

isc Silicon NPN RF Transistor

2SC3357

**DESCRIPTION**

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

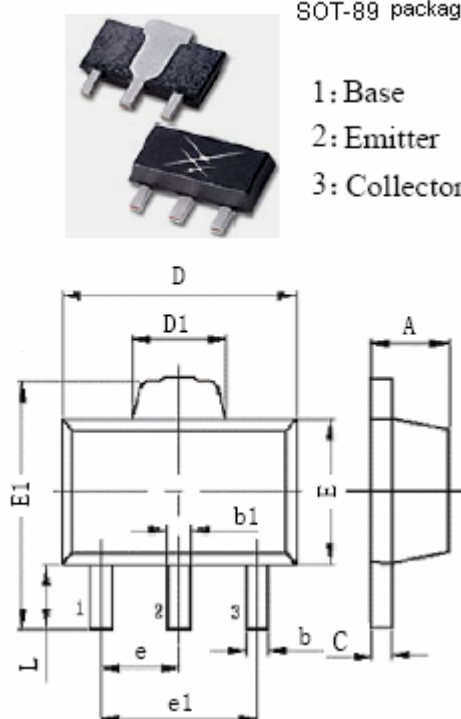
**APPLICATIONS**

- 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 @ $T_c=25^\circ\text{C}$	1.2	W
$T_J$	Junction Temperature	150	$^\circ\text{C}$
$T_{stg}$	Storage Temperature Range	-65~150	$^\circ\text{C}$

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

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## ELECTRICAL CHARACTERISTICS

 $T_C=25^{\circ}\text{C}$  unless otherwise specified

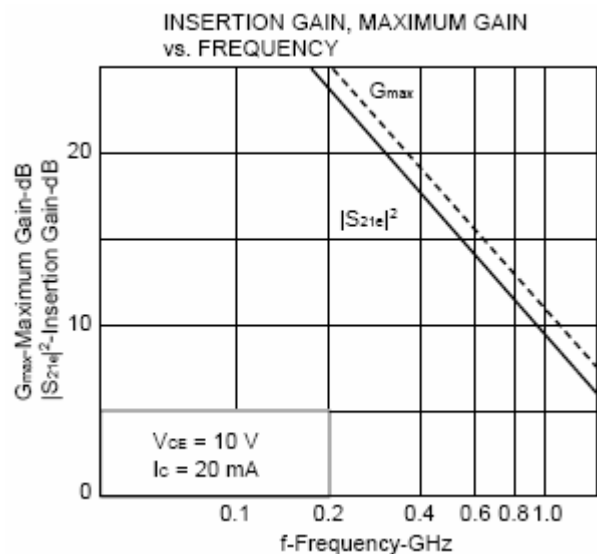
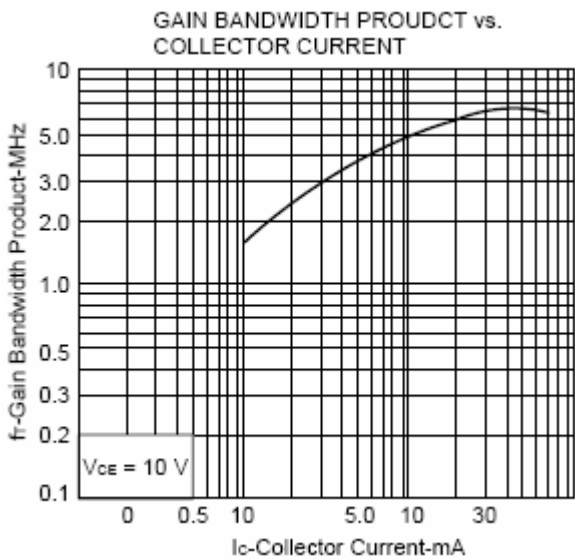
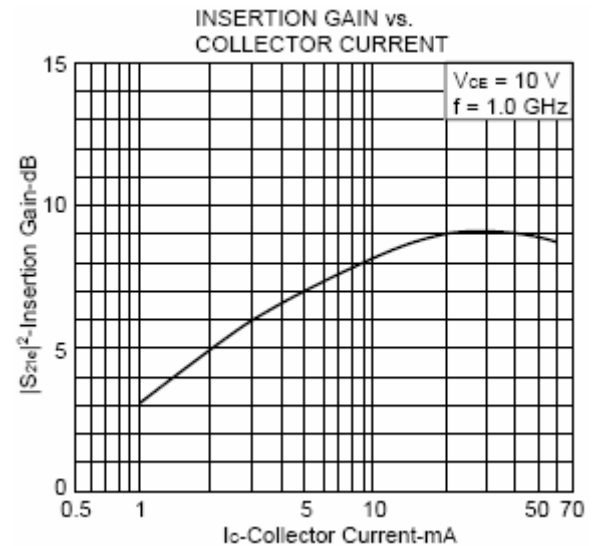
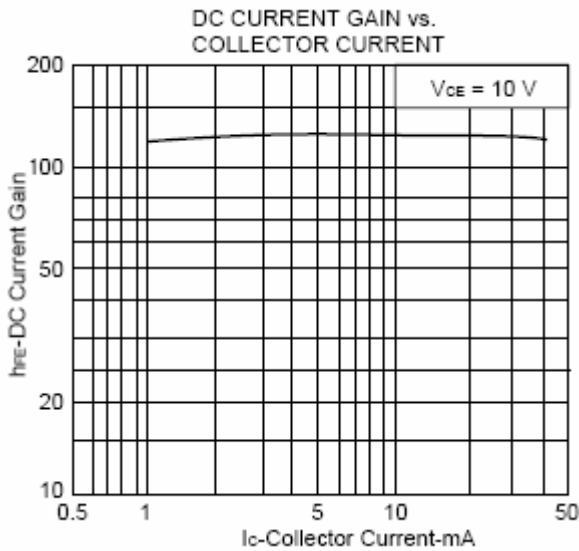
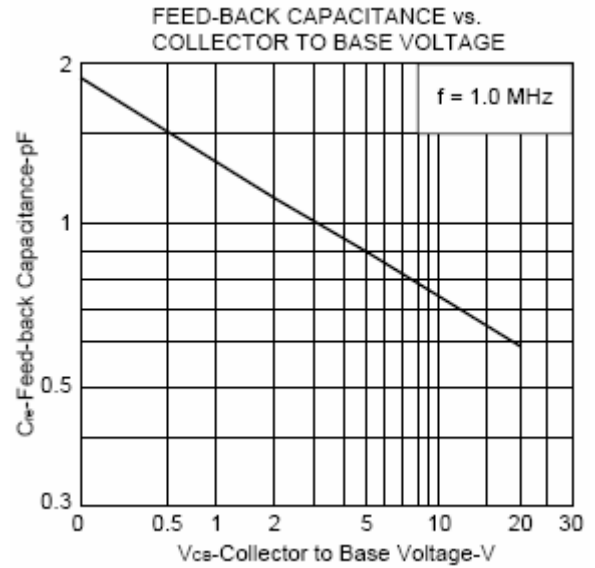
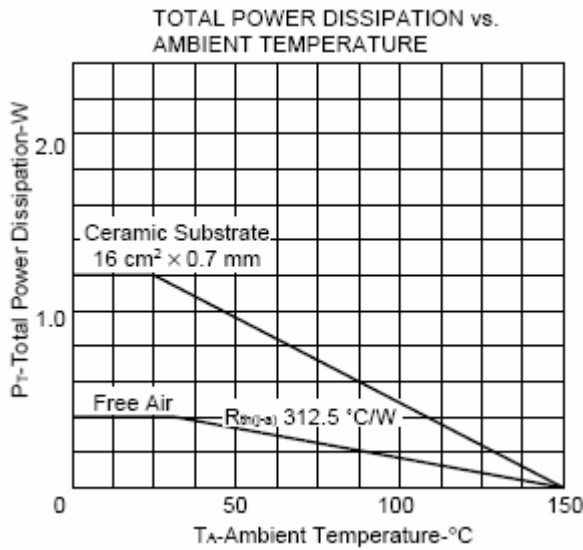
SYMBOL	PARAMETER	CONDITIONS	MIN	TYP.	MAX	UNIT
$I_{CBO}$	Collector Cutoff Current	$V_{CB}=10\text{V}; I_E=0$			1.0	$\mu\text{A}$
$I_{EBO}$	Emitter Cutoff Current	$V_{EB}=1\text{V}; I_C=0$			1.0	$\mu\text{A}$
$h_{FE}$	DC Current Gain	$I_C=20\text{mA}; V_{CE}=10\text{V}$	50		300	
$f_T$	Current-Gain—Bandwidth Product	$I_C=20\text{mA}; V_{CE}=10\text{V}$		6.5		GHz
$C_{re}$	Feed-Back Capacitance	$I_E=0; V_{CB}=10\text{V}; f=1.0\text{MHz}$		0.65	1.0	pF
$ S_{21e} ^2$	Insertion Power Gain	$I_C=20\text{mA}; V_{CE}=10\text{V}; f=1.0\text{GHz}$		9		dB
NF	Noise Figure	$I_C=7\text{mA}; V_{CE}=10\text{V}; f=1.0\text{GHz}$		1.1		dB
NF	Noise Figure	$I_C=40\text{mA}; V_{CE}=10\text{V}; f=1.0\text{GHz}$		1.8	3.0	dB

◆  $h_{FE}$  Classification

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

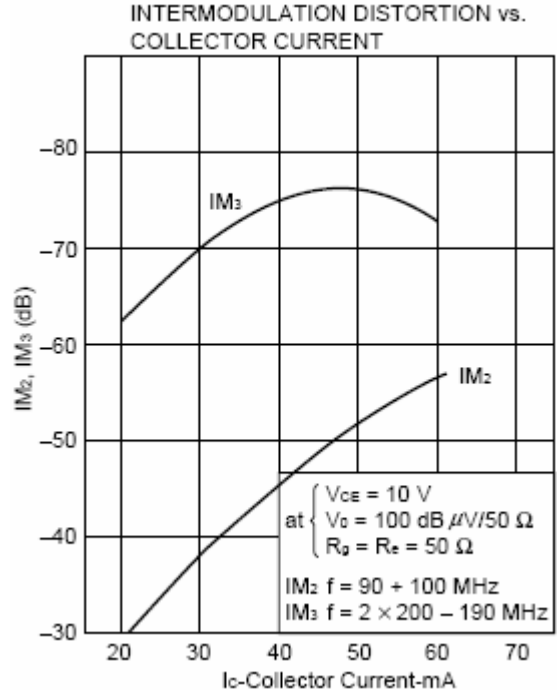
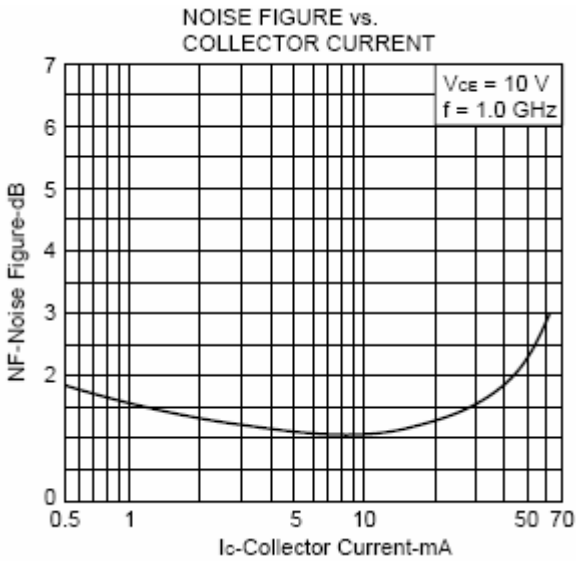
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S-PARAMETER

$V_{CE} = 10\text{ V}$ ,  $I_c = 40\text{ mA}$ ,  $Z_0 = 50\ \Omega$

f (MHz)	$ S_{11} $	$\angle S_{11}$	$ S_{21} $	$\angle S_{21}$	$ S_{12} $	$\angle S_{12}$	$ S_{22} $	$\angle S_{22}$
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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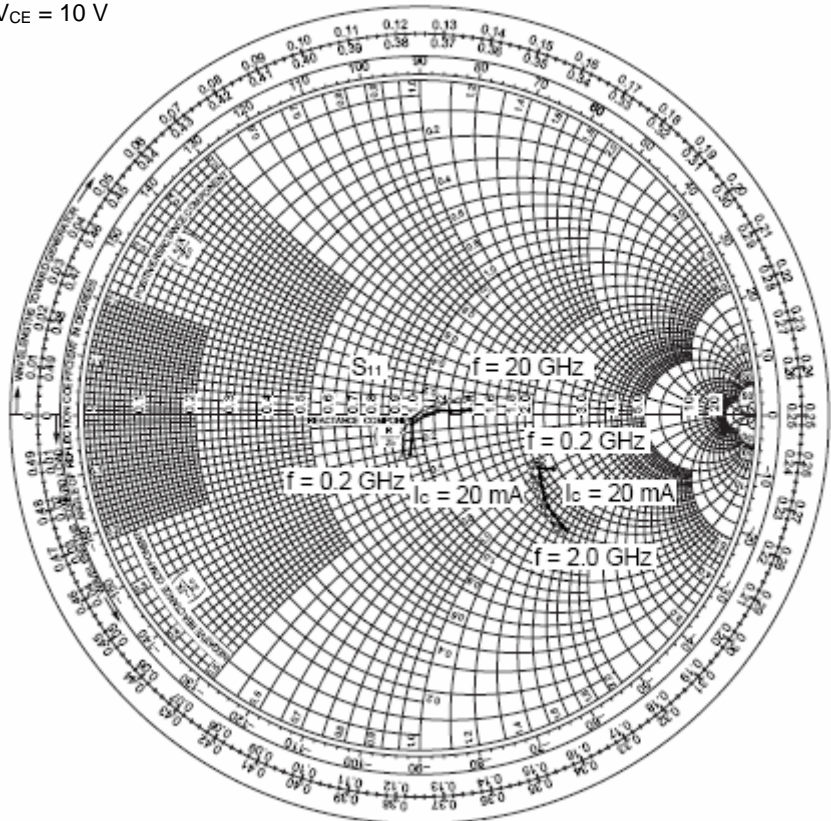
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$V_{CE} = 10\text{ V}$ ,  $I_c = 20\text{ mA}$ ,  $Z_o = 50\ \Omega$

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  $V_{CE} = 10\text{ V}$



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

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

