

2SK1402, 2SK1402A

Silicon N Channel MOS FET

REJ03G0942-0200
(Previous: ADE-208-1282)
Rev.2.00
Sep 07, 2005

Application

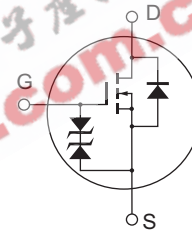
High speed power switching

Features

- Low on-resistance
- High speed switching
- Low drive current
- No secondary breakdown
- Suitable for switching regulator and DC-DC converter

Outline

RENESAS Package code: PRSS0004AC-A
(Package name: TO-220AB)



1. Gate
2. Drain
(Flange)
3. Source

Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	2SK1402	600	V
	2SK1402A	650	
Gate to source voltage	V _{GSS}	±30	V
Drain current	I _D	4	A
Drain peak current	I _{D(pulse)} *1	16	A
Body to drain diode reverse drain current	I _{DR}	4	A
Channel dissipation	P _{ch} *2	50	W
Channel temperature	T _{ch}	150	°C
Storage temperature	T _{stg}	-55 to +150	°C

Notes: 1. PW ≤ 10 μs, duty cycle ≤ 1%

2. Value at T_C = 25°C

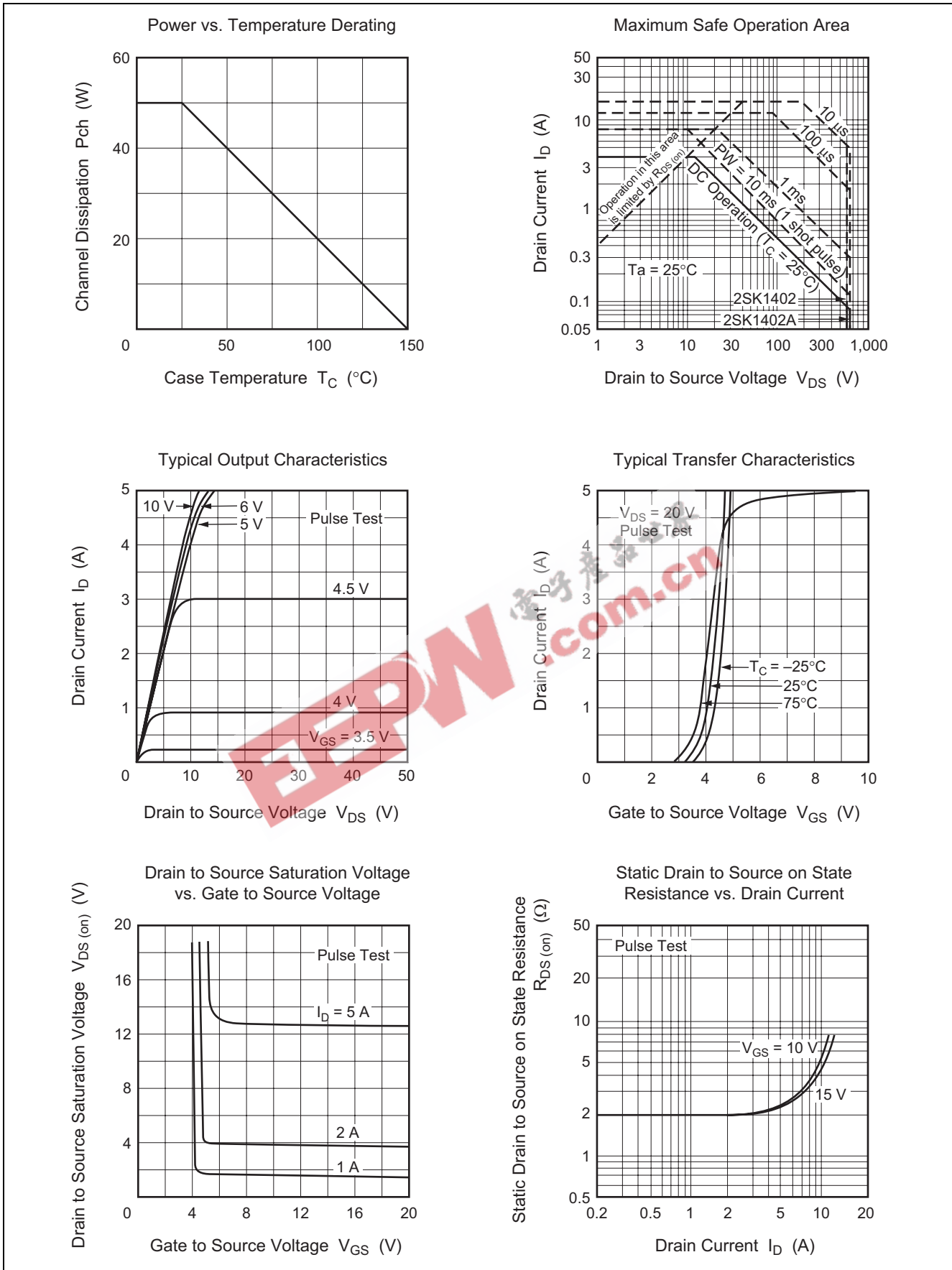
Electrical Characteristics

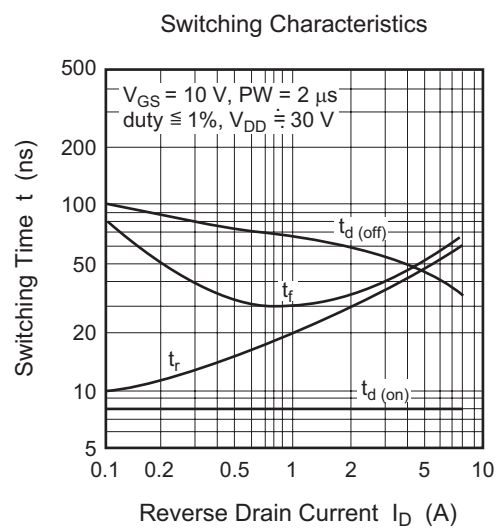
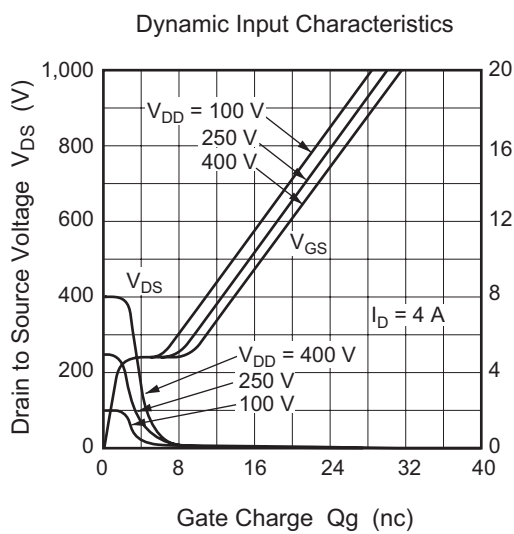
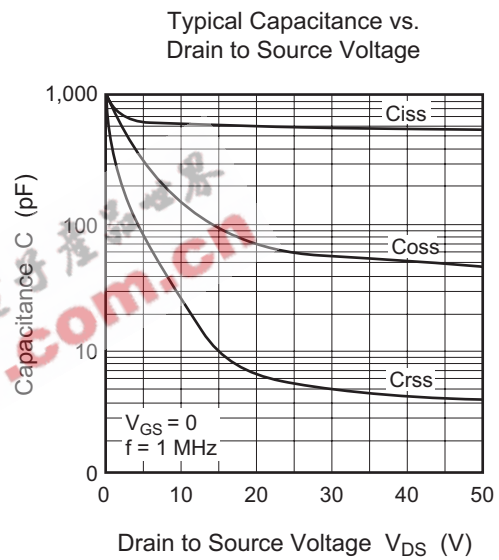
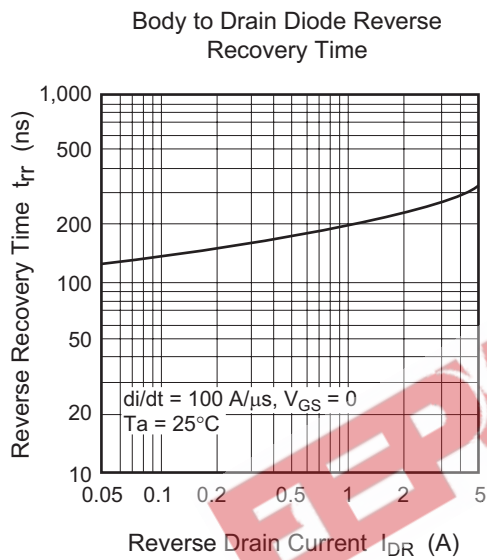
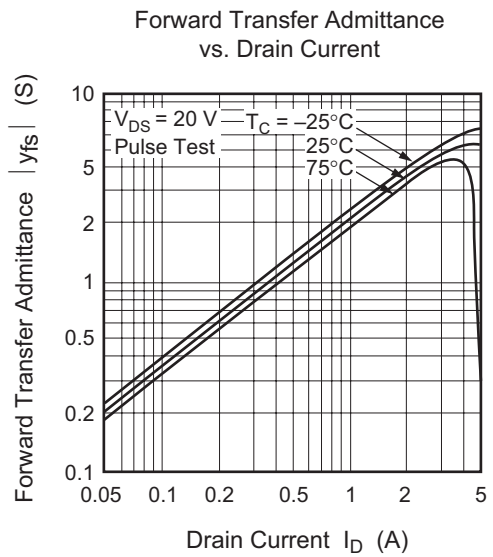
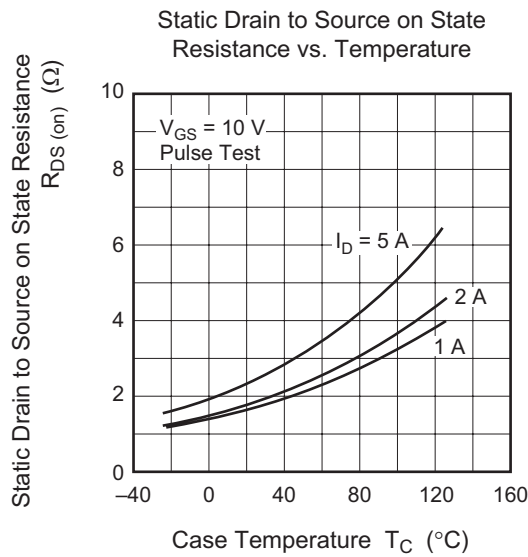
(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	2SK1402	600	—	—	V	I _D = 10 mA, V _{GS} = 0
	2SK1402A	650	—	—		
Gate to source breakdown voltage	V _{(BR)GSS}	±30	—	—	V	I _G = ±100 μA, V _{DS} = 0
Gate to source leak current	I _{GSS}	—	—	±10	μA	V _{GS} = ±25 V, V _{DS} = 0
Zero gate voltage drain current	2SK1402	—	—	250	μA	V _{DS} = 500 V, V _{GS} = 0
	2SK1402A	—	—	—		V _{DS} = 550 V, V _{GS} = 0
Gate to source cutoff voltage	V _{GS(off)}	2.0	—	3.0	V	I _D = 1 mA, V _{DS} = 10 V
Static drain to source on state resistance	2SK1402	—	1.8	2.4	Ω	I _D = 2 A, V _{GS} = 10 V *3
	2SK1402A	—	2.0	2.6		
Forward transfer admittance	y _{fs}	2.2	3.5	—	S	I _D = 2 A, V _{DS} = 10 V *3
Input capacitance	C _{iss}	—	600	—	pF	V _{DS} = 10 V, V _{GS} = 0, f = 1 MHz
Output capacitance	C _{oss}	—	140	—	pF	
Reverse transfer capacitance	C _{rss}	—	25	—	pF	
Turn-on delay time	t _{d(on)}	—	8	—	ns	
Rise time	t _r	—	30	—	ns	I _D = 2 A, V _{GS} = 10 V, R _L = 15 Ω
Turn-off delay time	t _{d(off)}	—	60	—	ns	
Fall time	t _f	—	35	—	ns	
Body to drain diode forward voltage	V _{DF}	—	0.9	—	V	I _F = 4 A, V _{GS} = 0
Body to drain diode reverse recovery time	t _{rr}	—	300	—	ns	I _F = 4 A, V _{GS} = 0, di _F /dt = 100 A/μs

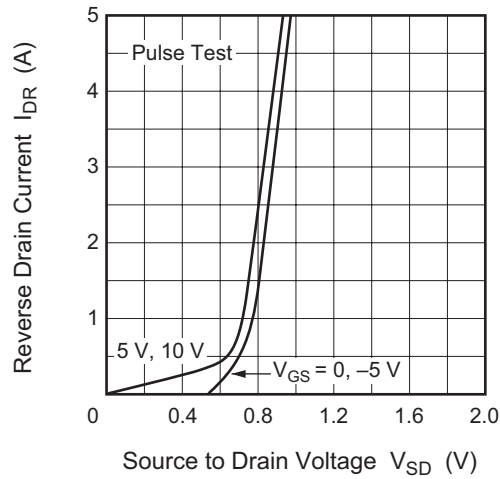
Note: 3. Pulse test

Main Characteristics

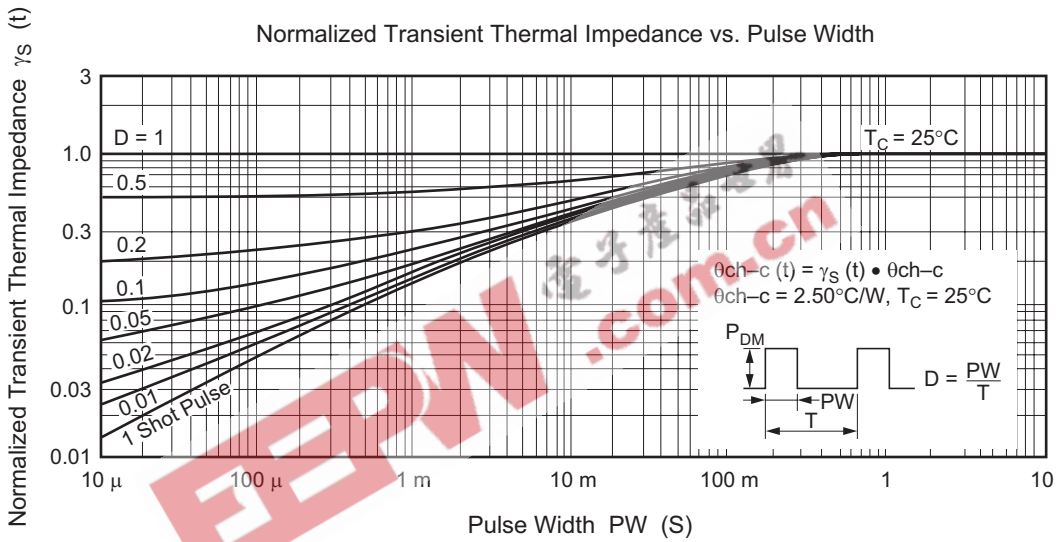




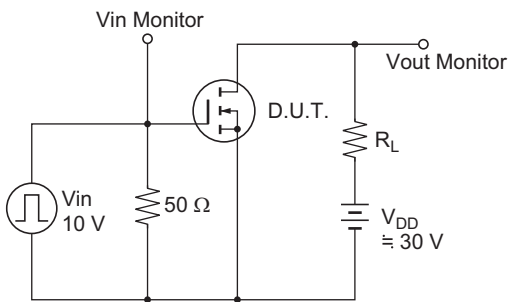
Reverse Drain Current vs. Source to Drain Voltage



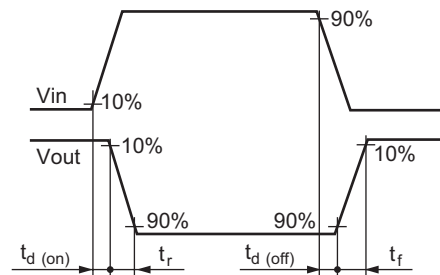
Normalized Transient Thermal Impedance vs. Pulse Width



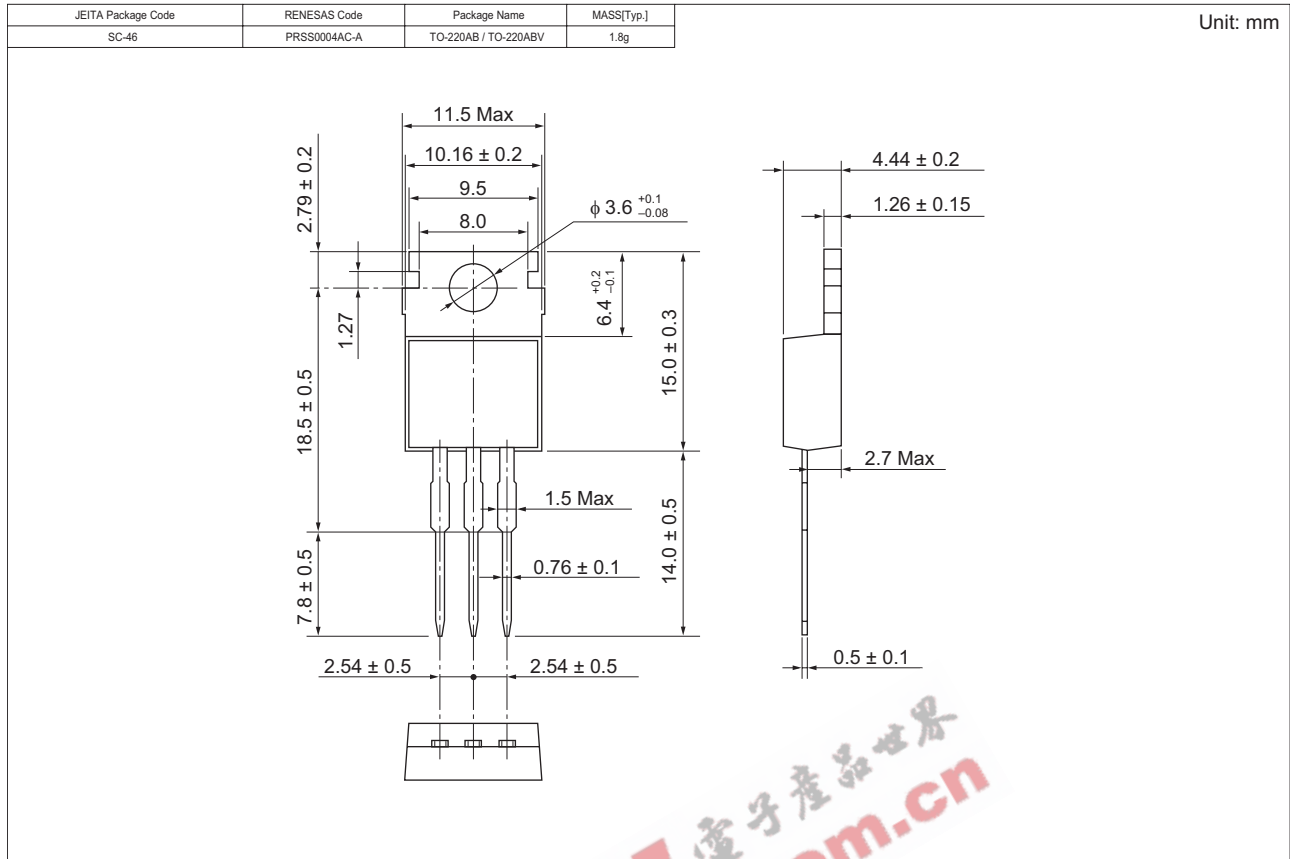
Switching Time Test Circuit



Waveforms



Package Dimensions



Ordering Information

Part Name	Quantity	Shipping Container
2SK1402-E	500 pcs	Box (Sack)
2SK1402A-E	500 pcs	Box (Sack)

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