

2SC5757

Silicon NPN Epitaxial
VHF/UHF wide band amplifier

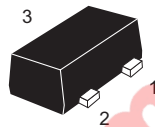
REJ03G0753-0500
(Previous ADE-208-1396D)
Rev.5.00
Aug.10.2005

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 "WE-".

*MFPAK is a trademark of Renesas Technology Corp.

Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Ratings	Unit
Collector to base voltage	V _{CB0}	10	V
Collector to emitter voltage	V _{CE0}	3.5	V
Emitter to base voltage	V _{EB0}	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}	-55 to +150	°C

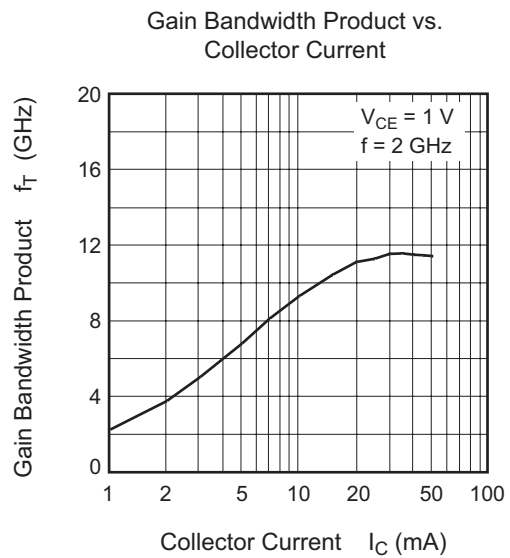
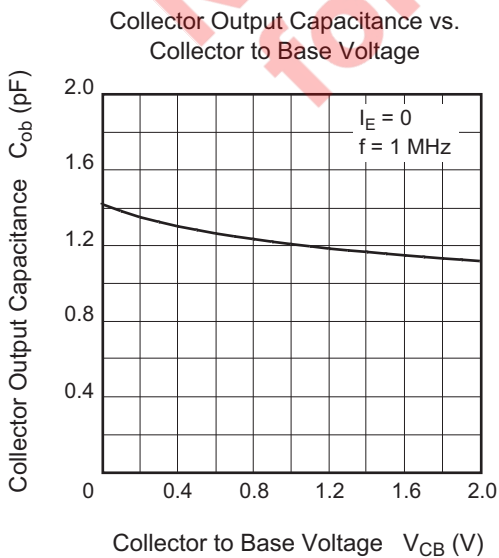
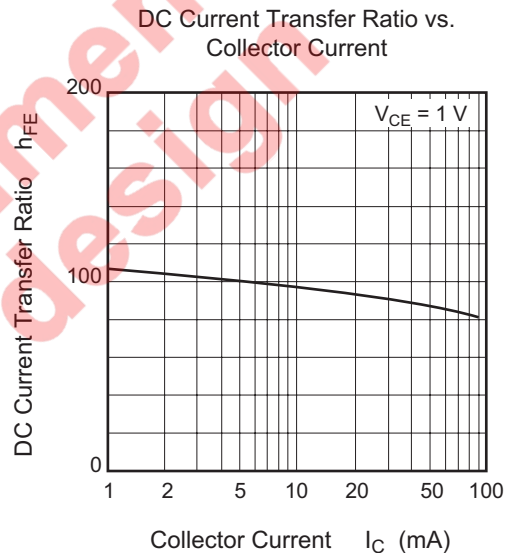
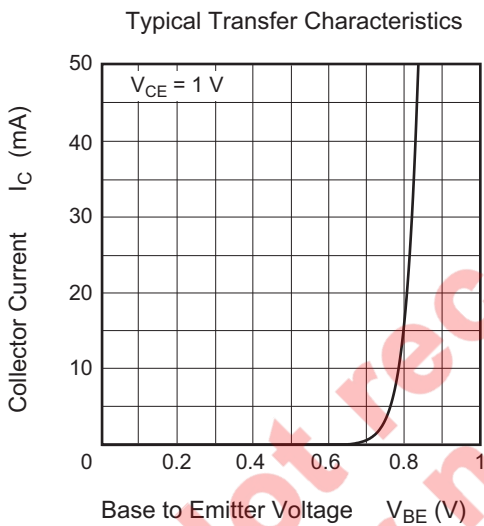
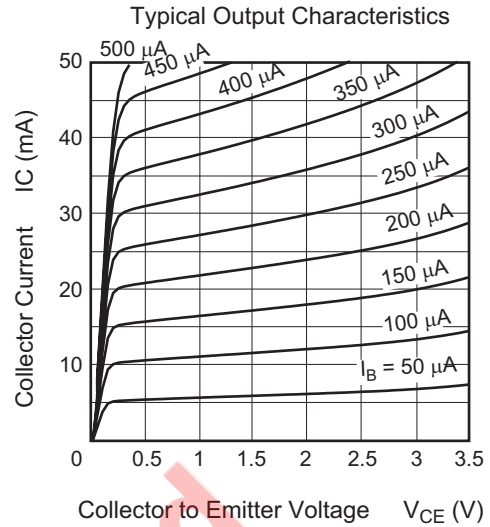
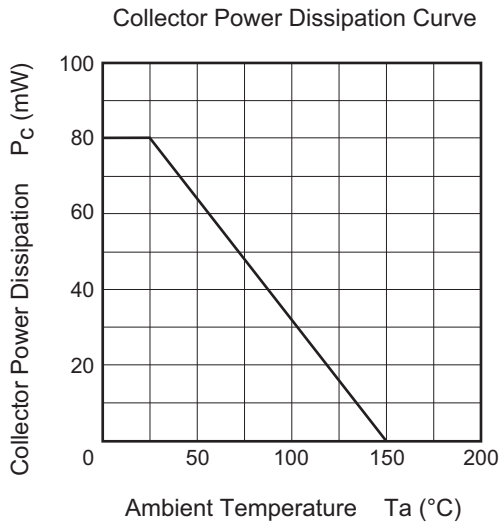
Electrical Characteristics

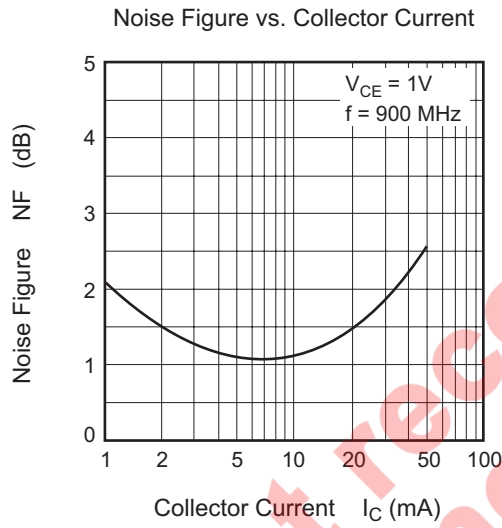
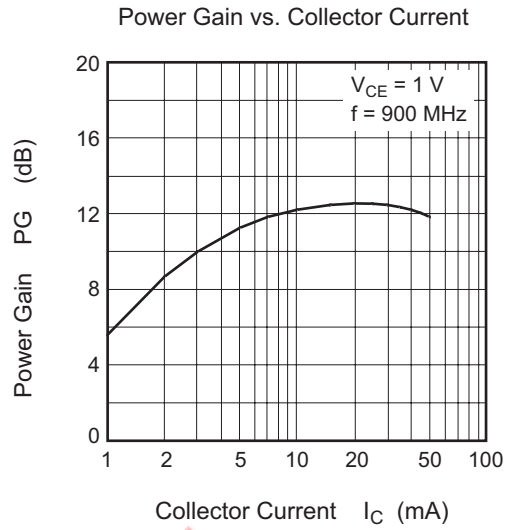
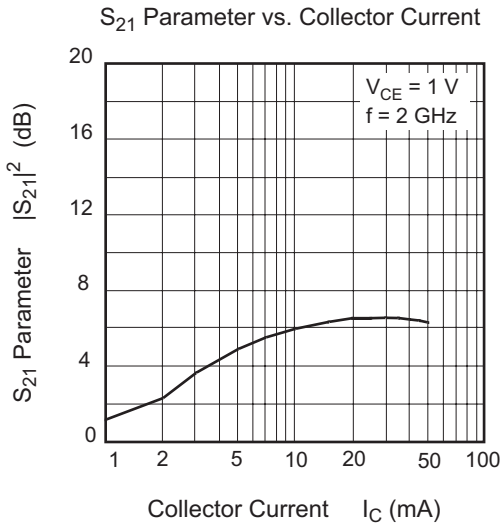
(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Collector to base breakdown voltage	$V_{(BR)CBO}$	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		$V_{CE} = 1 V, I_C = 5 mA$
Collector output capacitance	C_{ob}	0.9	1.2	1.5	pF	$V_{CB} = 1 V, I_E = 0, f = 1 MHz$
Gain bandwidth product	f_T	4.5	6.5	—	GHz	$V_{CE} = 1 V, I_C = 5 mA$
Power gain	PG	8	11	—	dB	$V_{CE} = 1 V, I_C = 5 mA,$ $f = 900 MHz$
Noise figure	NF	—	1.1	2.0	dB	$V_{CE} = 1 V, I_C = 5 mA,$ $f = 900 MHz$

Not recommend
for new design

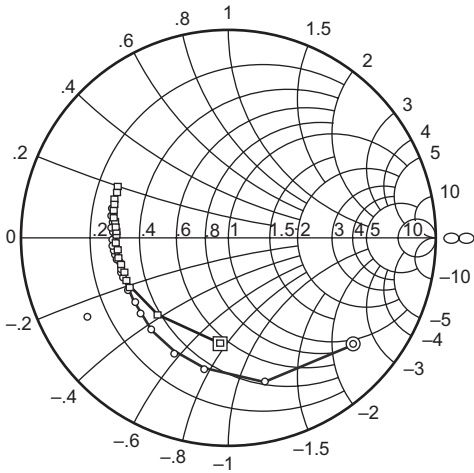
Main Characteristics





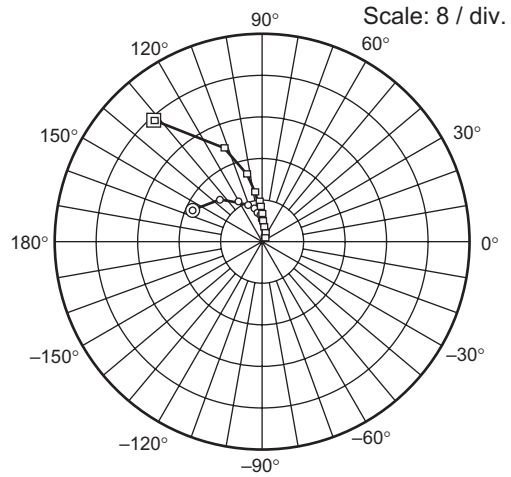
Not recommended for new design

S₁₁ Parameter vs. Frequency



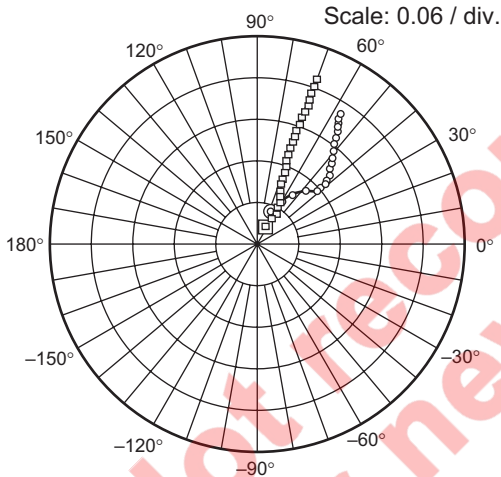
Condition: V_{CE} = 1 V , Z_O = 50 Ω
 100 to 2000 MHz (100 MHz Step)
 ○—○ (I_c = 5 mA)
 □—□ (I_c = 20 mA)

S₂₁ Parameter vs. Frequency



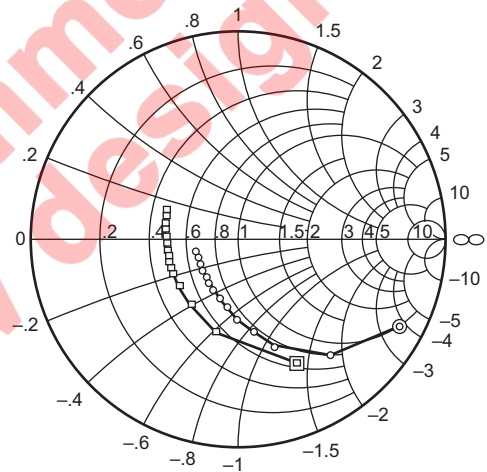
Condition: V_{CE} = 1 V , Z_O = 50 Ω
 100 to 2000 MHz (100 MHz Step)
 ○—○ (I_c = 5 mA)
 □—□ (I_c = 20 mA)

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	0.797	-40.0	14.26	154.3	0.048	69.8	0.881	-28.5
200	0.695	-75.2	11.44	133.4	0.081	54.5	0.709	-52.2
300	0.638	-100.7	9.03	119.6	0.099	46.6	0.559	-69.4
400	0.594	-117.6	7.23	110.7	0.109	42.7	0.457	-81.5
500	0.571	-130.8	6.00	103.8	0.116	41.1	0.388	-91.3
600	0.558	-140.3	5.13	98.8	0.122	41.1	0.336	-99.7
700	0.548	-148.5	4.43	94.6	0.128	41.2	0.300	-107.0
800	0.545	-154.4	3.93	90.9	0.134	42.6	0.274	-113.5
900	0.539	-160.1	3.52	88.0	0.139	43.6	0.254	-120.0
1000	0.541	-164.6	3.20	85.0	0.145	45.0	0.238	-125.7
1100	0.542	-169.1	2.93	82.5	0.150	46.3	0.227	-130.8
1200	0.543	-171.9	2.71	80.2	0.156	48.1	0.221	-135.9
1300	0.546	-175.6	2.53	77.9	0.163	49.1	0.213	-141.1
1400	0.546	-178.4	2.36	75.6	0.169	50.5	0.209	-144.8
1500	0.552	179.4	2.23	73.8	0.176	51.8	0.207	-149.5
1600	0.558	176.4	2.10	71.6	0.183	52.8	0.205	-153.0
1700	0.558	174.2	2.00	70.1	0.191	54.0	0.206	-156.9
1800	0.570	171.7	1.90	68.5	0.198	55.0	0.207	-160.7
1900	0.577	169.6	1.81	66.6	0.206	56.1	0.210	-163.9
2000	0.578	167.8	1.75	65.3	0.214	56.7	0.212	-167.7

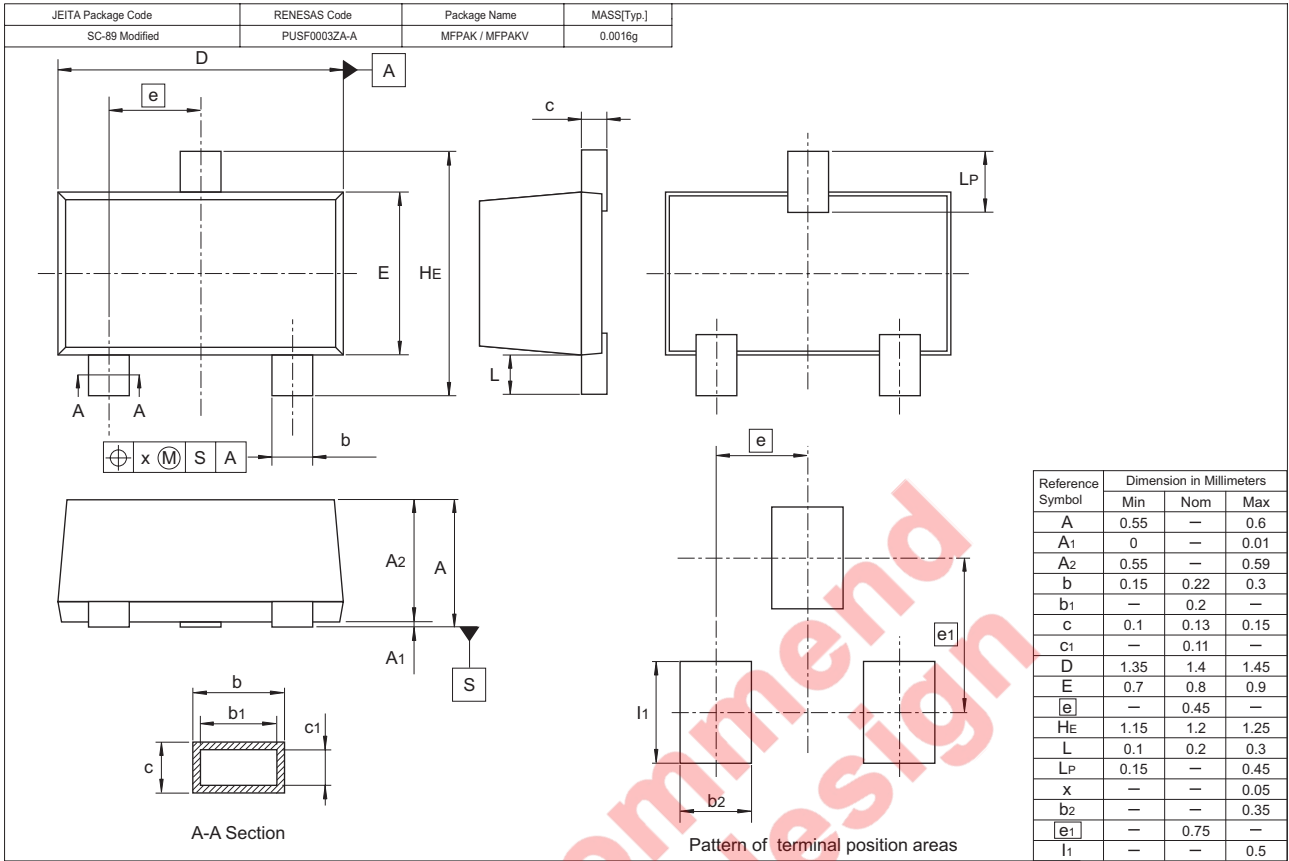
Not recommended
for new designs

$(V_{CE} = 1V, I_C = 20mA, Z_o = 50\Omega)$

f (MHz)	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
100	0.512	-94.1	30.18	133.2	0.031	60.2	0.643	-66.8
200	0.523	-134.9	18.31	112.6	0.044	54.5	0.459	-104.5
300	0.531	-151.8	12.60	102.9	0.054	57.1	0.386	-126.5
400	0.533	-161.4	9.53	97.8	0.065	60.5	0.355	-140.6
500	0.540	-168.0	7.67	93.7	0.076	63.2	0.341	-150.2
600	0.539	-172.3	6.43	90.7	0.088	65.5	0.333	-157.8
700	0.541	-176.7	5.49	88.2	0.100	66.6	0.330	-163.7
800	0.543	-179.7	4.83	86.0	0.111	67.8	0.328	-168.7
900	0.545	177.0	4.30	84.3	0.123	68.4	0.328	-172.9
1000	0.547	174.3	3.91	82.1	0.135	69.1	0.329	-176.7
1100	0.550	171.8	3.57	80.6	0.148	69.5	0.329	-180.0
1200	0.552	170.0	3.29	79.0	0.159	69.9	0.332	176.9
1300	0.557	167.3	3.05	77.5	0.172	69.8	0.334	174.2
1400	0.566	165.5	2.87	75.8	0.184	70.0	0.336	171.5
1500	0.570	163.7	2.68	74.4	0.197	70.0	0.339	169.2
1600	0.569	162.0	2.54	73.2	0.208	69.9	0.341	167.1
1700	0.570	160.2	2.41	71.4	0.220	69.5	0.345	164.7
1800	0.580	158.3	2.29	70.8	0.233	69.2	0.350	162.8
1900	0.588	157.6	2.19	69.2	0.244	69.4	0.355	161.0
2000	0.587	154.9	2.12	68.0	0.256	69.1	0.360	158.8

Not recommended
for new designs

Package Dimensions



Ordering Information

Part Name	Quantity	Shipping Container
2SC5757WE-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.

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.



RENEASAS 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