

BB101C

Built in Biasing Circuit MOS FET IC
UHF RF Amplifier

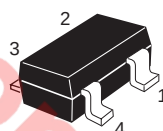
REJ03G0821-0300
(Previous ADE-208-505A)
Rev.3.00
Aug.10.2005

Features

- Built in Biasing Circuit; To reduce using parts cost & PC board space.
- Low noise characteristics;
(NF = 2.0 dB typ. at f = 900 MHz)
- Withstanding to ESD;
Built in ESD absorbing diode. Withstand up to 200V at C=200pF, Rs=0 conditions.
- Provide mini mold packages; CMPAK-4(SOT-343mod)

Outline

RENESAS Package code: PTSP0004ZA-A
(Package name: CMPAK-4)



1. Source
2. Gate1
3. Gate2
4. Drain

- Notes:
1. Marking is "AU-".
 2. BB101C is individual type number of RENESAS BBFET.

Absolute Maximum Ratings

(Ta = 25°C)

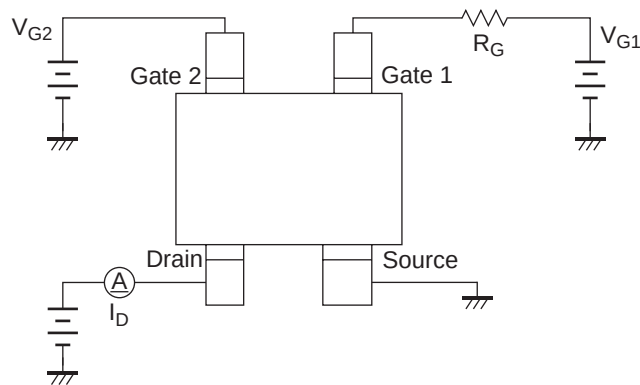
Item	Symbol	Ratings	Unit
Drain to source voltage	V_{DS}	6	V
Gate1 to source voltage	V_{G1S}	+6 -0	V
Gate2 to source voltage	V_{G2S}	±6	V
Drain current	I_D	25	mA
Channel power dissipation	Pch	100	mW
Channel temperature	Tch	150	°C
Storage temperature	Tstg	-55 to +150	°C

Electrical Characteristics

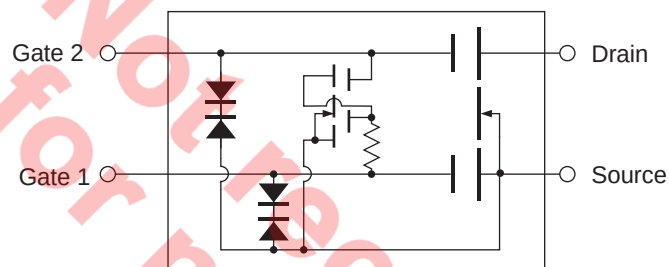
(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	6	—	—	V	$I_D = 200 \mu A$, $V_{G1S} = V_{G2S} = 0$
Gate1 to source breakdown voltage	$V_{(BR)G1SS}$	+6	—	—	V	$I_{G1} = +10 \mu A$, $V_{G2S} = V_{DS} = 0$
Gate2 to source breakdown voltage	$V_{(BR)G2SS}$	±6	—	—	V	$I_{G2} = +10 \mu A$, $V_{G1S} = V_{DS} = 0$
Gate1 to source cutoff current	I_{G1SS}	—	—	+100	nA	$V_{G1S} = +5 V$, $V_{G2S} = V_{DS} = 0$
Gate2 to source cutoff current	I_{G2SS}	—	—	±100	nA	$V_{G2S} = \pm 5 V$, $V_{G1S} = V_{DS} = 0$
Gate1 to source cutoff voltage	$V_{G1S(off)}$	0.2	—	0.8	V	$V_{DS} = 5 V$, $V_{G2S} = 4 V$, $I_D = 100 \mu A$
Gate2 to source cutoff voltage	$V_{G2S(off)}$	0.4	—	1.0	V	$V_{DS} = 5 V$, $V_{G1S} = 5 V$, $I_D = 100 \mu A$
Drain current	$I_{D(op)}$	10	15	20	mA	$V_{DS} = 5 V$, $V_{G1} = 5 V$, $V_{G2S} = 4 V$ $R_G = 220 k\Omega$
Forward transfer admittance	$ y_{fs} $	16	22	—	mS	$V_{DS} = 5 V$, $V_{G1} = 5 V$, $V_{G2S} = 4 V$ $R_G = 220 k\Omega$, $f = 1 kHz$
Input capacitance	C_{iss}	1.2	1.7	2.2	pF	$V_{DS} = 5 V$, $V_{G1} = 5 V$
Output capacitance	C_{oss}	0.7	1.1	1.5	pF	$V_{G2S} = 4 V$, $R_G = 220 k\Omega$
Reverse transfer capacitance	C_{rss}	—	0.012	0.03	pF	$f = 1 MHz$
Power gain	PG	16	20	—	dB	$V_{DS} = 5 V$, $V_{G1} = 5 V$, $V_{G2S} = 4 V$
Noise figure	NF	—	2.0	3.0	dB	$R_G = 220 k\Omega$, $f = 900 MHz$

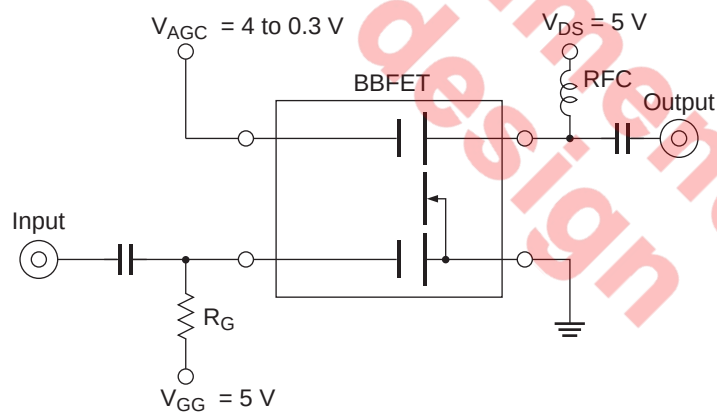
Main Characteristics

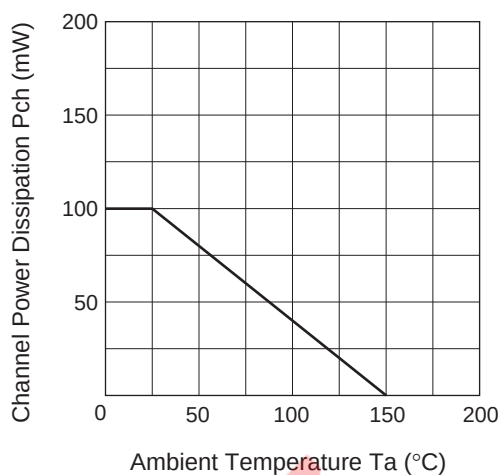
Test Circuit for Operating Items ($I_{D(op)}$, $|y_{fs}|$, C_{iss} , C_{oss} , C_{rss} , NF, PG)

Equivalent Circuit

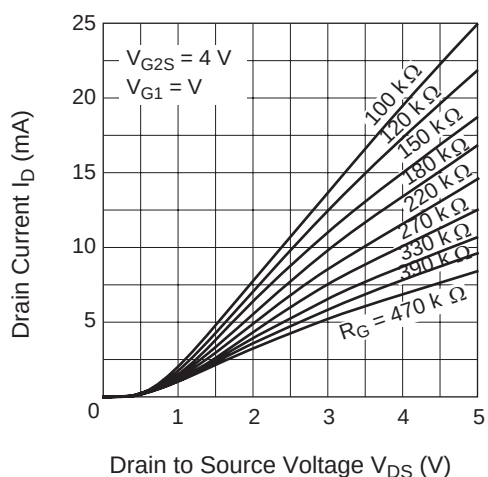
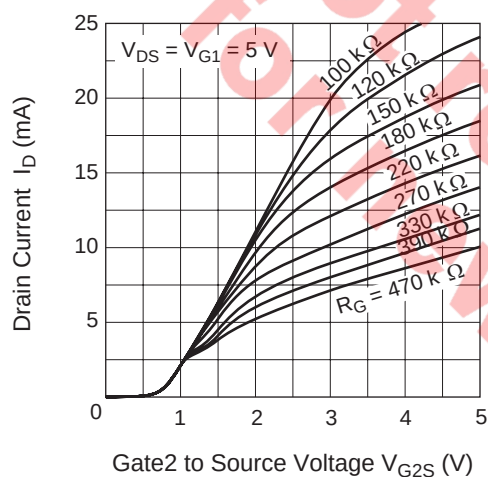


Application Circuit

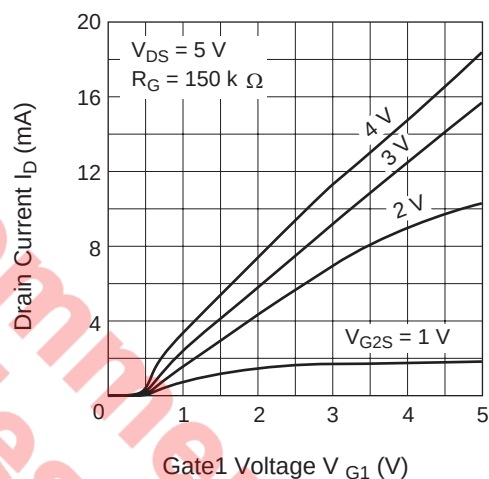


Maximum Channel Power
Dissipation Curve

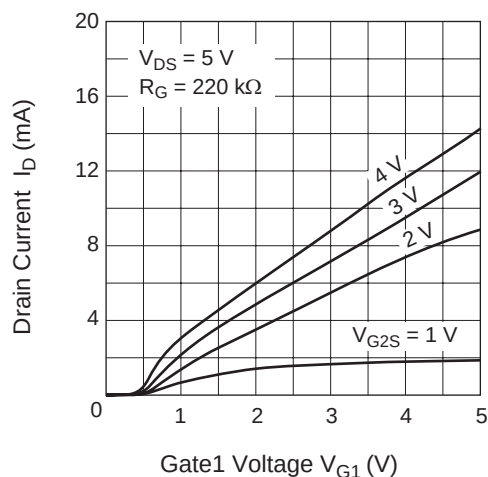
Typical Output Characteristics

Drain Current vs.
Gate2 to Source Voltage

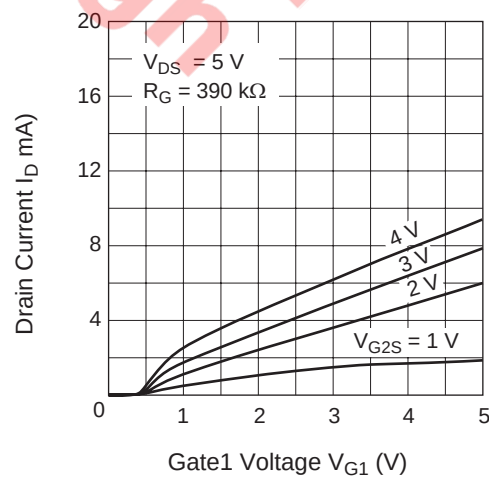
Drain Current vs. Gate1 Voltage

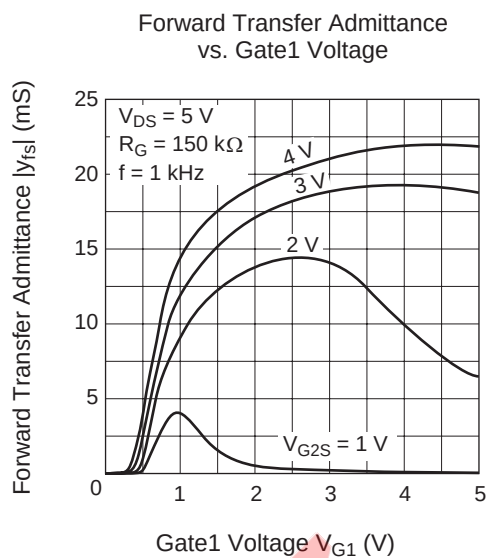
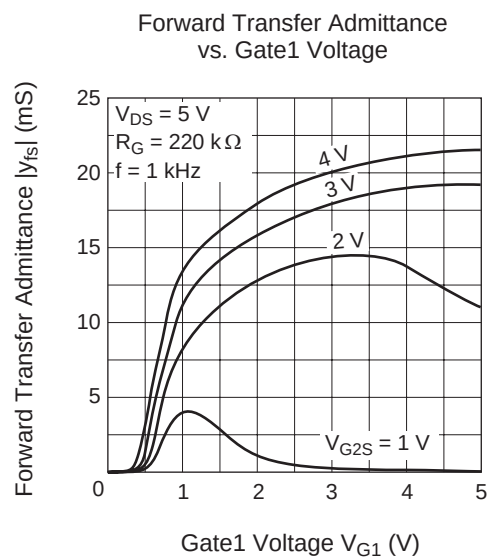
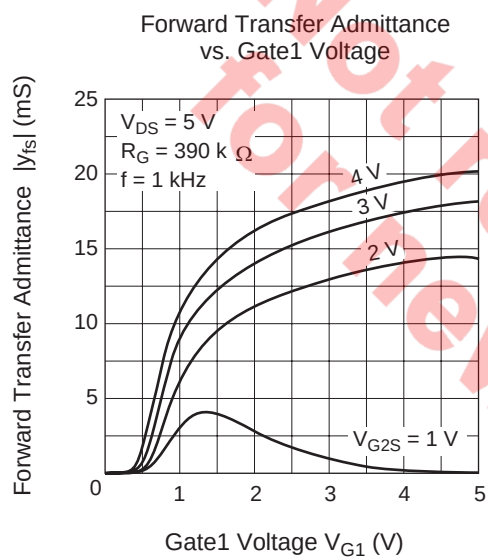
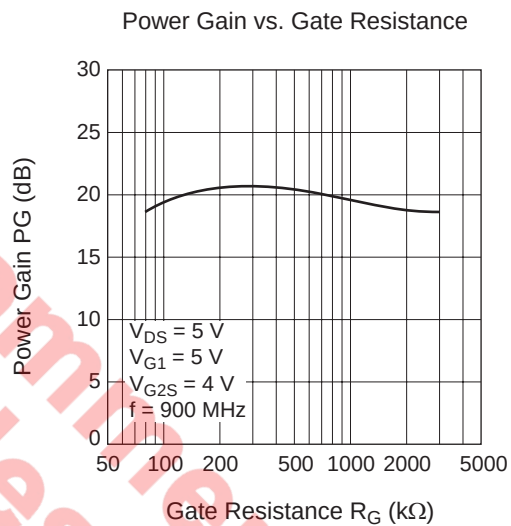
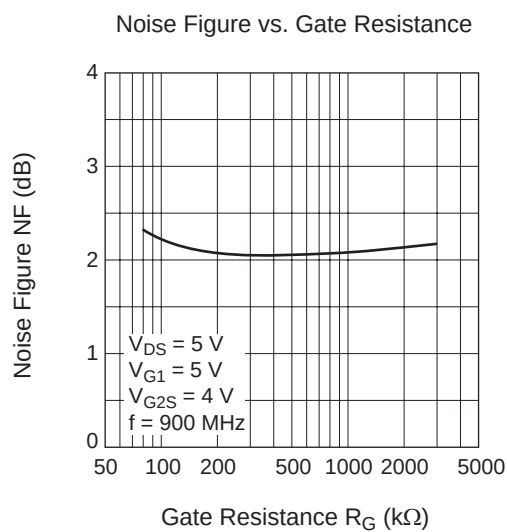
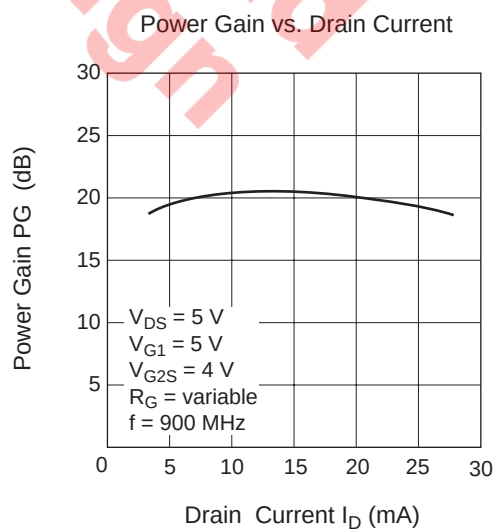


Drain Current vs. Gate1 Voltage

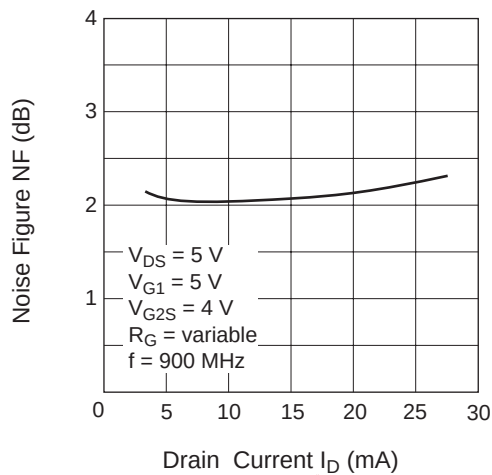


Drain Current vs. Gate1 Voltage

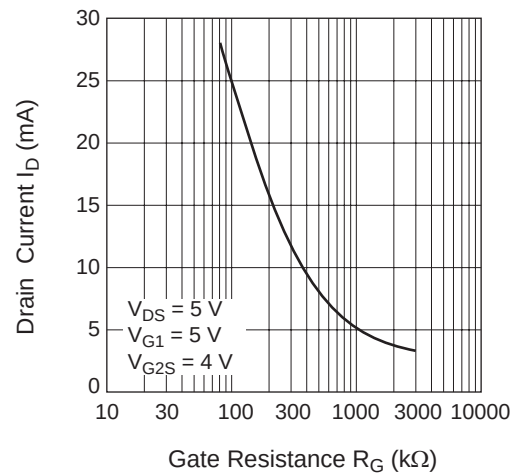
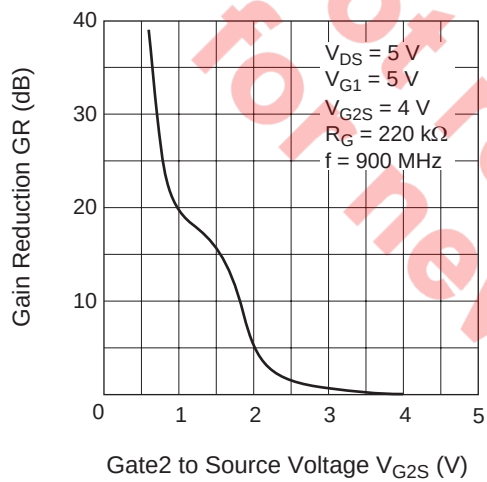
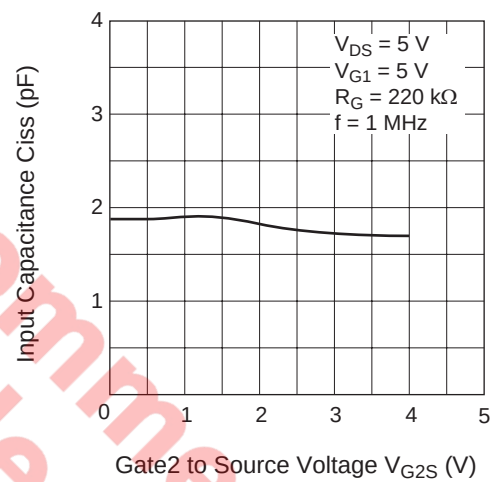
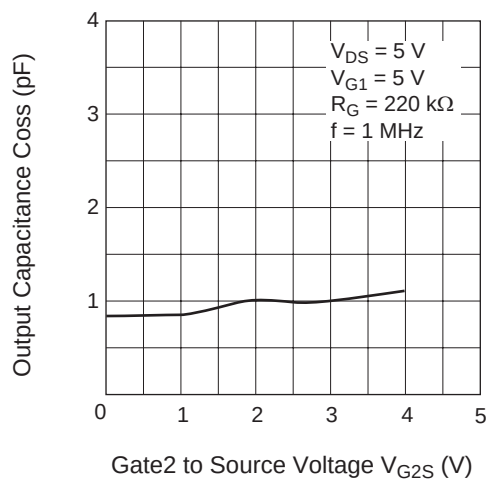




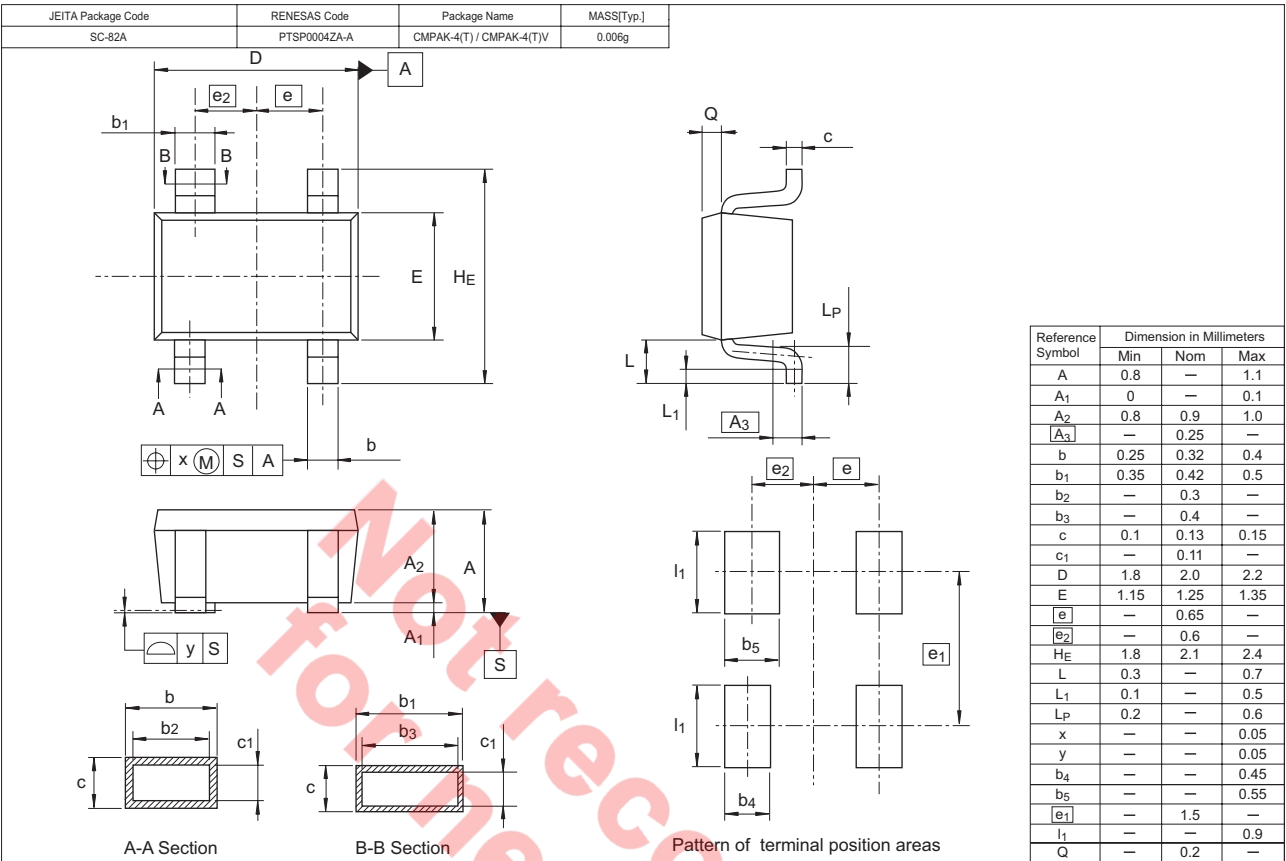
Noise Figure vs. Drain Current



Drain Current vs. Gate Resistance

Gain Reduction vs.
Gate2 to Source VoltageInput Capacitance vs.
Gate2 to Source VoltageOutput Capacitance vs.
Gate2 to Source Voltage

Package Dimensions



Ordering Information

Part Name	Quantity	Shipping Container
BB101CAU-TL-E	3000	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