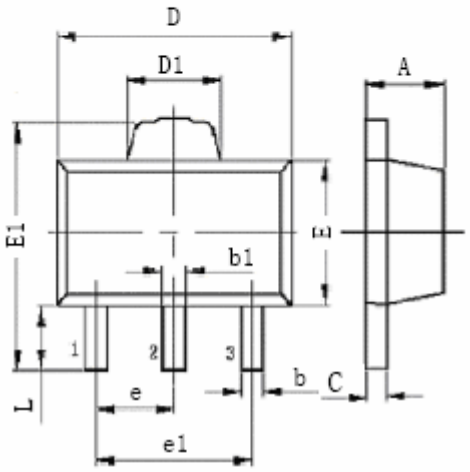
isc Silicon NPN RF Transistor 2SC3357

SOT-89 package

1: Base
2: Emitter
3: Collector



DIM	mm MIN	MAX
A	1.40	1.60
b	0.32	0.52
b1	0.36	0.56
C	0.35	0.44
D	4.40	4.46
D1	1.40	1.80
E	2.30	2.60
E1	3.94	4.25
e	1.50typ	
e1	2.90	3.10
L	0.90	1.10

DESCRIPTION

- Low Noise and High Gain
  NF = 1.1 dB TYP., G_a = 8.0 dB TYP.
  @V_{CE} = 10 V, I_C = 7 mA, f = 1.0 GHz
  NF = 1.8 dB TYP., G_a = 9.0 dB TYP.
  @V_{CE} = 10 V, I_C = 40 mA, f = 1.0 GHz

APPLICATIONS

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

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	3.0	V
I_C	Collector Current-Continuous	0.1	A
P_C	Collector Power Dissipation @T_C=25℃	1.2	W
T_J	Junction Temperature	150	℃
T_{stg}	Storage Temperature Range	-65~150	℃

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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			1.0	μA
I_{EBO}	Emitter Cutoff Current	V_{EB}= 1V; I_C= 0			1.0	μA
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		6.5		GHz
C_{re}	Feed-Back Capacitance	I_E= 0 ; V_{CB}= 10V;f= 1.0MHz		0.65	1.0	pF
$\|S_{21e}\|^2$	Insertion Power Gain	I_C= 20mA ; V_{CE}= 10V;f= 1.0GHz		9		dB
NF	Noise Figure	I_C= 7mA ; V_{CE}= 10V;f= 1.0GHz		1.1		dB
NF	Noise Figure	I_C= 40mA ; V_{CE}= 10V;f= 1.0GHz		1.8	3.0	dB

◆ **h_{FE} Classification**

Marking	RH	RF	RE
h_{FE}	50-100	80-160	125-250

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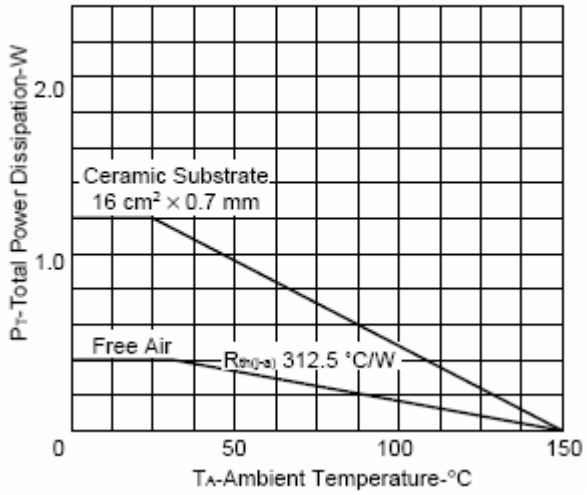
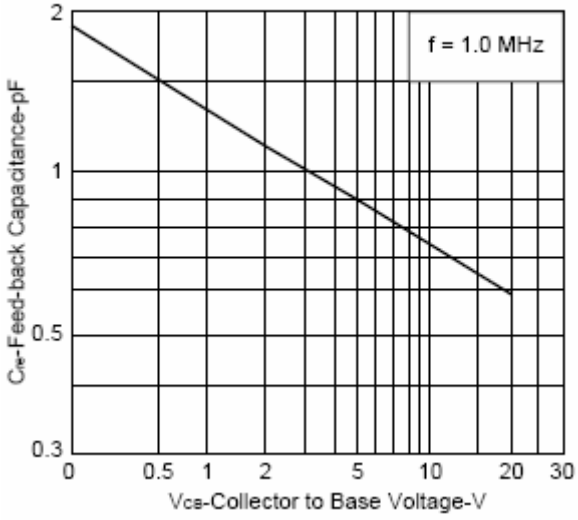
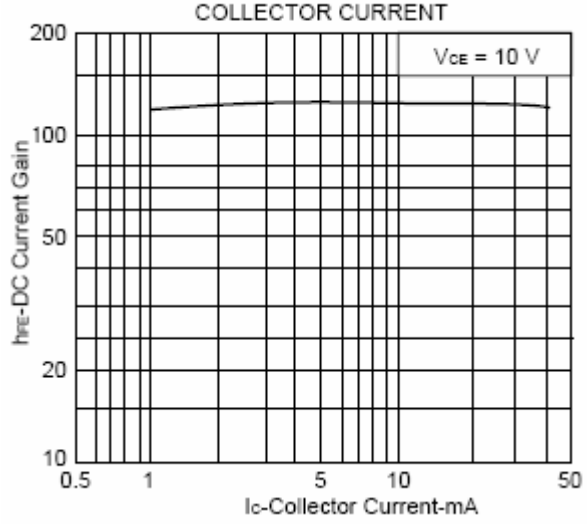
TOTAL POWER DISSIPATION vs.
AMBIENT TEMPERATURE



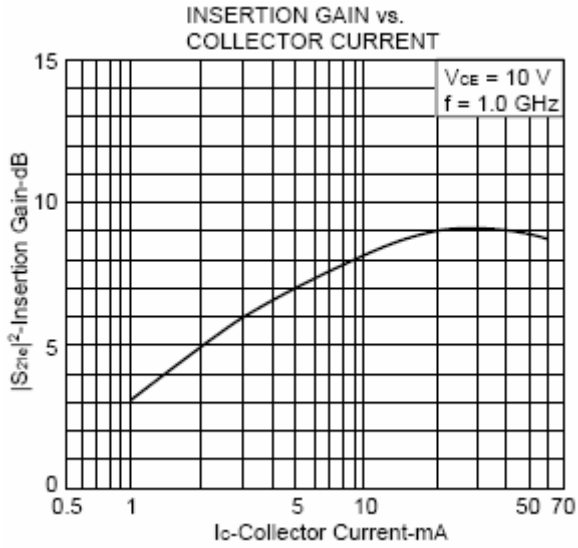
FEED-BACK CAPACITANCE vs.
COLLECTOR TO BASE VOLTAGE



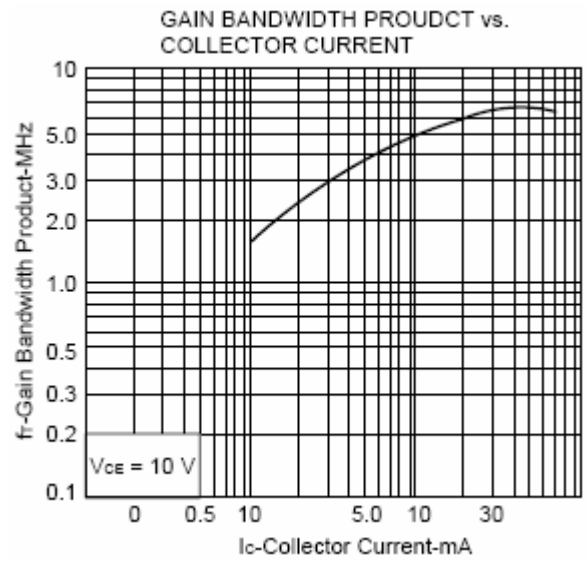
DC CURRENT GAIN vs.
COLLECTOR CURRENT



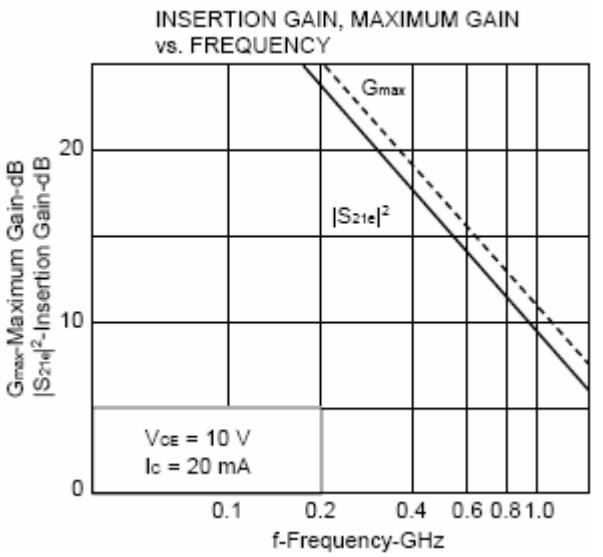
INSERTION GAIN vs.
COLLECTOR CURRENT



GAIN BANDWIDTH PROUDCT vs.
COLLECTOR CURRENT



INSERTION GAIN, MAXIMUM GAIN
vs. FREQUENCY



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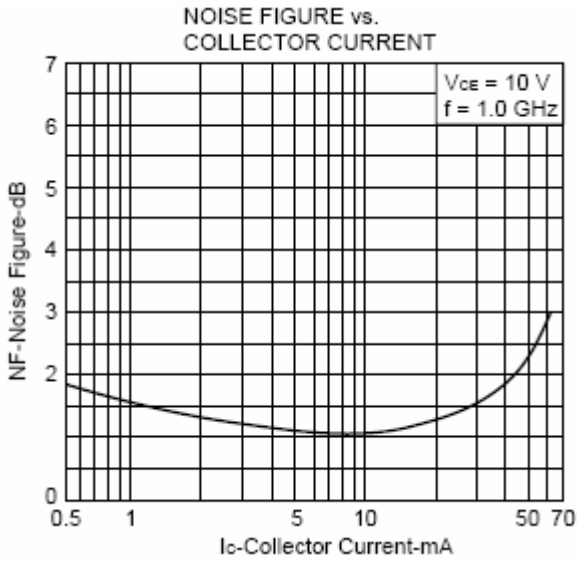

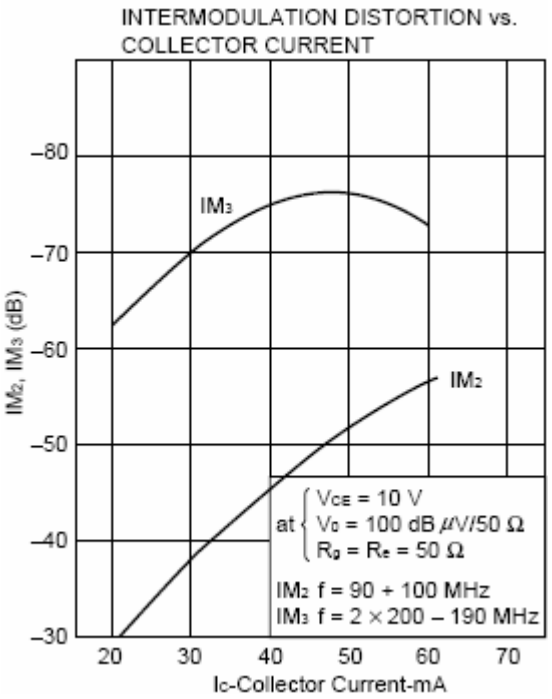

S-PARAMETER

V_{CE} = 10 V, I_C = 40 mA, Z_O = 50 Ω

f (MHz)	$\lvert S_{11} \rvert$	$\angle S_{11}$	$\lvert S_{21} \rvert$	$\angle S_{21}$	$\lvert S_{12} \rvert$	$\angle S_{12}$	$\lvert S_{22} \rvert$	$\angle S_{22}$
200	0.196	-94.4	13.023	102.4	0.043	74.5	0.444	-21.1
400	0.103	-118.3	6.852	89.2	0.081	77.4	0.398	-25.3
600	0.056	-131.1	4.632	78.3	0.118	77.5	0.399	-26.9
800	0.024	-43.7	3.527	75.9	0.152	78.0	0.414	-28.9
1000	0.008	-2.0	2.854	68.7	0.188	78.4	0.440	-33.5
1200	0.039	13.1	2.421	65.7	0.218	75.7	0.461	-33.3
1400	0.072	11.8	2.118	59.0	0.255	71.7	0.479	-36.3
1600	0.102	9.6	1.887	57.1	0.278	73.1	0.499	-35.5
1800	0.129	8.6	1.681	52.5	0.308	71.3	0.515	-38.8
2000	0.151	9.8	1.579	51.4	0.339	71.8	0.537	-35.9

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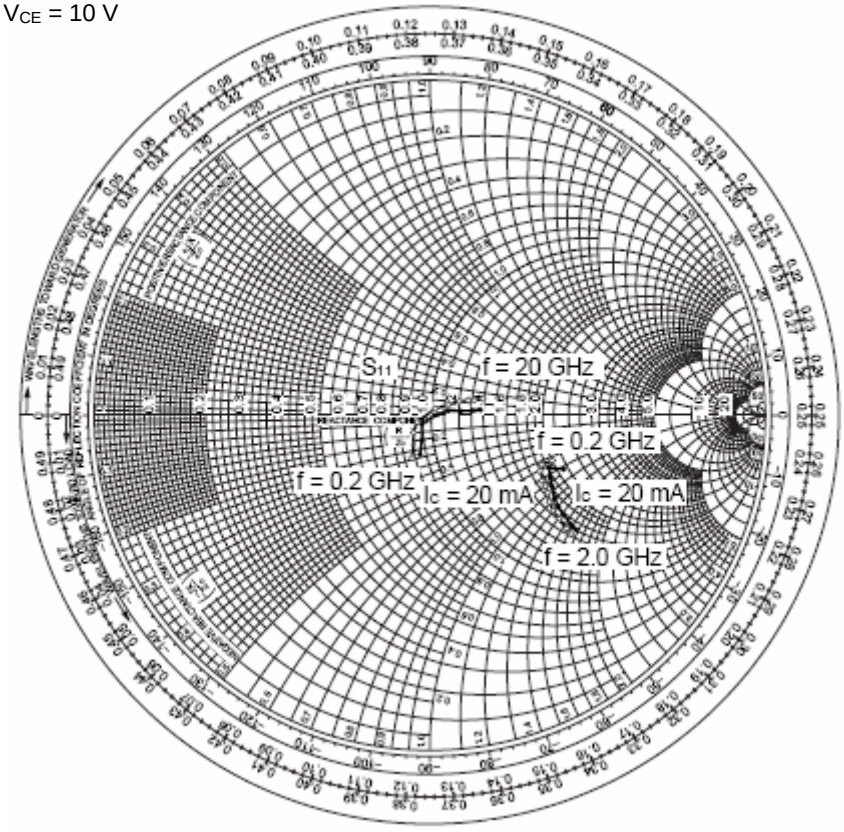
V_{CE} = 10 V, I_C = 20 mA, Z_O = 50 Ω

f (MHz)	$\|S_{11}\|$	$\angle S_{11}$	$\|S_{21}\|$	$\angle S_{21}$	$\|S_{12}\|$	$\angle S_{12}$	$\|S_{22}\|$	$\angle S_{22}$
200	0.130	-109.2	13.430	98.1	0.042	79.0	0.403	-22.1
400	0.073	-134.1	6.930	87.2	0.081	80.6	0.382	-24.7
600	0.037	-146.6	4.690	79.4	0.119	79.4	0.392	-25.6
800	0.010	177.1	3.560	75.2	0.154	79.7	0.412	-27.1
1000	0.024	23.7	2.878	68.2	0.191	76.5	0.440	-31.9
1200	0.056	17.2	2.439	65.4	0.220	76.8	0.463	-32.3
1400	0.093	13.8	2.133	59.0	0.257	72.9	0.483	-35.7
1600	0.124	12.0	1.898	57.3	0.280	74.0	0.504	-35.3
1800	0.151	11.0	1.693	52.9	0.311	72.4	0.519	-38.4
2000	0.174	13.4	1.591	52.0	0.341	72.8	0.542	-36.3

S-PARAMETER

S_{11e}, S_{22e}-FREQUENCY CONDITION V_{CE} = 10 V



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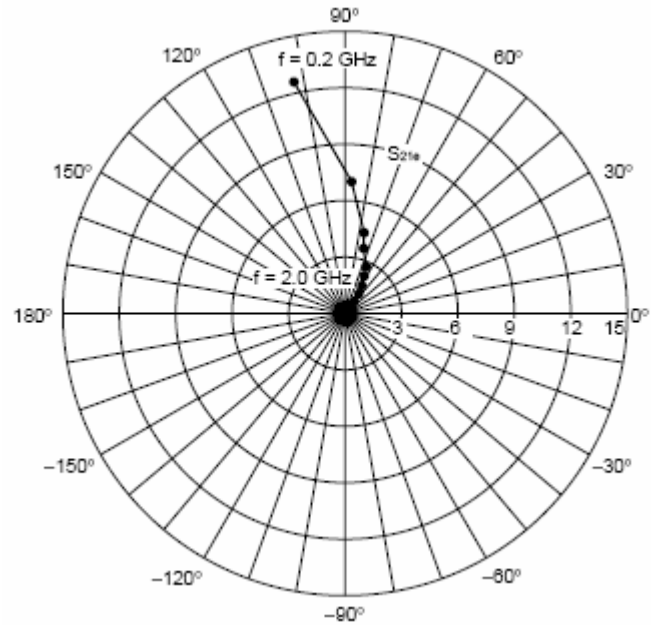
S_{21e}-FREQUENCY CONDITION V_{CE} = 10 V
I_C = 20 mA



S_{12e}-FREQUENCY CONDITION V_{CE} = 10 V
I_C = 20 mA