

2SC5545

Silicon NPN Epitaxial
VHF / UHF wide band amplifier

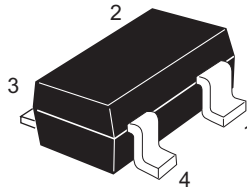
REJ03G0747-0200
(Previous ADE-208-746)
Rev.2.00
Aug.10.2005

Features

- Excellent inter modulation characteristic
- High power gain and low noise figure ;
PG=16dB typ. , NF=1.1dB typ. at f=900MHz

Outline

RENESAS Package code: PLSP0004ZA-A
(Package name: MPAK-4)



1. Collector
2. Emitter
3. Base
4. Emitter

Note: Marking is "ZS-".

Absolute Maximum Ratings

(Ta = 25°C)

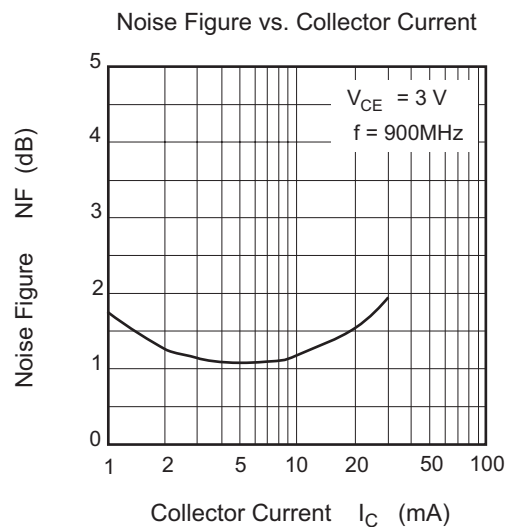
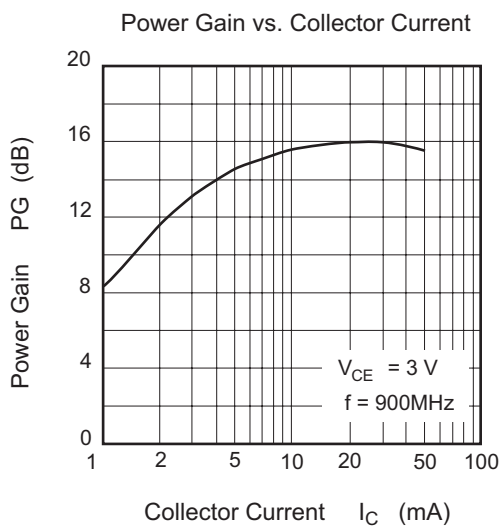
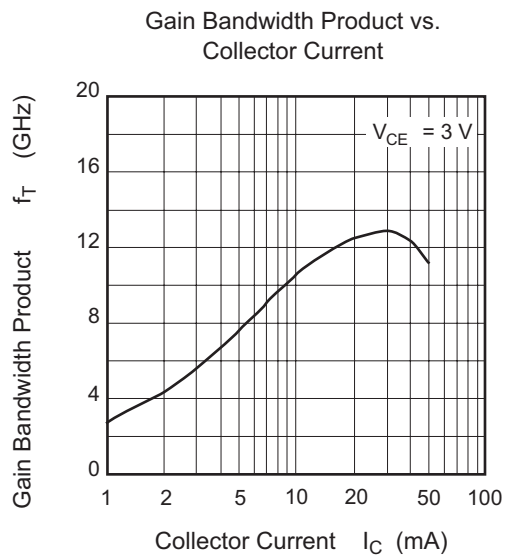
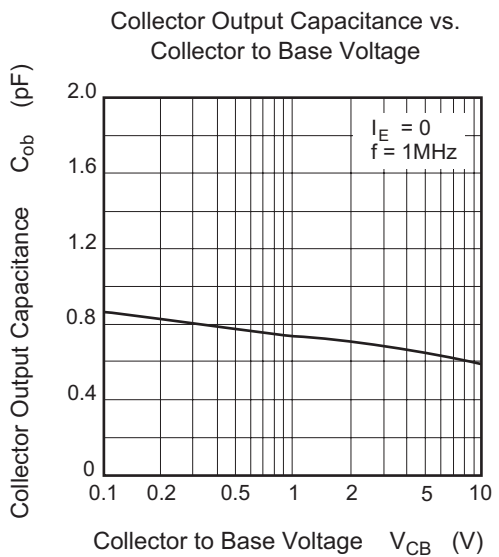
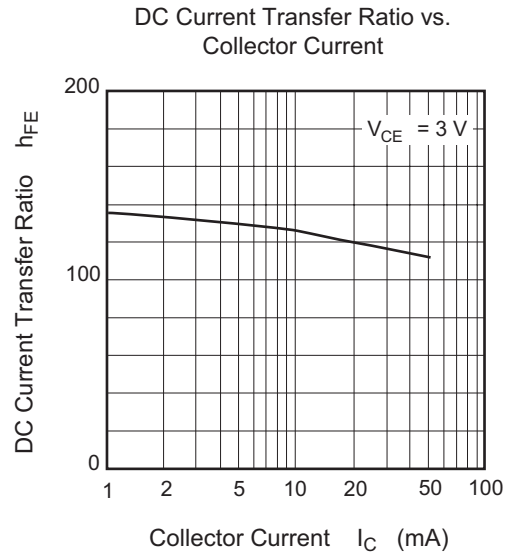
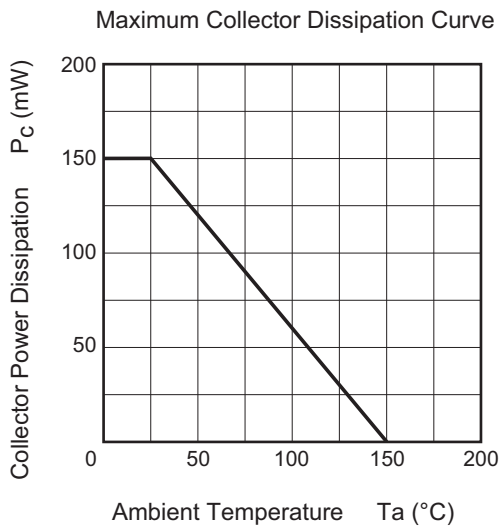
Item	Symbol	Ratings	Unit
Collector to base voltage	V_{CBO}	15	V
Collector to emitter voltage	V_{CEO}	6	V
Emitter to base voltage	V_{EBO}	1.5	V
Collector current	I_C	50	mA
Collector power dissipation	P_C	150	mW
Junction temperature	T_j	150	°C
Storage temperature	T_{stg}	-55 to +150	°C

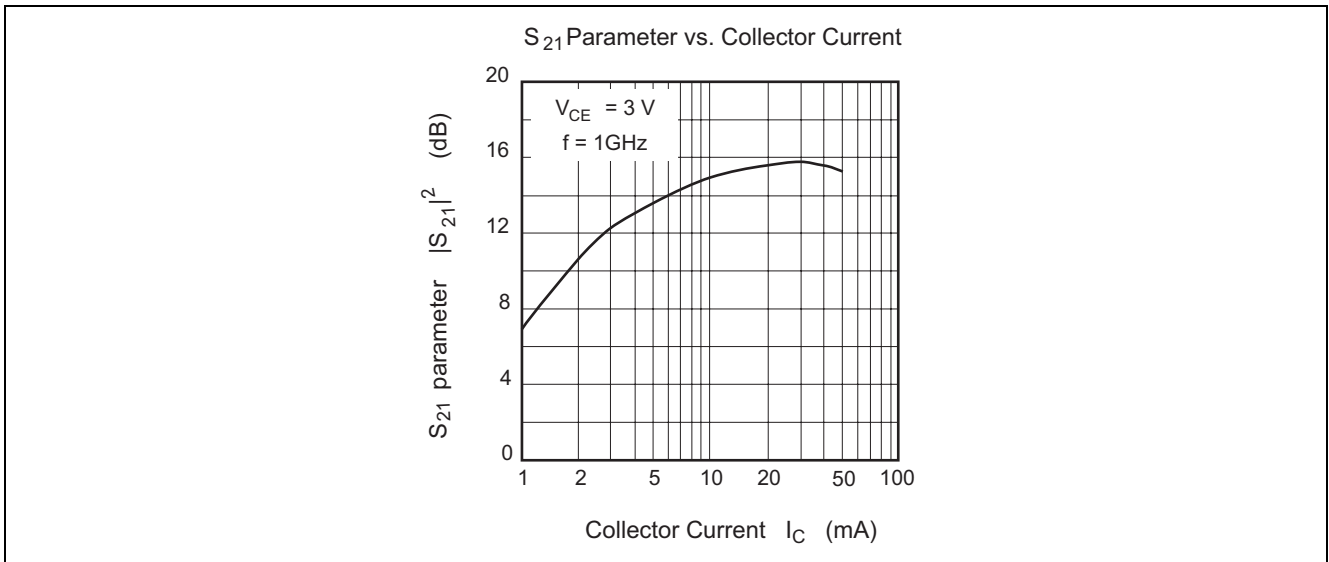
Electrical Characteristics

(Ta = 25°C)

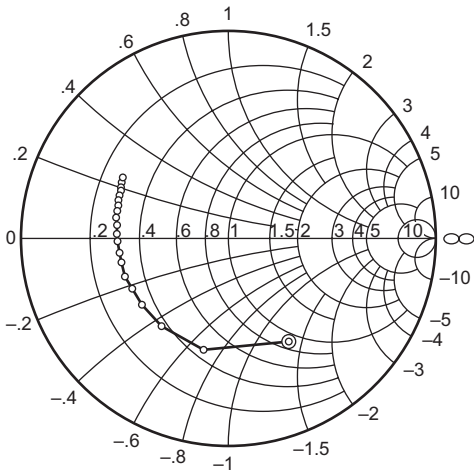
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Collector to base breakdown voltage	$V_{(BR)CBO}$	15	—	—	V	$I_C = 10\mu A, I_E = 0$
Collector cutoff current	I_{CBO}	—	—	1	μA	$V_{CB} = 12V, I_E = 0$
Collector cutoff current	I_{CEO}	—	—	1	mA	$V_{CE} = 6V, R_{BE} = \infty$
Emitter cutoff current	I_{EBO}	—	—	10	μA	$V_{EB} = 1.5V, I_C = 0$
DC current transfer ratio	h_{FE}	80	120	160		$V_{CE} = 3V, I_C = 20mA$
Collector output capacitance	C_{ob}	—	0.69	1.1	pF	$V_{CB} = 3V, I_E = 0$ $f = 1MHz$
Gain bandwidth product	f_T	10	12.6	—	GHz	$V_{CE} = 3V, I_C = 20mA$
Power gain	PG	14	16	—	dB	$V_{CE} = 3V, I_C = 20mA$ $f = 900MHz$
Noise figure	NF	—	1.1	2.0	dB	$V_{CE} = 3V, I_C = 5mA$ $f = 900MHz$

Main Characteristics





S11 Parameter vs. Frequency

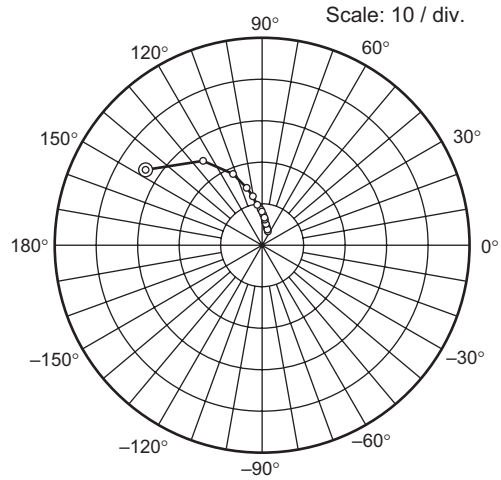


Condition : $V_{CE} = 3\text{ V}$, $I_C = 20\text{ mA}$

100 to 2000 MHz (100 MHz step)



S21 Parameter vs. Frequency

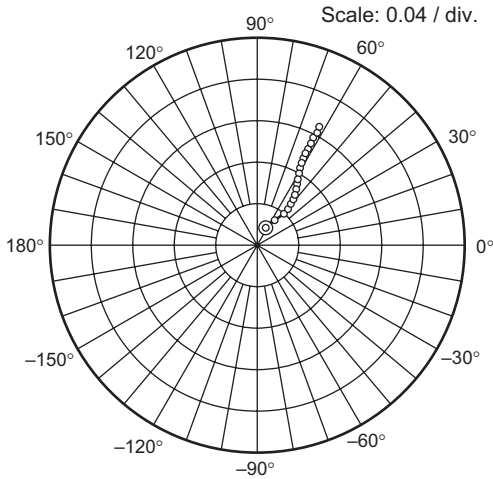


Condition : $V_{CE} = 3\text{ V}$, $I_C = 20\text{ mA}$

100 to 2000 MHz (100 MHz step)



S12 Parameter vs. Frequency

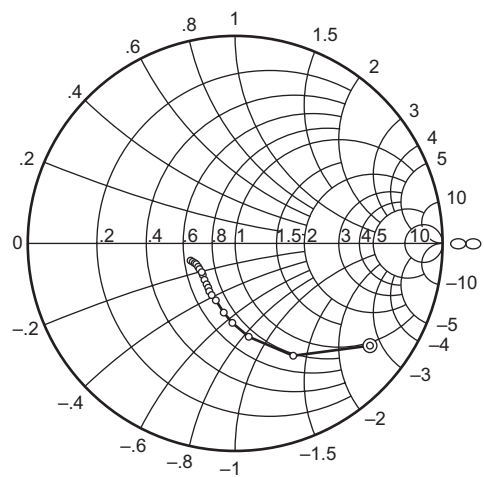


Condition : $V_{CE} = 3\text{ V}$, $I_C = 20\text{ mA}$

100 to 2000 MHz (100 MHz step)



S22 Parameter vs. Frequency



Condition : $V_{CE} = 3\text{ V}$, $I_C = 20\text{ mA}$

100 to 2000 MHz (100 MHz step)

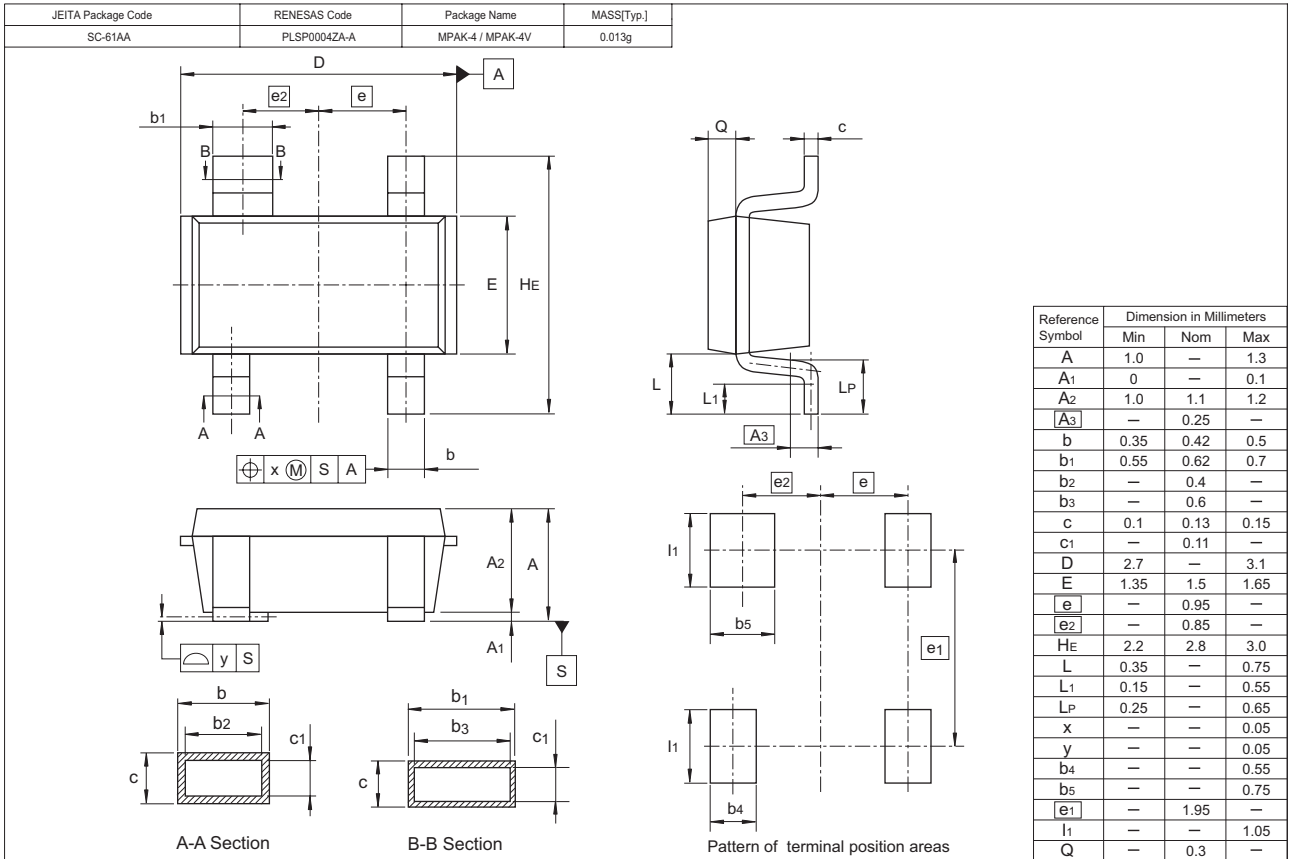


Sparameter

 $(V_{CE} = 3V, I_C = 20mA, Z_o = 50\Omega)$

f (MHz)	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
100	0.567	-60.8	34.04	146.8	0.0207	67.3	0.817	-37.3
200	0.539	-102.7	24.61	125.5	0.0329	54.3	0.605	-63.5
300	0.528	-128.1	18.16	113.2	0.0399	50.6	0.463	-80.5
400	0.525	-143.2	14.26	105.5	0.0447	50.3	0.379	-92.4
500	0.518	-153.6	11.65	100.2	0.0495	51.6	0.327	-101.8
600	0.526	-161.2	9.82	96.4	0.0545	53.3	0.293	-109.6
700	0.526	-167.9	8.48	92.9	0.0594	54.8	0.269	-116.2
800	0.528	-172.8	7.46	90.0	0.0639	56.1	0.253	-121.9
900	0.532	-178.3	6.63	87.4	0.0698	57.7	0.242	-127.0
1000	0.535	178.2	6.00	85.1	0.0741	58.7	0.235	-131.2
1100	0.536	174.2	5.48	82.9	0.0801	59.5	0.229	-135.1
1200	0.549	170.6	5.04	81.0	0.0851	60.6	0.225	-139.1
1300	0.546	167.6	4.67	79.1	0.0901	60.9	0.223	-142.0
1400	0.547	165.4	4.34	77.4	0.0961	61.5	0.222	-144.7
1500	0.552	162.4	4.09	75.7	0.102	62.1	0.222	-147.2
1600	0.562	159.4	3.82	74.0	0.106	62.3	0.223	-149.7
1700	0.561	157.3	3.62	72.5	0.113	62.5	0.224	-152.3
1800	0.563	154.8	3.43	70.7	0.118	62.9	0.227	-154.3
1900	0.573	152.5	3.26	69.2	0.124	62.3	0.229	-155.8
2000	0.577	150.0	3.13	67.8	0.130	63.0	0.232	-157.6

Package Dimensions



Ordering Information

Part Name	Quantity	Shipping Container
2SC5545ZS-TL-E	3000	φ 178 mm Reel, 8 mm Emboss Taping

RENESAS Technology Corp. Sales Strategic Planning Div. Nippon Bldg., 2-6-2, Ohte-machi, Chiyoda-ku, Tokyo 100-0004, Japan

Keep safety first in your circuit designs!

1. Renesas Technology Corp. 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.

Notes regarding these materials

1. These materials are intended as a reference to assist our customers in the selection of the Renesas Technology Corp. product best suited to the customer's application; they do not convey any license under any intellectual property rights, or any other rights, belonging to Renesas Technology Corp. or a third party.
2. Renesas Technology Corp. assumes no responsibility for any damage, or infringement of any third-party's rights, originating in the use of any product data, diagrams, charts, programs, algorithms, or circuit application examples contained in these materials.
3. All information contained in these materials, including product data, diagrams, charts, programs and algorithms represents information on products at the time of publication of these materials, and are subject to change by Renesas Technology Corp. without notice due to product improvements or other reasons. It is therefore recommended that customers contact Renesas Technology Corp. or an authorized Renesas Technology Corp. product distributor for the latest product information before purchasing a product listed herein.
The information described here may contain technical inaccuracies or typographical errors.
Renesas Technology Corp. assumes no responsibility for any damage, liability, or other loss rising from these inaccuracies or errors.
Please also pay attention to information published by Renesas Technology Corp. by various means, including the Renesas Technology Corp. Semiconductor home page (<http://www.renesas.com>).
4. When using any or all of the information contained in these materials, including product data, diagrams, charts, programs, and algorithms, please be sure to evaluate all information as a total system before making a final decision on the applicability of the information and products. Renesas Technology Corp. assumes no responsibility for any damage, liability or other loss resulting from the information contained herein.
5. Renesas Technology Corp. semiconductors are not designed or manufactured for use in a device or system that is used under circumstances in which human life is potentially at stake. Please contact Renesas Technology Corp. or an authorized Renesas Technology Corp. product distributor when considering the use of a product contained herein for any specific purposes, such as apparatus or systems for transportation, vehicular, medical, aerospace, nuclear, or undersea repeater use.
6. The prior written approval of Renesas Technology Corp. is necessary to reprint or reproduce in whole or in part these materials.
7. If these products or technologies are subject to the Japanese export control restrictions, they must be exported under a license from the Japanese government and cannot be imported into a country other than the approved destination.
Any diversion or reexport contrary to the export control laws and regulations of Japan and/or the country of destination is prohibited.
8. Please contact Renesas Technology Corp. for further details on these materials or the products contained therein.



RENESAS SALES OFFICES

<http://www.renesas.com>

Refer to "<http://www.renesas.com/en/network>" for the latest and detailed information.

Renesas Technology America, Inc.

450 Holger Way, San Jose, CA 95134-1368, U.S.A
Tel: <1> (408) 382-7500, Fax: <1> (408) 382-7501

Renesas Technology Europe Limited

Dukes Meadow, Millboard Road, Bourne End, Buckinghamshire, SL8 5FH, U.K.
Tel: <44> (1628) 585-100, Fax: <44> (1628) 585-900

Renesas Technology Hong Kong Ltd.

7th Floor, North Tower, World Finance Centre, Harbour City, 1 Canton Road, Tsimshatsui, Kowloon, Hong Kong
Tel: <852> 2265-6688, Fax: <852> 2730-6071

Renesas Technology Taiwan Co., Ltd.

10th Floor, No.99, Fushing North Road, Taipei, Taiwan
Tel: <886> (2) 2715-2888, Fax: <886> (2) 2713-2999

Renesas Technology (Shanghai) Co., Ltd.

Unit2607 Ruijing Building, No.205 Maoming Road (S), Shanghai 200020, China
Tel: <86> (21) 6472-1001, Fax: <86> (21) 6415-2952

Renesas Technology Singapore Pte. Ltd.

1 Harbour Front Avenue, #06-10, Keppel Bay Tower, Singapore 098632
Tel: <65> 6213-0200, Fax: <65> 6278-8001

Renesas Technology Korea Co., Ltd.

Kukje Center Bldg. 18th Fl., 191, 2-ka, Hangang-ro, Yongsan-ku, Seoul 140-702, Korea
Tel: <82> 2-796-3115, Fax: <82> 2-796-2145

Renesas Technology Malaysia Sdn. Bhd.

Unit 906, Block B, Menara Amcorp, Amcorp Trade Centre, No.18, Jalan Persiaran Barat, 46050 Petaling Jaya, Selangor Darul Ehsan, Malaysia
Tel: <603> 7955-9390, Fax: <603> 7955-9510