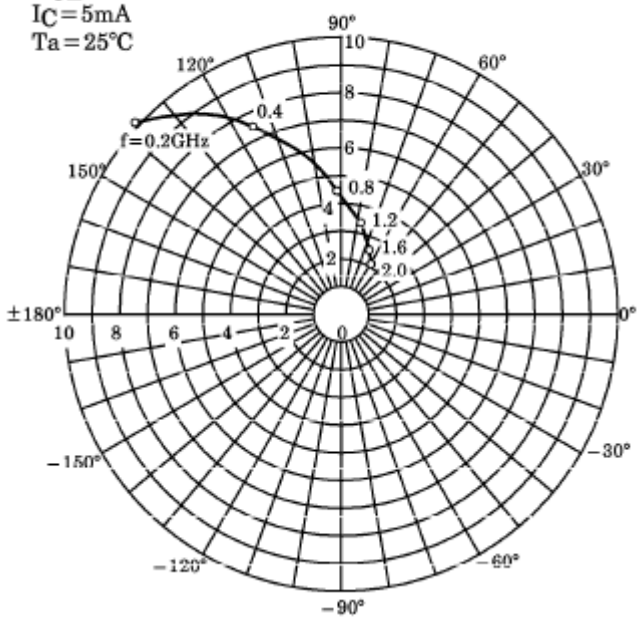
Freque.	S_{11}		S_{21}		S_{12}		S_{22}	
MHz	MAG.	ANG.	MAG.	ANG.	MAG.	ANG.	MAG.	ANG.
200	0.319	-91.9	18.383	126.7	0.033	65.3	0.494	-43.5
400	0.213	-134.2	10.303	99.2	0.054	68.9	0.312	-42.4
600	0.185	-160.0	7.111	90.3	0.076	70.8	0.258	-37.6
800	0.176	-178.2	5.415	84.3	0.098	71.2	0.236	-34.3
1000	0.174	167.8	4.400	79.2	0,120	71.1	0.228	-32.0
1200	0.178	156.8	3.712	74.8	0,143	70.3	0.226	-31.5
1400	0.186	147.5	3.236	70.3	0.168	68.7	0.226	-32.8
1600	0.194	139.7	2.874	66.3	0,190	66.6	0.223	-35.9
1800	0.199	133.7	2.583	62.6	0.211	64.9	0.216	-39.0
2000	0.215	127.8	2.369	58.8	0,232	63.5	0.211	-41.9

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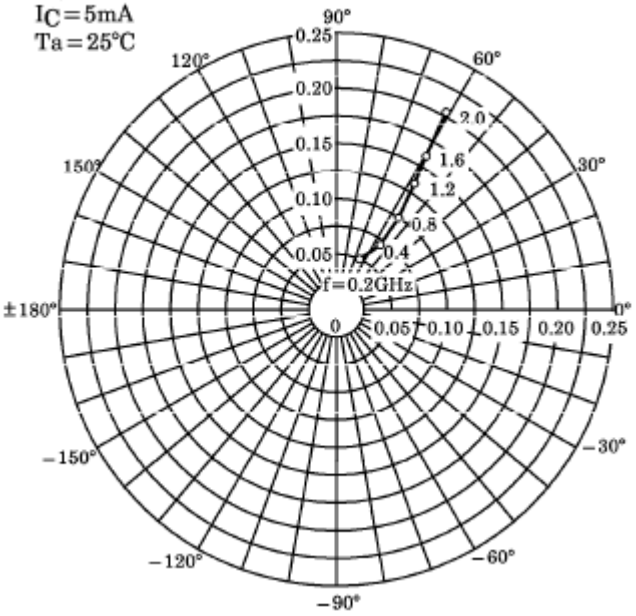
S_{11e}
$V_{CE}=8V$
$I_C=5mA$
$Ta=25°C$
(UNIT : Ω)



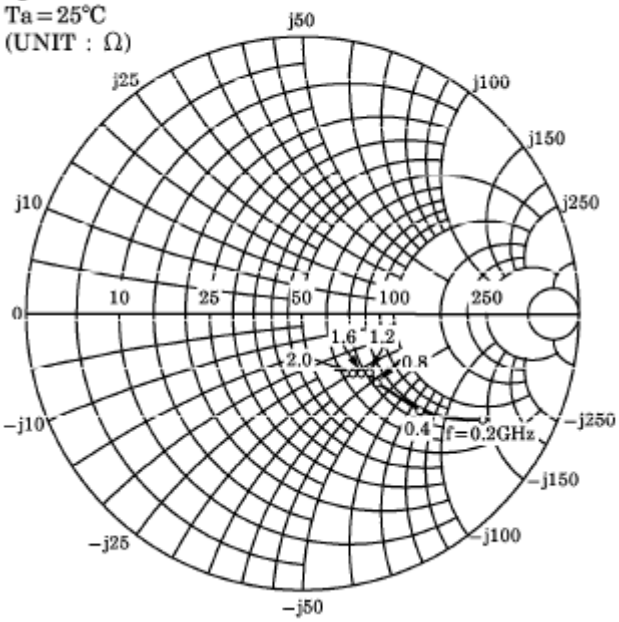
S_{21e}
$V_{CE}=8V$
$I_C=5mA$
$Ta=25°C$



S_{12e}
$V_{CE}=8V$
$I_C=5mA$
$Ta=25°C$

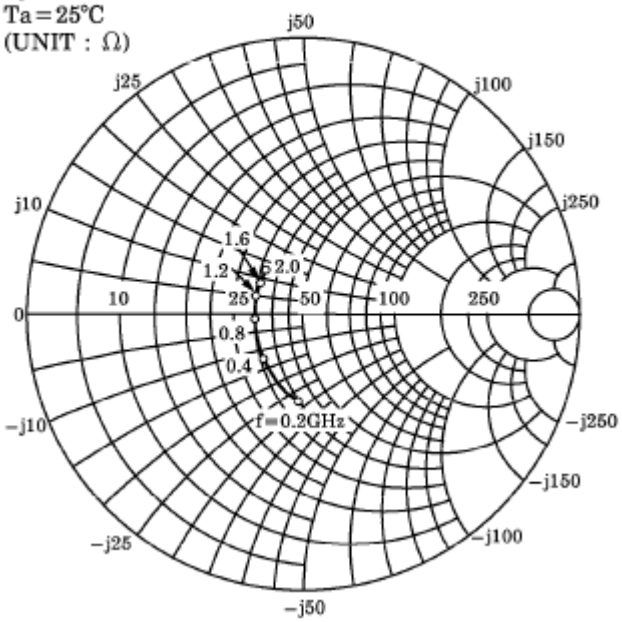


S_{22e}
$V_{CE}=8V$
$I_C=5mA$
$Ta=25°C$
(UNIT : Ω)

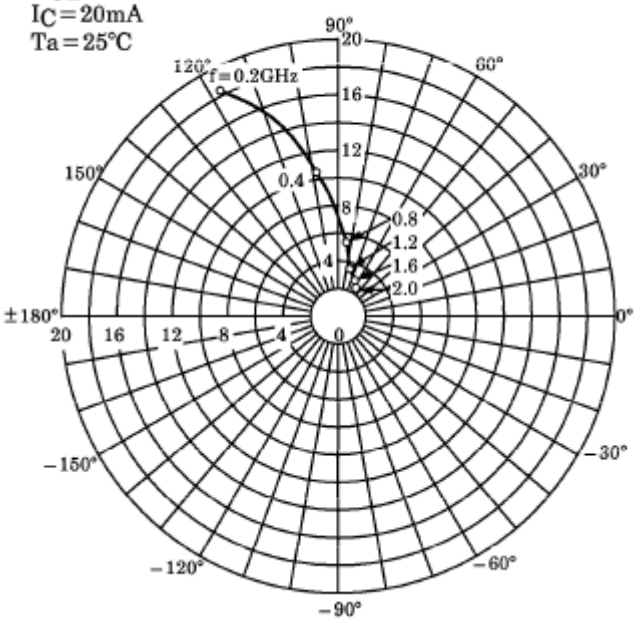


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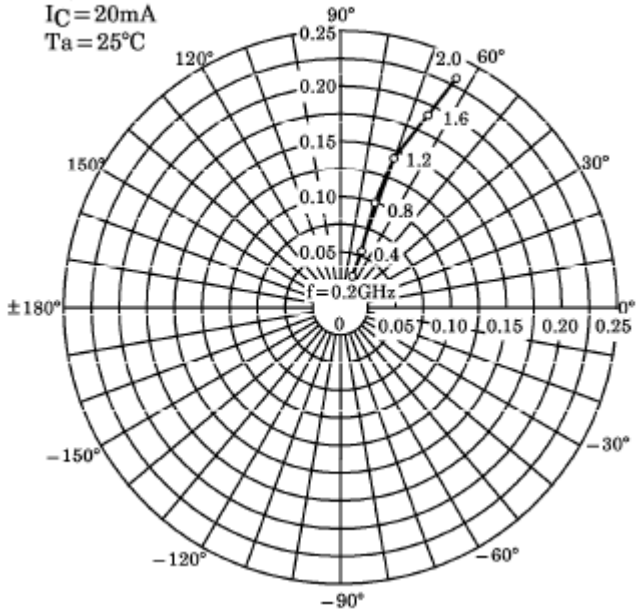
S_{11e}
$V_{CE}=8V$
$I_C=20mA$
$Ta=25°C$
(UNIT : Ω)



S_{21e}
$V_{CE}=8V$
$I_C=20mA$
$Ta=25°C$



S_{12e}
$V_{CE}=8V$
$I_C=20mA$
$Ta=25°C$



S_{22e}
$V_{CE}=8V$
$I_C=20mA$
$Ta=25°C$
(UNIT : Ω)

