

**2SC5347**

## High-Frequency Semi-Power Output Stage, Low-Noise Medium Output Amplifiers Applications

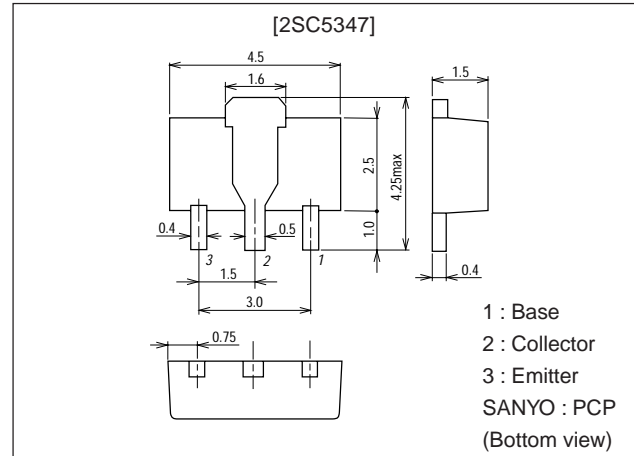
### Features

- High frequency medium output amplification  
( $V_{CE}=5V$ ,  $I_C=50mA$ )
- :  $f_T=4.7GHz$  typ ( $f=1GHz$ ).
- :  $|S_{21e}|^2=8dB$  typ ( $f=1GHz$ ).
- :  $NF=1.8dB$  typ ( $f=1GHz$ ).

### Package Dimensions

unit:mm

2038A



### Specifications

#### Absolute Maximum Ratings at $T_a = 25^\circ C$

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	$V_{CBO}$		20	V
Collector-to-Emitter Voltage	$V_{CEO}$		12	V
Emitter-to-Base Voltage	$V_{EBO}$		2	V
Collector Current	$I_C$		150	mA
Collector Dissipation	$P_C$	Mounted on ceramic board (250mm <sup>2</sup> ×0.8mm)	1.3	W
Junction Temperature	$T_J$		150	°C
Storage Temperature	$T_{stg}$		-55 to +150	°C

#### Electrical Characteristics at $T_a = 25^\circ C$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	$I_{CBO}$	$V_{CB}=10V$ , $I_E=0$			1.0	$\mu A$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB}=1V$ , $I_C=0$			10	$\mu A$
DC Current Gain	$h_{FE}$	$V_{CE}=5V$ , $I_C=50mA$	60*		270*	
Gain-Bandwidth Product	$f_T$	$V_{CE}=5V$ , $I_C=50mA$	3	4.7		GHz
Output Capacitance	$C_{ob}$	$V_{CB}=10V$ , $f=1MHz$		1.3	2.0	pF
Reverse Transfer Capacitance	$C_{re}$	$V_{CB}=10V$ , $f=1MHz$		0.9		pF
Forward Transfer Gain	$ S_{21e} ^2$	$V_{CE}=5V$ , $I_C=50mA$ , $f=1GHz$	6	8		dB
Noise Figure	NF	$V_{CE}=5V$ , $I_C=50mA$ , $f=1GHz$		1.8	3.0	dB

\* : The 2SC5347 is classified by 50mA  $h_{FE}$  as follows : 

60	D	120	90	E	180	135	F	270
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Marking : CZ  
 $h_{FE}$  rank : D, E, F

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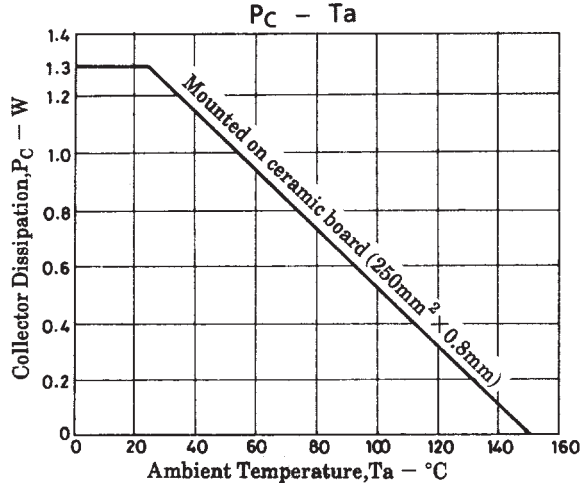
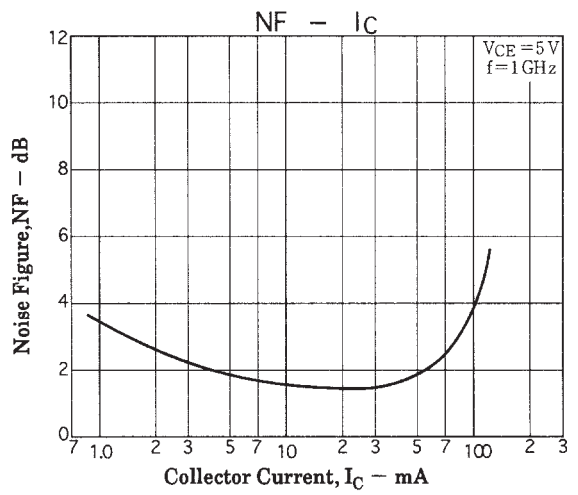
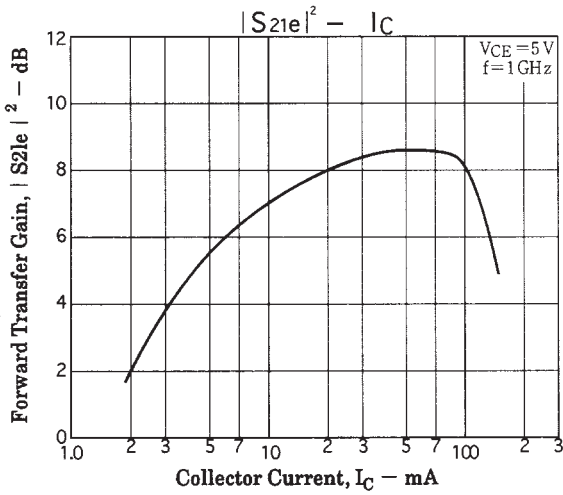
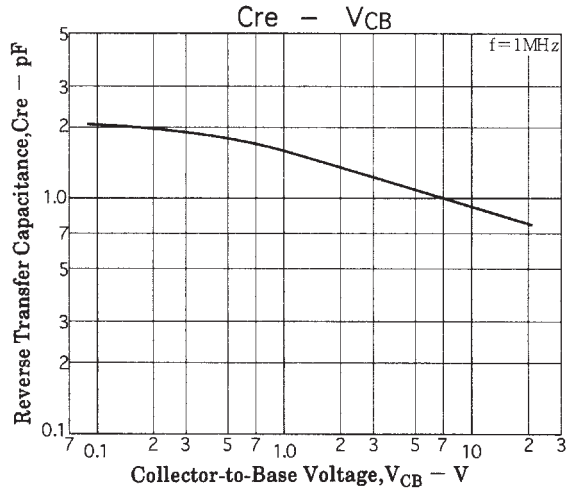
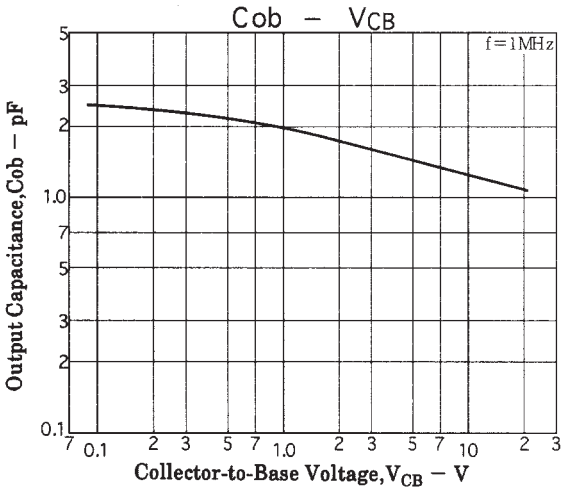
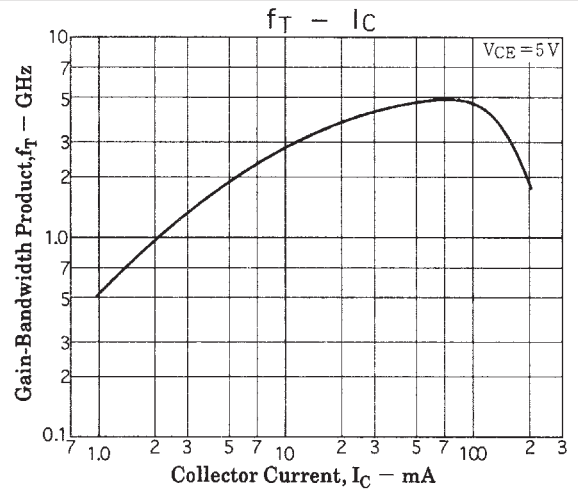
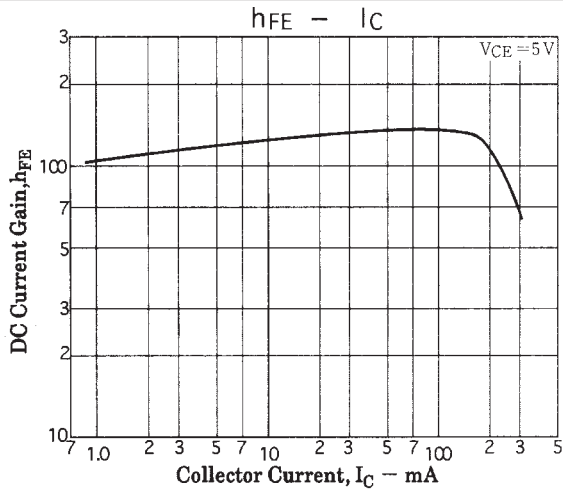
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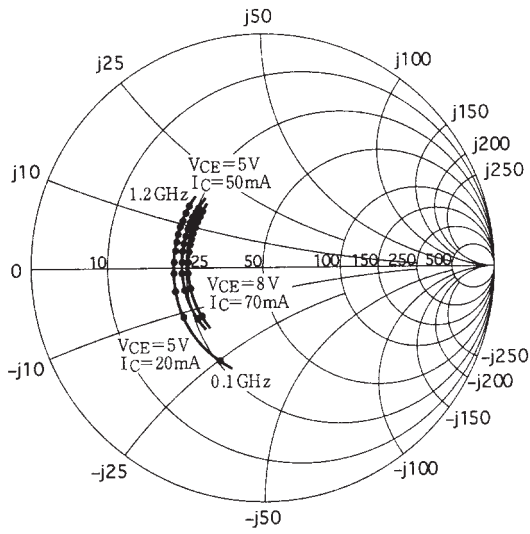
# 2SC5347



S Parameters

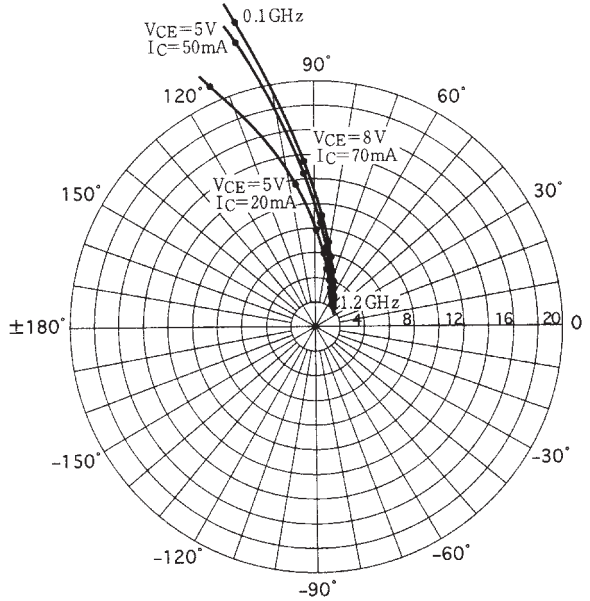
S11e

f = 100MHz to 1200MHz (100MHz step)



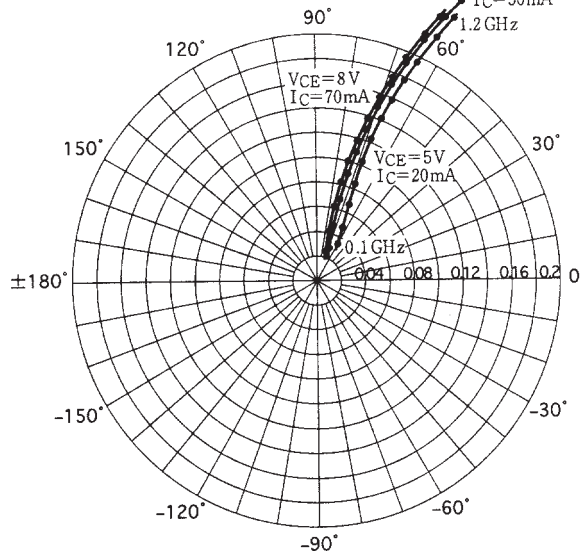
S21e

f = 100MHz to 1200MHz (100MHz step)



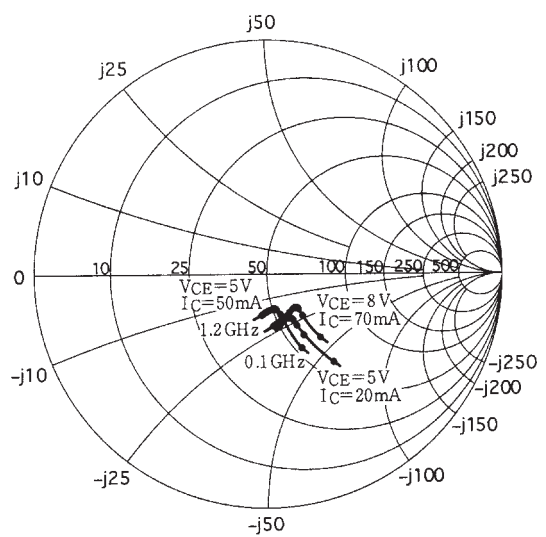
S12e

f = 100MHz to 1200MHz (100MHz step)



S22e

f = 100MHz to 1200MHz (100MHz step)



## 2SC5347

### S parameters (Common emitter)

$V_{CE}=5V, I_C=50mA, Z_O=50\Omega$

Freq (MHz)	$ S_{11} $	$\angle S_{11}$	$ S_{21} $	$\angle S_{21}$	$ S_{12} $	$\angle S_{12}$	$ S_{22} $	$\angle S_{22}$
100	0.358	-141.0	24.005	105.9	0.027	68.4	0.342	-63.0
200	0.354	-165.7	12.593	93.3	0.047	72.7	0.205	-68.4
300	0.355	-176.8	8.532	86.8	0.068	74.1	0.166	-69.7
400	0.359	174.9	6.428	81.9	0.089	73.7	0.149	-72.3
500	0.359	169.3	5.293	77.6	0.110	72.8	0.145	-75.3
600	0.362	163.9	4.360	73.5	0.130	71.7	0.143	-78.6
700	0.366	158.5	3.774	69.9	0.151	70.2	0.147	-82.1
800	0.364	153.5	3.334	66.4	0.171	68.6	0.151	-85.6
900	0.368	149.8	2.995	62.9	0.191	66.7	0.158	-90.1
1000	0.370	145.3	2.725	59.4	0.210	65.1	0.166	-92.3
1100	0.373	141.5	2.494	56.5	0.230	63.0	0.170	-95.1
1200	0.377	137.6	2.307	53.0	0.248	61.4	0.177	-97.8

$V_{CE}=5V, I_C=20mA, Z_O=50\Omega$

Freq (MHz)	$ S_{11} $	$\angle S_{11}$	$ S_{21} $	$\angle S_{21}$	$ S_{12} $	$\angle S_{12}$	$ S_{22} $	$\angle S_{22}$
100	0.445	-115.4	21.095	113.8	0.032	59.7	0.479	-52.4
200	0.400	-149.6	11.567	97.4	0.049	63.4	0.300	-58.0
300	0.394	-165.7	7.917	89.3	0.066	67.0	0.242	-58.8
400	0.391	-176.5	5.974	82.5	0.085	68.5	0.214	-60.0
500	0.391	176.7	4.845	78.4	0.103	68.8	0.203	-62.2
600	0.392	169.4	4.065	73.9	0.122	68.6	0.199	-64.7
700	0.393	163.8	3.522	70.0	0.141	67.8	0.198	-67.9
800	0.394	158.4	3.114	66.4	0.159	67.1	0.201	-71.2
900	0.396	154.1	2.798	62.5	0.178	65.7	0.204	-74.7
1000	0.399	149.3	2.548	58.9	0.196	64.5	0.212	-78.1
1100	0.403	144.9	2.333	55.5	0.215	62.9	0.218	-81.4
1200	0.408	141.0	2.158	51.8	0.233	61.8	0.224	-84.1

$V_{CE}=8V, I_C=70mA, Z_O=50\Omega$

Freq (MHz)	$ S_{11} $	$\angle S_{11}$	$ S_{21} $	$\angle S_{21}$	$ S_{12} $	$\angle S_{12}$	$ S_{22} $	$\angle S_{22}$
100	0.328	-141.2	25.505	105.1	0.024	70.5	0.348	-50.8
200	0.323	-165.7	13.334	93.0	0.043	75.0	0.233	-48.9
300	0.323	-176.6	9.025	86.7	0.062	75.8	0.204	-47.0
400	0.326	175.1	6.819	81.8	0.081	75.5	0.191	-48.0
500	0.325	169.5	5.481	77.8	0.100	74.5	0.187	-50.5
600	0.328	163.6	4.612	73.7	0.119	73.4	0.185	-53.6
700	0.330	158.4	3.980	70.2	0.139	71.8	0.188	-57.3
800	0.333	153.5	3.524	66.7	0.157	70.4	0.191	-60.9
900	0.335	150.0	3.148	63.3	0.177	68.5	0.198	-65.1
1000	0.341	144.7	2.866	60.0	0.194	67.1	0.204	-69.0
1100	0.345	141.2	2.629	57.0	0.213	65.1	0.208	-72.1
1200	0.348	138.0	2.424	53.4	0.230	62.6	0.215	-75.3

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