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Renesas Technology Corp.
Customer Support Dept.
April 1, 2003

Cautions

Keep safety first in your circuit designs!

1. Renesas Technology Corporation puts the maximum effort into making semiconductor products better and more reliable, but there is always the possibility that trouble may occur with them. Trouble with semiconductors may lead to personal injury, fire or property damage.

Remember to give due consideration to safety when making your circuit designs, with appropriate measures such as (i) placement of substitutive, auxiliary circuits, (ii) use of nonflammable material or (iii) prevention against any malfunction or mishap.

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2SC5554

Silicon NPN Epitaxial
VHF / UHF wide band amplifier

RENESAS

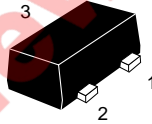
ADE-208-692 (Z)
1st. Edition
Nov. 1998

Features

- Super compact package;
(1.4 × 0.8 × 0.59mm)
- Capable low voltage operation ;
($V_{CE} = 1V$)

Outline

MFPAK



1. Emitter
2. Base
3. Collector

Note: Marking is "YH-".

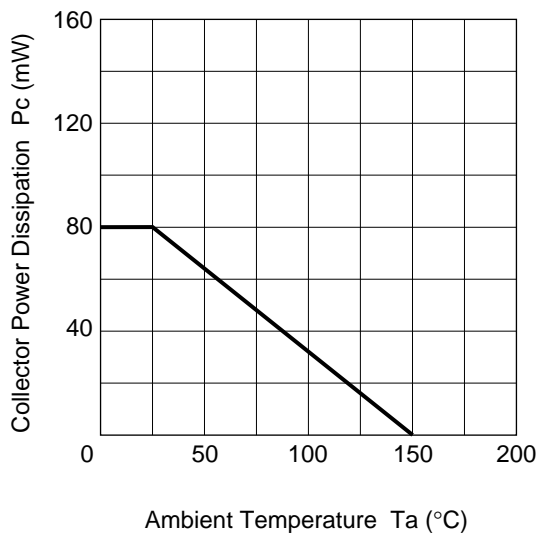
Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings	Unit
Collector to base voltage	V_{CBO}	15	V
Collector to emitter voltage	V_{CEO}	9	V
Emitter to base voltage	V_{EBO}	1.5	V
Collector current	I_C	20	mA
Collector power dissipation	P_C	80	mW
Junction temperature	T_j	150	°C
Storage temperature	T_{stg}	-55 to +150	°C

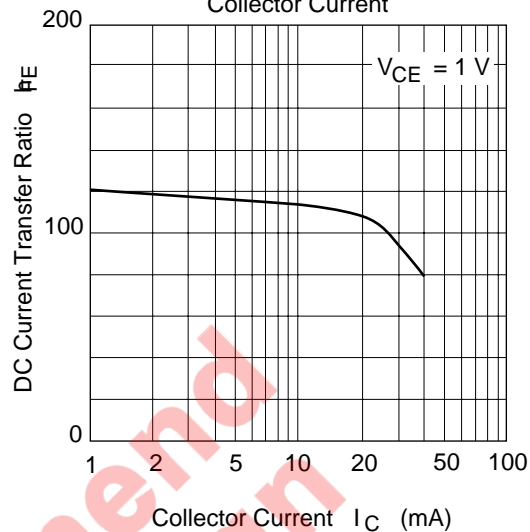
Electrical Characteristics (Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Collector cutoff current	I_{CBO}	—	—	10	μ A	$V_{CB} = 15V, I_E = 0$
Collector cutoff current	I_{CEO}	—	—	1	mA	$V_{CE} = 9V, R_{BE} = \infty$
Emitter cutoff current	I_{EBO}	—	—	10	μ A	$V_{EB} = 1.5V, I_C = 0$
DC current transfer ratio	h_{FE}	50	120	250	V	$V_{CE} = 1V, I_C = 5mA$
Collector output capacitance	C_{ob}	—	0.6	0.9	pF	$V_{CB} = 1V, I_E = 0$ $f = 1MHz$
Gain bandwidth product	f_T	3.5	7	—	GHz	$V_{CE} = 1V, I_C = 5mA$
Power gain	PG	9	12	—	dB	$V_{CE} = 1V, I_C = 5mA$ $f = 900MHz$
Noise figure	NF	—	1.4	3	dB	$V_{CE} = 1V, I_C = 5mA$ $f = 900MHz$

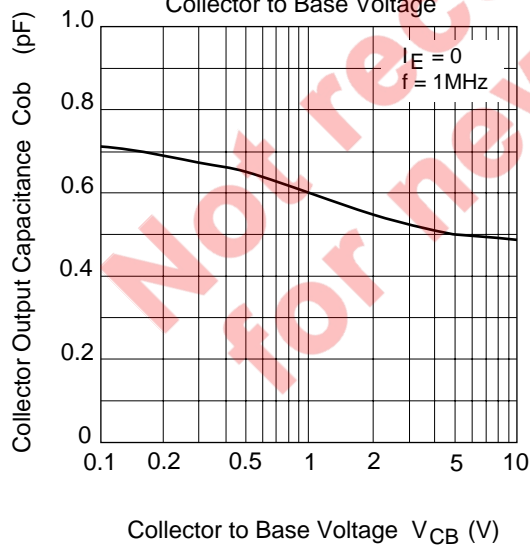
Maximum Collector Dissipation Curve



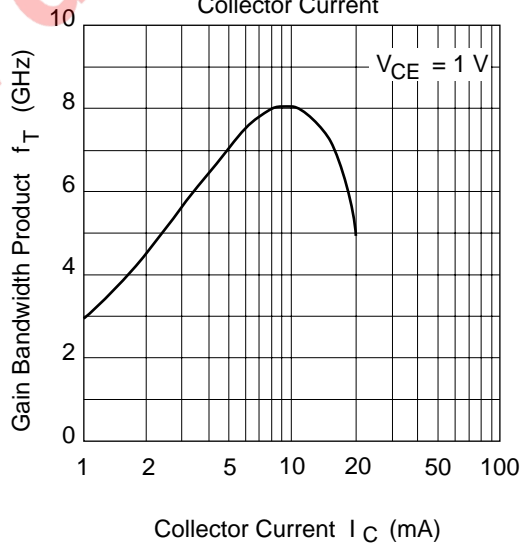
DC Current Transfer Ratio vs. Collector Current

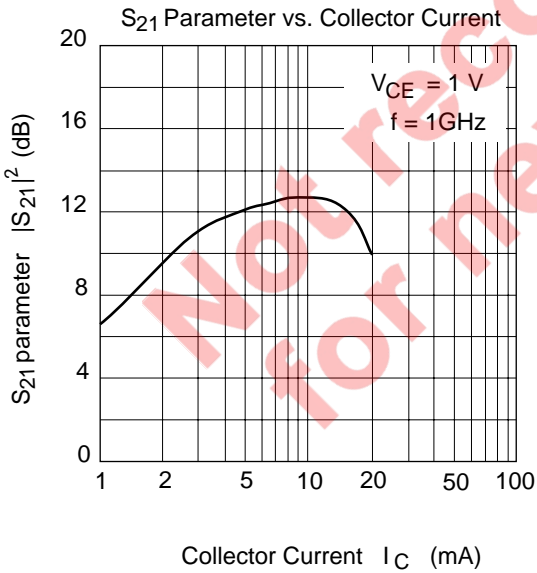
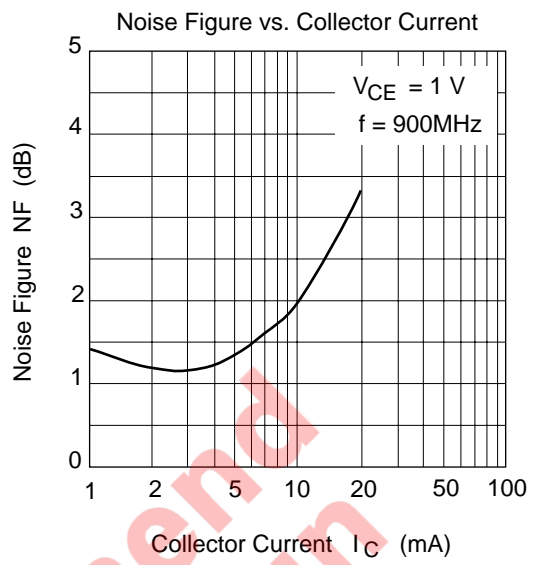
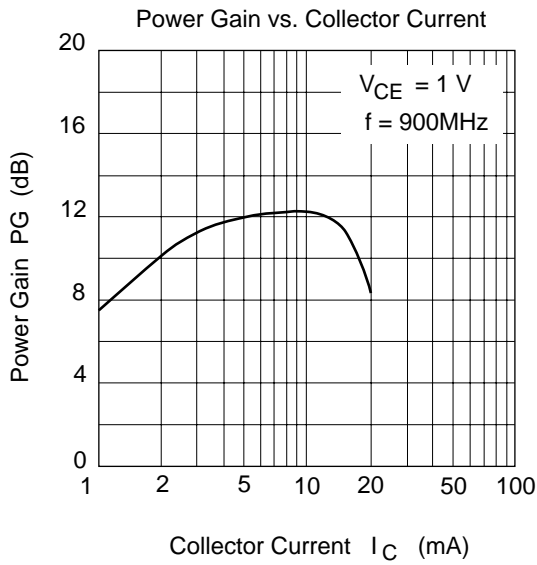


Collector Output Capacitance vs. Collector to Base Voltage

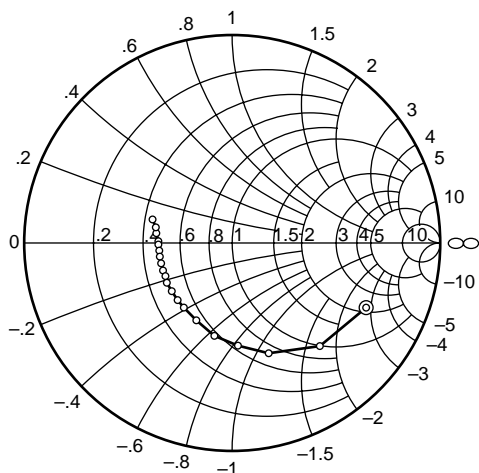


Gain Bandwidth Product vs. Collector Current





S11 Parameter vs. Frequency

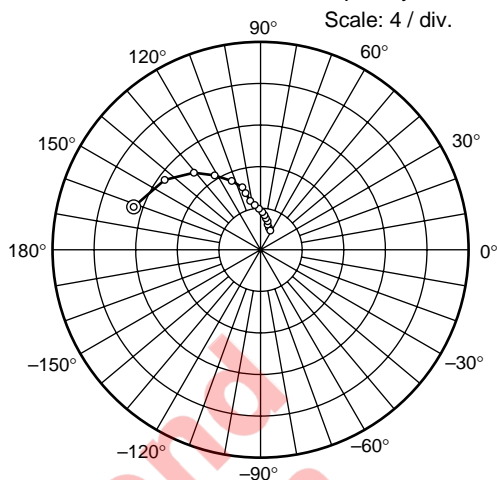


Condition : $V_{CE} = 1\text{ V}$, $I_C = 5\text{ mA}$

100 to 2000 MHz (100 MHz step)

⊙—○

S21 Parameter vs. Frequency

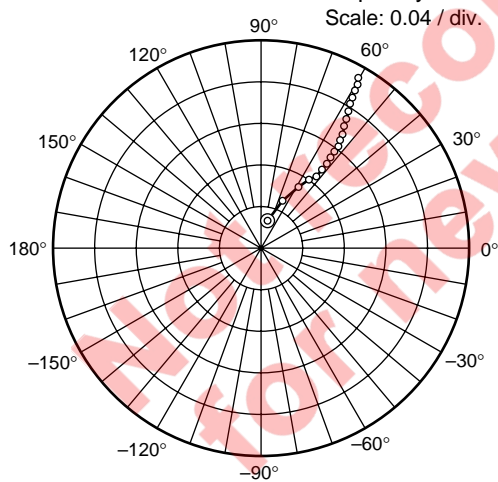


Condition : $V_{CE} = 1\text{ V}$, $I_C = 5\text{ mA}$

100 to 2000 MHz (100 MHz step)

⊙—○

S12 Parameter vs. Frequency

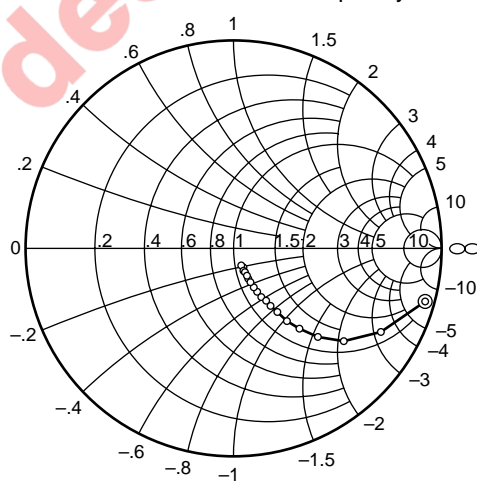


Condition : $V_{CE} = 1\text{ V}$, $I_C = 5\text{ mA}$

100 to 2000 MHz (100 MHz step)

⊙—○

S22 Parameter vs. Frequency



Condition : $V_{CE} = 1\text{ V}$, $I_C = 5\text{ mA}$

100 to 2000 MHz (100 MHz step)

⊙—○

Sparameter ($V_{CE} = 1V, I_C = 5mA, Z_0 = 50\Omega$)

f (MHz)	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
100	0.715	-25.4	13.06	161.3	0.0279	76.6	0.947	-16.1
200	0.647	-50.1	11.47	144.2	0.0517	65.6	0.828	-30.2
300	0.559	-71.5	9.74	131.0	0.0681	58.4	0.697	-40.4
400	0.501	-88.2	8.28	121.3	0.0798	54.6	0.587	-47.0
500	0.453	-102.5	7.08	113.7	0.0882	52.4	0.501	-51.3
600	0.416	-114.8	6.16	108.1	0.0955	51.8	0.433	-54.3
700	0.393	-125.4	5.43	103.1	0.102	51.7	0.378	-56.2
800	0.378	-134.4	4.84	99.3	0.109	52.1	0.333	-57.3
900	0.369	-142.8	4.37	95.7	0.115	52.7	0.295	-58.0
1000	0.357	-149.5	3.99	92.5	0.122	53.5	0.266	-58.4
1100	0.361	-156.6	3.66	89.7	0.128	54.2	0.240	-58.6
1200	0.358	-162.2	3.38	87.2	0.135	55.1	0.217	-58.5
1300	0.358	-167.5	3.15	84.9	0.141	56.0	0.199	-58.0
1400	0.362	-172.5	2.96	82.7	0.148	56.9	0.180	-58.0
1500	0.362	-177.3	2.78	80.9	0.155	57.2	0.166	-57.2
1600	0.369	178.8	2.64	78.6	0.163	58.1	0.151	-56.9
1700	0.373	174.7	2.50	77.2	0.169	58.8	0.137	-56.6
1800	0.377	171.1	2.38	75.1	0.177	59.2	0.126	-56.4
1900	0.388	168.3	2.28	73.3	0.183	59.6	0.113	-56.2
2000	0.395	165.3	2.18	71.8	0.191	60.1	0.102	-55.7

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