

2SC5543

Silicon NPN Epitaxial
VHF / UHF wide band amplifier

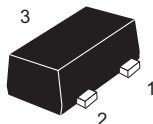
REJ03G0745-0200
(Previous ADE-208-690)
Rev.2.00
Aug.10.2005

Features

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

Outline

RENESAS Package code: PUSF0003ZA-A
(Package name: MFPAK[®])



1. Emitter
2. Base
3. Collector

Note: Marking is "YA-".

*MFPAK is a trademark of Renesas Technology Corp.

Absolute Maximum Ratings

($T_a = 25^\circ\text{C}$)

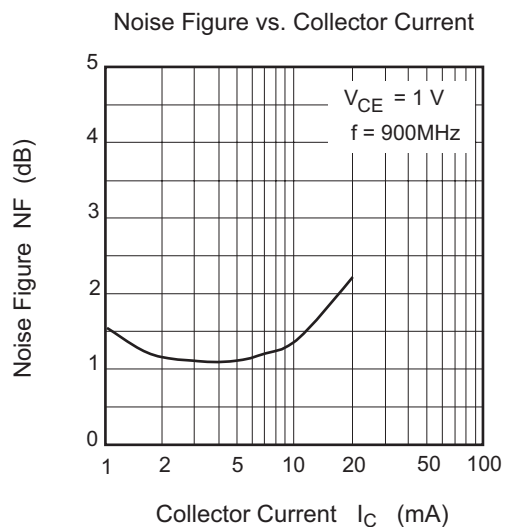
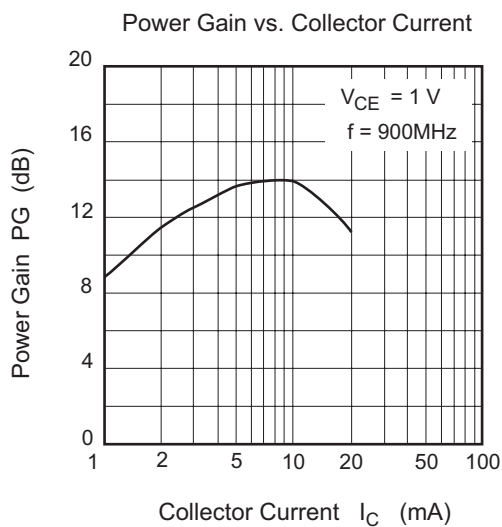
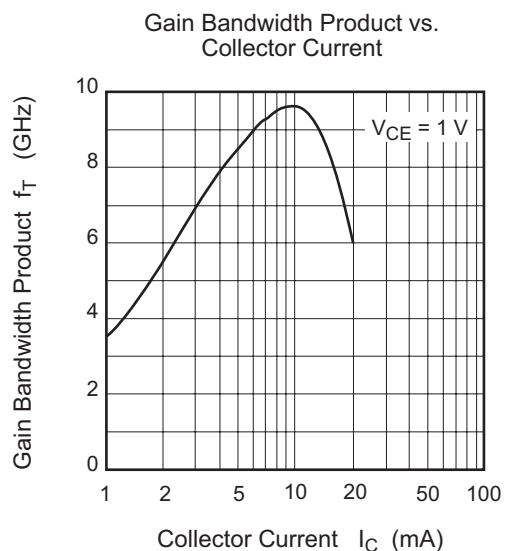
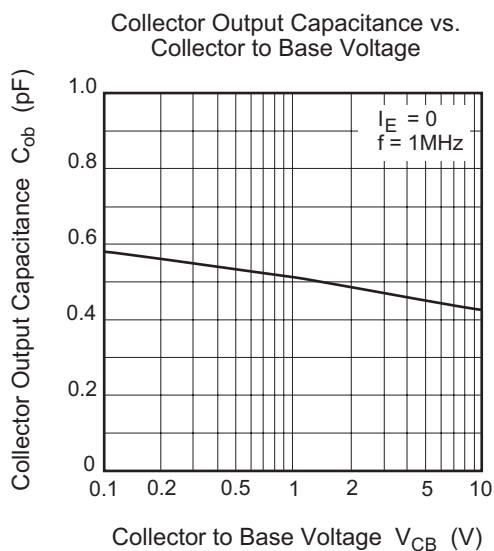
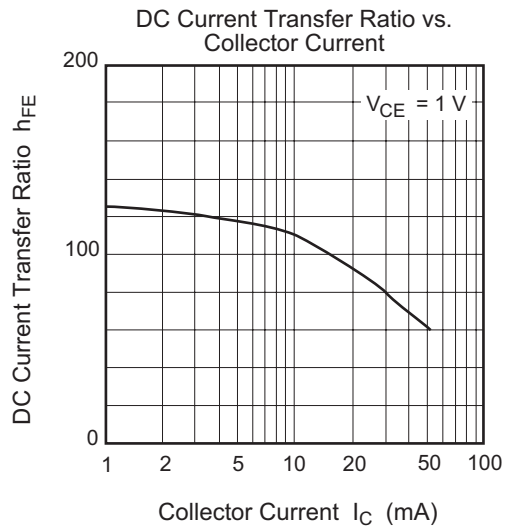
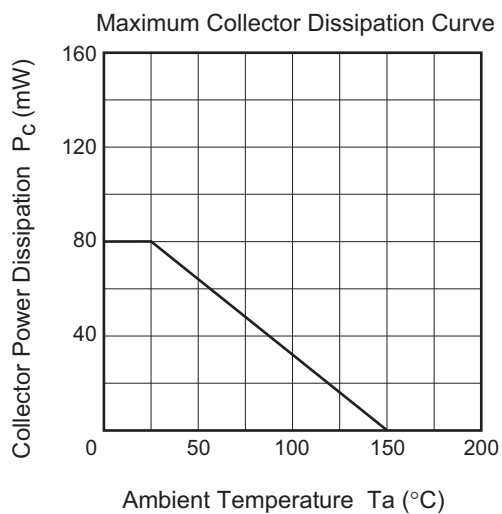
Item	Symbol	Ratings	Unit
Collector to base voltage	V_{CBO}	15	V
Collector to emitter voltage	V_{CEO}	8	V
Emitter to base voltage	V_{EBO}	1.5	V
Collector current	I_C	20	mA
Collector power dissipation	P_c	80	mW
Junction temperature	T_j	150	$^\circ\text{C}$
Storage temperature	T_{stg}	-55 to +150	$^\circ\text{C}$

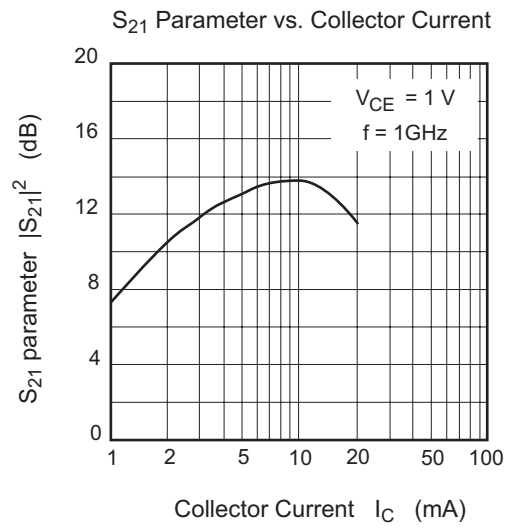
Electrical Characteristics

(Ta = 25°C)

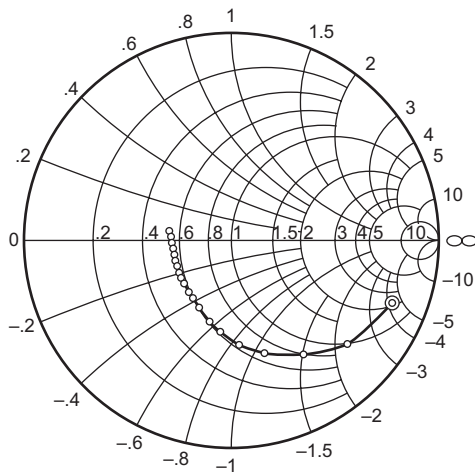
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Collector cutoff current	I_{CBO}	—	—	10	μA	$V_{CB} = 15V, I_E = 0$
Collector cutoff current	I_{CEO}	—	—	1	mA	$V_{CE} = 8V, R_{BE} = \infty$
Emitter cutoff current	I_{EBO}	—	—	10	μA	$V_{EB} = 1.5V, I_C = 0$
DC current transfer ratio	h_{FE}	85	—	170		$V_{CE} = 1V, I_C = 5mA$
Collector output capacitance	C_{ob}	—	0.51	0.9	pF	$V_{CB} = 1V, I_E = 0$ $f = 1MHz$
Gain bandwidth product	f_T	5.5	8.5	—	GHz	$V_{CE} = 1V, I_C = 5mA$
Power gain	PG	11	13.7	—	dB	$V_{CE} = 1V, I_C = 5mA$ $f = 900MHz$
Noise figure	NF	—	1.1	2.5	dB	$V_{CE} = 1V, I_C = 5mA$ $f = 900MHz$

Main Characteristics





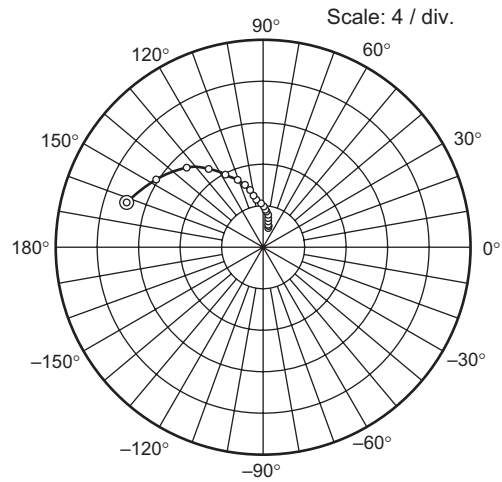
S11 Parameter vs. Frequency

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

100 to 2000 MHz (100 MHz step)



S21 Parameter vs. Frequency



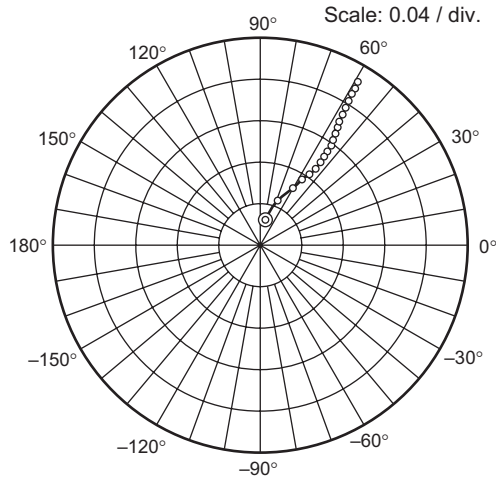
Scale: 4 / div.

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

100 to 2000 MHz (100 MHz step)



S12 Parameter vs. Frequency



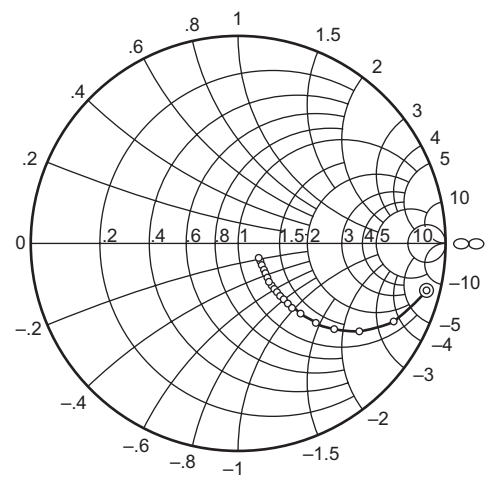
Scale: 0.04 / div.

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)

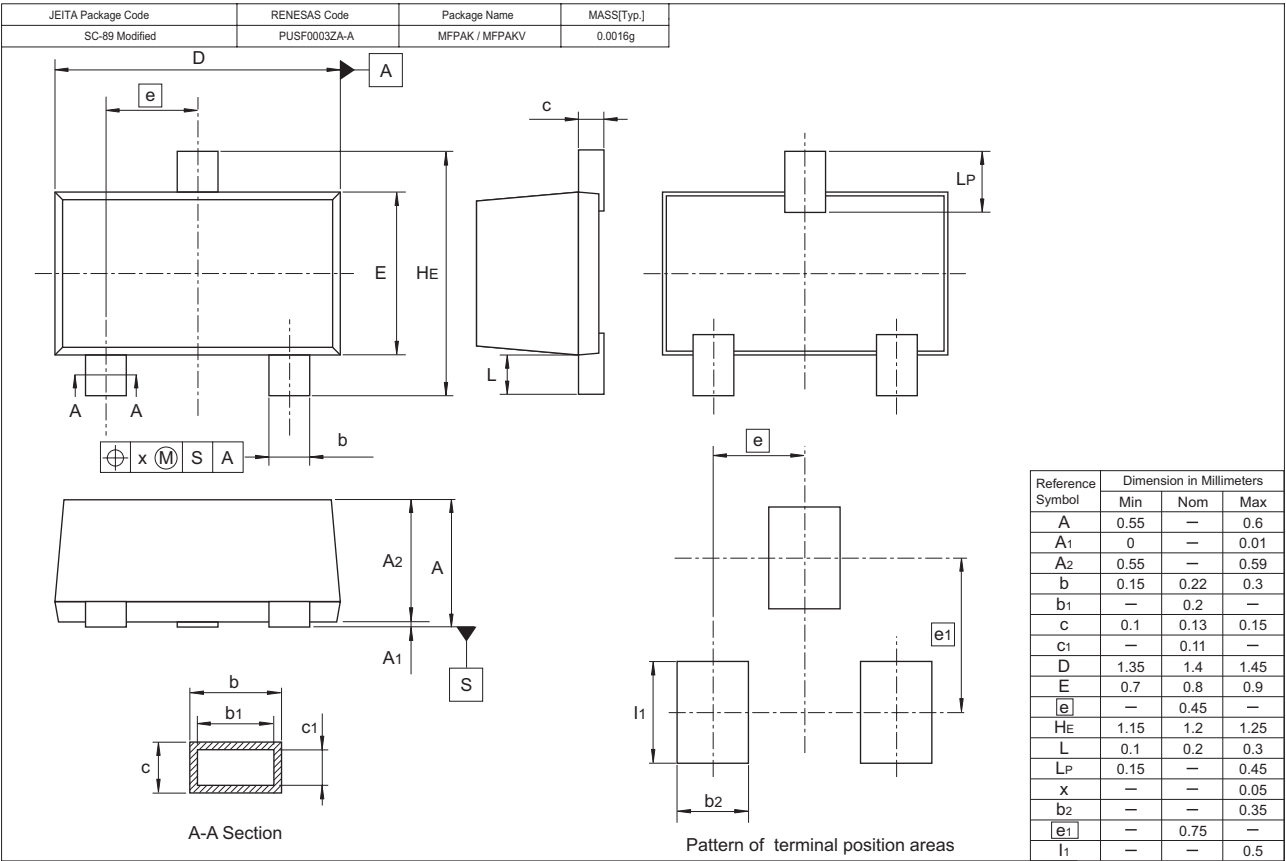


Sparameter

(V_{CE} = 1V, I_C = 5mA, Z_o = 50Ω)

f (MHz)	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
100	0.836	-20.7	13.66	162.9	0.0249	77.4	0.948	-14.2
200	0.757	-41.1	12.22	146.9	0.0472	68.0	0.846	-26.9
300	0.649	-58.5	10.57	134.1	0.0637	60.8	0.727	-36.2
400	0.564	-73.2	9.14	124.5	0.0750	56.9	0.623	-42.5
500	0.496	-85.2	7.90	116.8	0.0840	54.2	0.538	-46.2
600	0.436	-97.1	6.91	111.2	0.0916	53.4	0.469	-48.8
700	0.396	-106.2	6.12	105.9	0.0985	53.0	0.413	-50.4
800	0.364	-114.9	5.49	102.0	0.105	53.2	0.368	-51.1
900	0.338	-123.9	4.96	98.3	0.111	53.6	0.327	-51.1
1000	0.316	-130.6	4.52	95.3	0.118	54.1	0.297	-51.2
1100	0.305	-140.0	4.16	92.3	0.124	54.7	0.270	-50.7
1200	0.296	-146.5	3.86	89.8	0.130	55.3	0.246	-49.7
1300	0.293	-153.0	3.59	87.5	0.137	56.1	0.229	-48.7
1400	0.286	-159.5	3.36	85.4	0.143	56.6	0.209	-47.9
1500	0.287	-166.0	3.17	83.2	0.150	57.2	0.195	-46.3
1600	0.285	-170.7	3.00	81.4	0.157	57.7	0.180	-45.0
1700	0.289	-175.8	2.83	79.8	0.164	58.2	0.167	-43.8
1800	0.294	-178.7	2.71	77.9	0.171	58.8	0.154	-42.4
1900	0.302	-175.4	2.59	75.9	0.178	59.0	0.144	-40.2
2000	0.308	-171.1	2.47	74.5	0.185	59.2	0.133	-38.6

Package Dimensions



Ordering Information

Part Name	Quantity	Shipping Container
2SC5543YA-TR-E	9000	φ 178 mm Reel, 8 mm Emboss Taping

Note: For some grades, production may be terminated. Please contact the Renesas sales office to check the state of production before ordering the product.

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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