

2SC5758

Silicon NPN Epitaxial
VHF / UHF Wide band amplifier

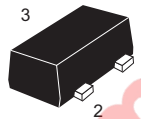
REJ03G0754-0500
(Previous ADE-208-1397D)
Rev.5.00
Aug.10.2005

Features

Super compact package: MFPAK (1.4 x 0.8 x 0.59 mm)

Outline

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



- 1. Emitter
- 2. Base
- 3. Collector

Note: Marking is "WF-".

*MFPAK is a trademark of Renesas Technology Corp.

Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Ratings	Unit
Collector to base voltage	V_{CBO}	10	V
Collector to emitter voltage	V_{CEO}	3.5	V
Emitter to base voltage	V_{EBO}	1.5	V
Collector current	I_C	80	mA
Collector power dissipation	P_C	80	mW
Junction temperature	T_j	150	°C
Storage temperature	T_{stg}	-50 to +150	°C

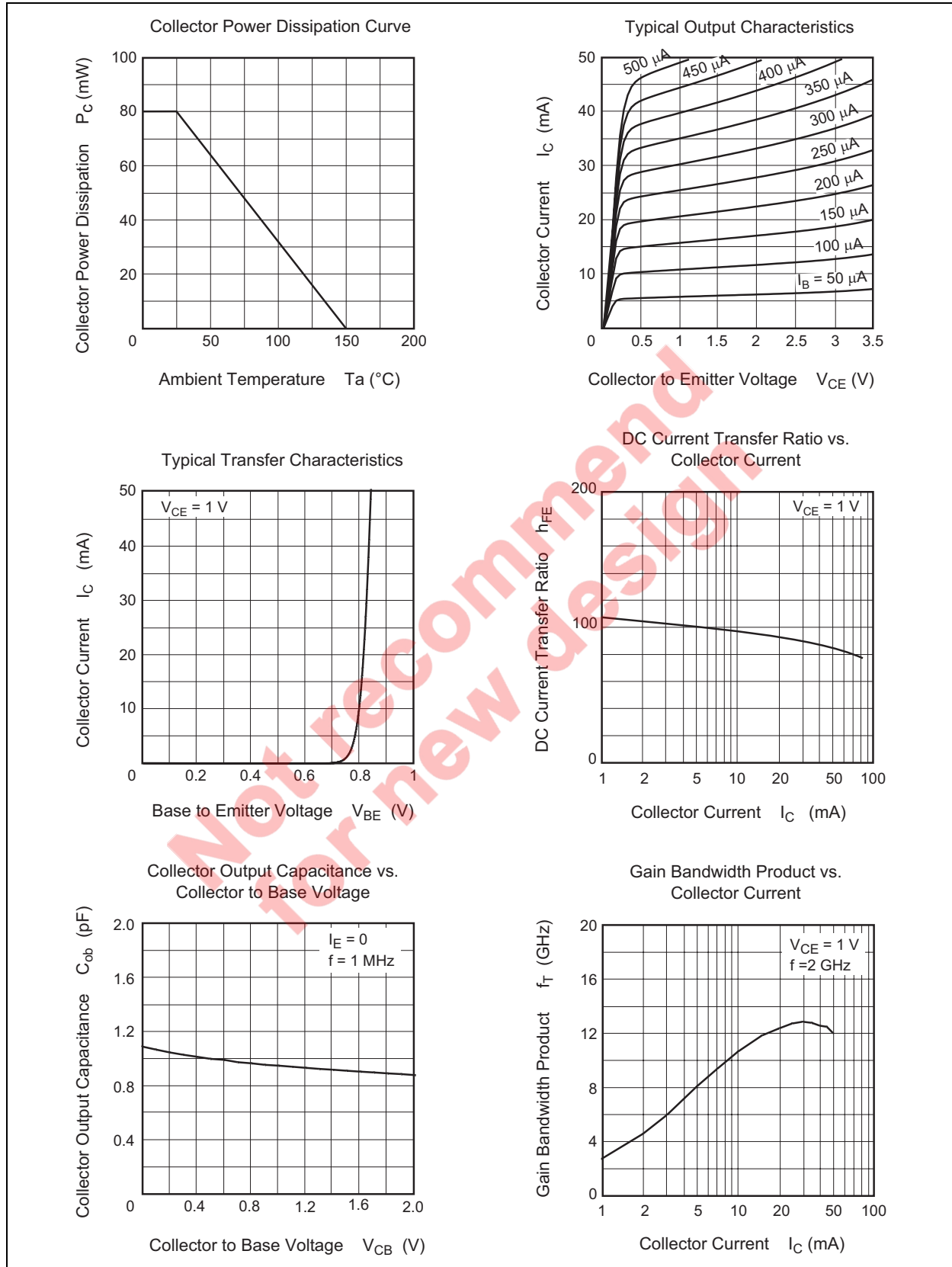
Electrical Characteristics

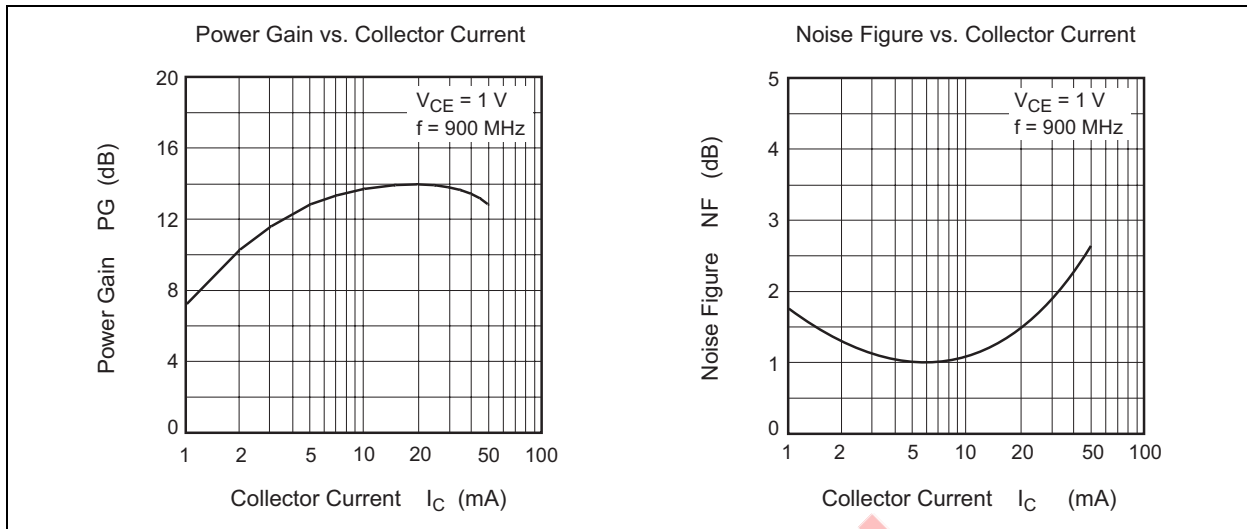
(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Collector to base breakdown voltage	$V_{(BR)CBO}$	10	—	—	V	$I_C = 10 \mu A, I_E = 0$
Collector cutoff current	I_{CBO}	—	—	600	nA	$V_{CB} = 10 V, I_E = 0$
Collector cutoff current	I_{CEO}	—	—	200	nA	$V_{CE} = 3.5 V, R_{BE} = \infty$
Emitter cutoff current	I_{EBO}	—	—	100	nA	$V_{EB} = 1.5 V, I_C = 0$
DC current transfer ratio	h_{FE}	80	100	130		$V_{CB} = 1 V, I_C = 5 mA$
Collector output capacitance	C_{ob}	0.65	0.95	1.25	pF	$V_{CB} = 1 V, I_E = 0, f = 1 MHz$
Gain bandwidth product	f_T	6	8	—	GHz	$V_{CE} = 1 V, I_C = 5 mA$
Power gain	PG	10	13	—	dB	$V_{CE} = 1 V, I_C = 5 mA,$ $f = 900 MHz$
Noise figure	NF	—	1.0	2.0	dB	$V_{CE} = 1 V, I_C = 5 mA,$ $f = 900 MHz$

Not recommend
for new design

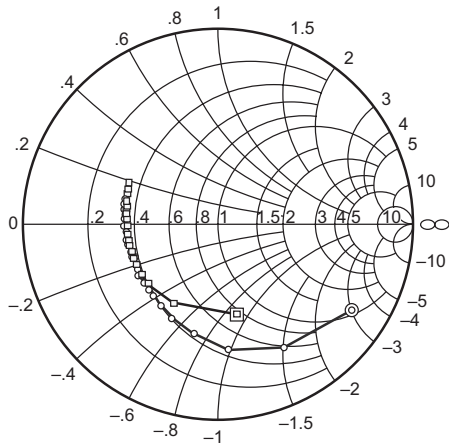
Main Characteristics





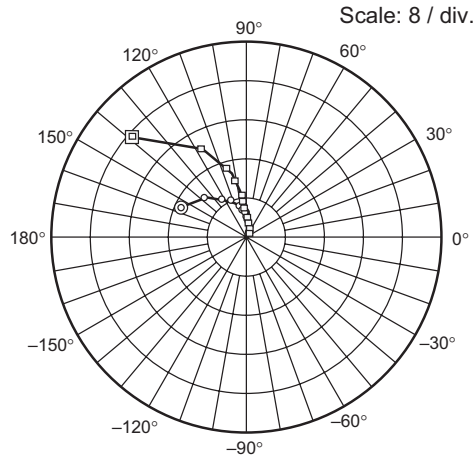
Not recommended
for new design

S₁₁ Parameter vs. Frequency



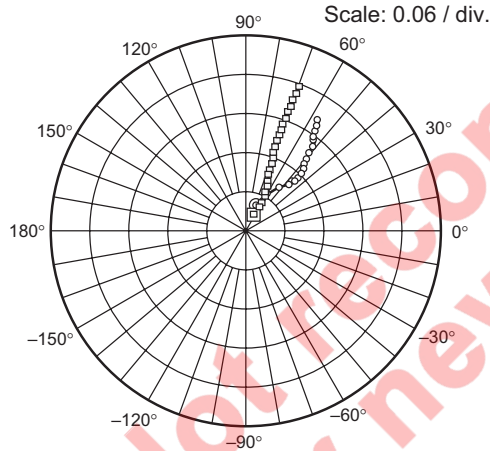
Condition: V_{CE} = 1 V , Z_O = 50 Ω
 100 to 2000 MHz (100 MHz Step)
 ○—○ (I_c = 5 mA)
 □—□ (I_c = 20 mA)

S₂₁ Parameter vs. Frequency



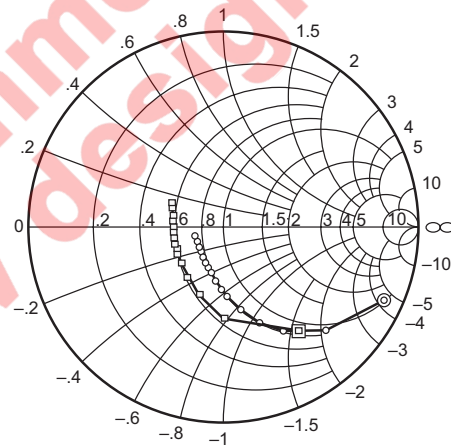
Condition: V_{CE} = 1 V , Z_O = 50 Ω
 100 to 2000 MHz (100 MHz Step)
 ○—○ (I_c = 5 mA)
 □—□ (I_c = 20 mA)

S₁₂ Parameter vs. Frequency



Condition: V_{CE} = 1 V , Z_O = 50 Ω
 100 to 2000 MHz (100 MHz Step)
 ○—○ (I_c = 5 mA)
 □—□ (I_c = 20 mA)

S₂₂ Parameter vs. Frequency



Condition: V_{CE} = 1 V , Z_O = 50 Ω
 100 to 2000 MHz (100 MHz Step)
 ○—○ (I_c = 5 mA)
 □—□ (I_c = 20 mA)

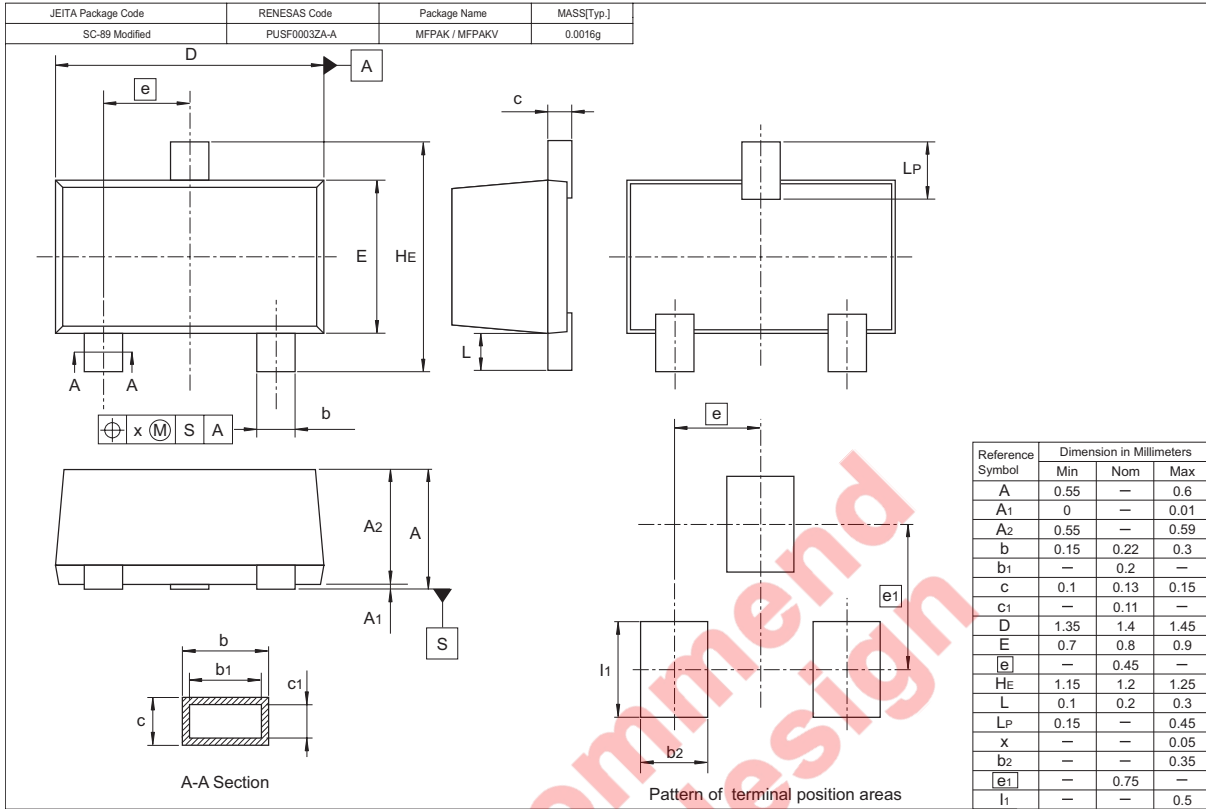
Sparameter

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

f (MHz)	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
100	0.806	-31.9	14.60	157.6	0.038	72.8	0.901	-24.3
200	0.713	-61.5	12.31	138.9	0.067	59.5	0.757	-44.8
300	0.635	-85.3	10.02	125.3	0.085	51.3	0.610	-60.1
400	0.560	-102.7	8.22	115.4	0.096	47.2	0.501	-70.9
500	0.529	-117.1	6.94	108.4	0.104	45.5	0.421	-79.8
600	0.500	-127.8	5.97	103.1	0.111	44.6	0.360	-87.2
700	0.486	-137.2	5.20	98.6	0.117	44.8	0.314	-93.1
800	0.474	-144.1	4.65	94.6	0.123	45.7	0.278	-99.7
900	0.467	-151.1	4.14	91.7	0.129	46.7	0.249	-105.1
1000	0.466	-157.1	3.77	88.4	0.135	47.7	0.226	-110.9
1100	0.461	-162.4	3.45	85.9	0.141	48.6	0.208	-116.0
1200	0.464	-166.1	3.19	83.4	0.147	49.7	0.194	-121.4
1300	0.464	-169.9	2.99	81.3	0.153	51.0	0.181	-127.1
1400	0.467	-173.8	2.78	79.1	0.159	51.8	0.172	-131.7
1500	0.465	-177.2	2.62	77.3	0.166	53.0	0.165	-137.5
1600	0.476	179.9	2.46	75.2	0.174	53.8	0.159	-141.6
1700	0.480	177.4	2.36	73.4	0.180	54.7	0.155	-147.4
1800	0.480	173.4	2.24	71.8	0.187	55.6	0.154	-152.9
1900	0.490	172.0	2.14	70.2	0.195	56.5	0.154	-157.6
2000	0.487	169.3	2.06	68.6	0.202	57.0	0.153	-162.5

f (MHz)	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
100	0.487	-78.2	31.25	138.4	0.026	64.0	0.679	-53.9
200	0.466	-120.9	20.22	117.0	0.040	57.9	0.469	-87.5
300	0.465	-141.6	14.16	106.4	0.050	58.9	0.362	-109.1
400	0.459	-154.5	10.81	100.4	0.060	61.5	0.311	-124.4
500	0.461	-161.8	8.74	96.1	0.070	63.7	0.283	-135.8
600	0.462	-168.1	7.34	92.9	0.080	65.8	0.268	-145.4
700	0.468	-172.8	6.30	90.2	0.091	67.1	0.258	-153.2
800	0.468	-176.5	5.56	87.7	0.101	68.3	0.253	-159.6
900	0.474	179.1	4.93	85.7	0.113	69.0	0.249	-165.5
1000	0.473	176.8	4.46	83.7	0.124	69.5	0.249	-170.7
1100	0.478	173.5	4.07	82.2	0.135	69.8	0.249	-175.1
1200	0.486	170.7	3.75	80.3	0.145	70.2	0.251	-179.3
1300	0.477	168.8	3.51	78.8	0.156	70.2	0.251	176.9
1400	0.493	166.3	3.26	77.2	0.167	70.1	0.254	173.5
1500	0.493	163.6	3.07	75.9	0.179	70.4	0.256	170.4
1600	0.502	161.7	2.88	74.5	0.189	70.4	0.260	167.6
1700	0.506	160.8	2.74	73.2	0.201	70.2	0.263	164.8
1800	0.511	157.7	2.62	72.0	0.211	69.8	0.268	162.1
1900	0.517	156.4	2.49	70.7	0.222	69.9	0.275	159.6
2000	0.523	154.5	2.40	69.5	0.232	69.4	0.280	157.1

Package Dimensions



Ordering Information

Part Name	Quantity	Shipping Container
2SC5758WF-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