H5N2801P

Silicon N Channel MOS FET
High Speed Power Switching

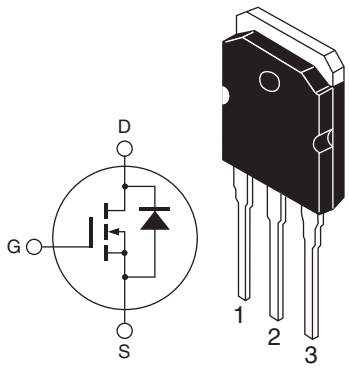
REJ03G0118-0100Z
Rev.1.00
Oct.01.2003

Features

- Low on-resistance
- Low drive current
- High speed switching

Outline

TO-3P



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

Absolute Maximum Rating

(Ta = 25°C)

Item	Symbol	Rating	Unit
Drain to source voltage	V_{DSS}	280	V
Gate to source voltage	V_{GSS}	±30	V
Drain current	I_D	60	A
Drain peak current	$I_{D\ (pulse)}$ Note1	240	A
Body-drain diode reverse drain current	I_{DR}	60	A
Avalanche current	I_{AP} Note3	35	A
Avalanche energy	E_{AR} Note3	74.5	mJ
Channel dissipation	Pch Note2	150	W
Channel to case thermal impedance	θch-c	0.833	°C /W
Channel temperature	Tch	150	°C
Storage temperature	Tstg	–55 to +150	°C

Notes: 1. PW ≤ 10 µs, duty cycle ≤ 1%
2. Value at Tc = 25°C
3. STch = 25°C, Tch ≤ 150°C

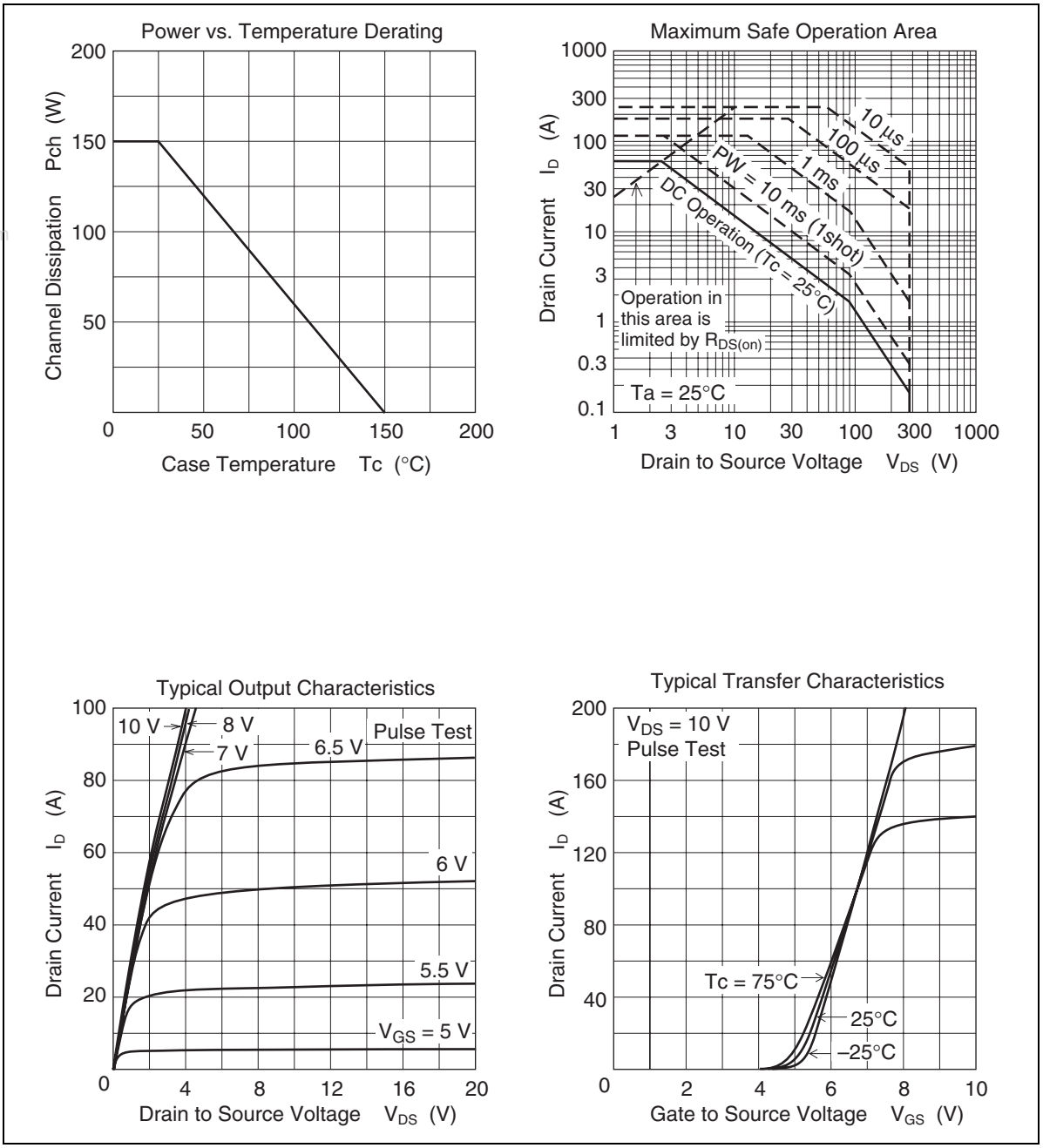
Electrical Characteristics

(Ta = 25°C)

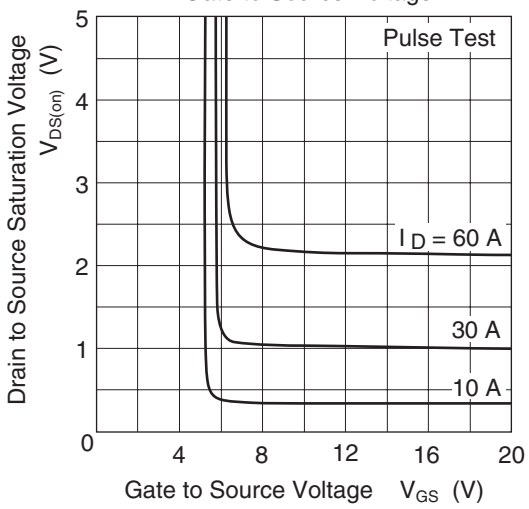
Item	Symbol	Min	Typ	Max	Unit	Test condition
Drain to Source breakdown voltage	$V_{(BR)DSS}$	280	—	—	V	I_D = 10 mA, V_{GS} = 0
Zero gate voltage drain current	I_{DSS}	—	—	1	µA	V_{DS} = 280 V, V_{GS} = 0
Gate to source leak current	I_{GSS}	—	—	±0.1	µA	V_{GS} = ±30 V, V_{DS} = 0
Gate to source cutoff voltage	$V_{GS(off)}$	3.0	—	4.5	V	V_{DS} = 10 V, I_D = 1 mA
Forward transfer admittance	|yfs|	27	45	—	S	I_D = 30 A, V_{DS} = 10 V[Note4]
Static drain to source on state resistance	$R_{DS(on)}$	—	0.034	0.043	Ω	I_D = 30 A, V_{GS} = 10 V[Note4]
Input capacitance	Ciss	—	5400	—	pF	V_{DS} = 25 V V_{GS} = 0 f = 1 MHz
Output capacitance	Coss	—	770	—	pF	
Reverse transfer capacitance	Crss	—	100	—	pF	
Turn-on delay time	td(on)	—	70	—	ns	I_D = 30 A R_L = 4.7 Ω V_{GS} = 10 V Rg = 10 Ω
Rise time	tr	—	300	—	ns	
Turn-off delay time	td(off)	—	250	—	ns	
Fall time	tf	—	210	—	ns	
Total gate charge	Qg	—	148	—	nC	V_{DD} = 220 V V_{GS} = 10 V I_D = 60 A
Gate to source charge	Qgs	—	30	—	nC	
Gate to drain charge	Qgd	—	73	—	nC	
Body-drain diode forward voltage	V_{DF}	—	1.10	1.65	V	I_F = 60 A, V_{GS} = 0[Note4]
Body-drain diode reverse recovery time	trr	—	270	—	ns	I_F = 60 A, V_{GS} = 0 diF/dt = 100 A/µs
Body-drain diode reverse recovery charge	Qrr	—	2.8	—	µC	

Notes: 4. Pulse test

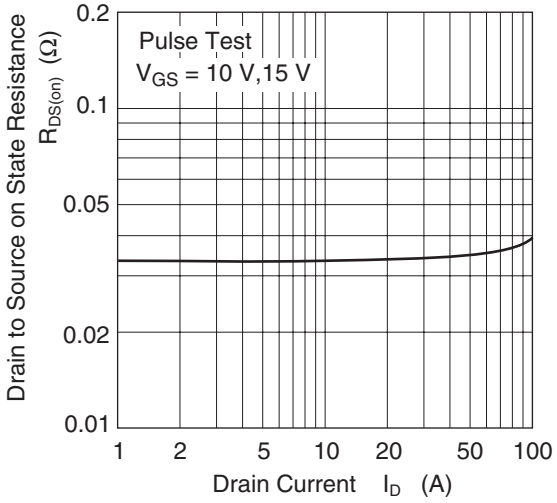
Main Characteristics



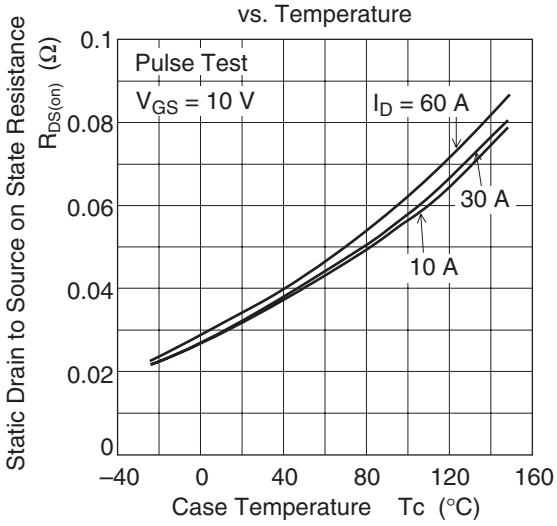
Drain to Source Saturation Voltage vs. Gate to Source Voltage



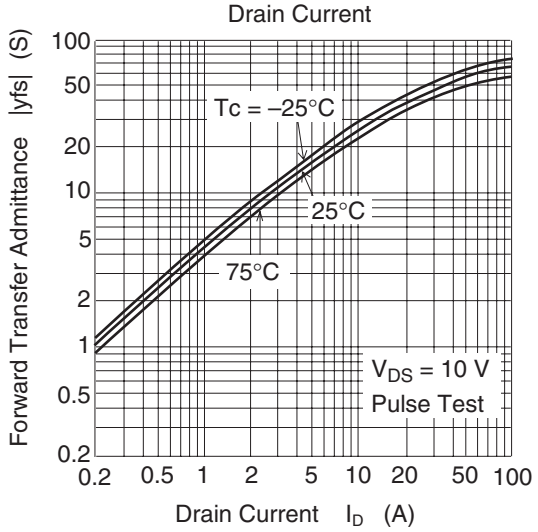
Static Drain to Source on State Resistance vs. Drain Current



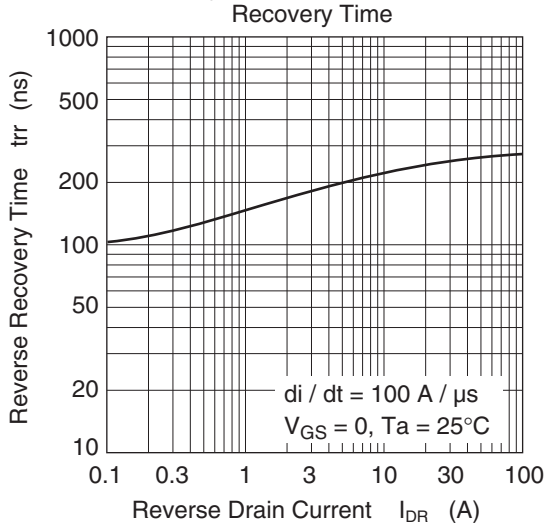
Static Drain to Source on State Resistance vs. Temperature



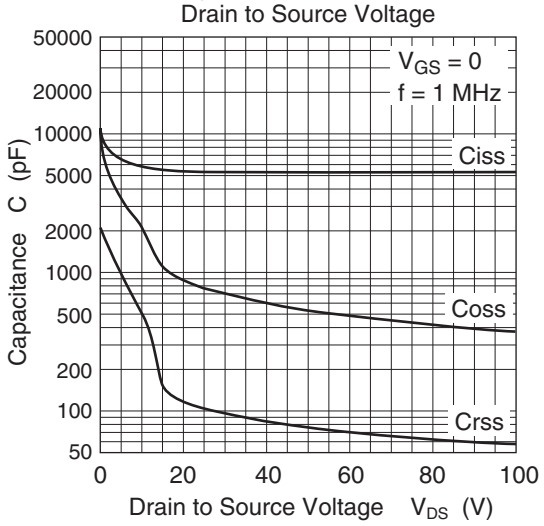
Forward Transfer Admittance vs. Drain Current



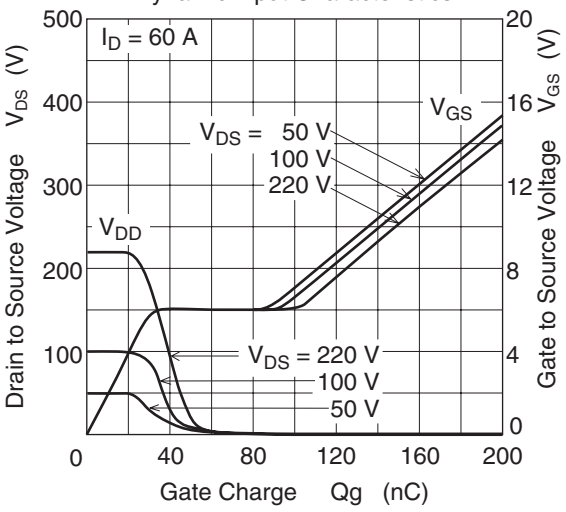
Body-Drain Diode Reverse Recovery Time



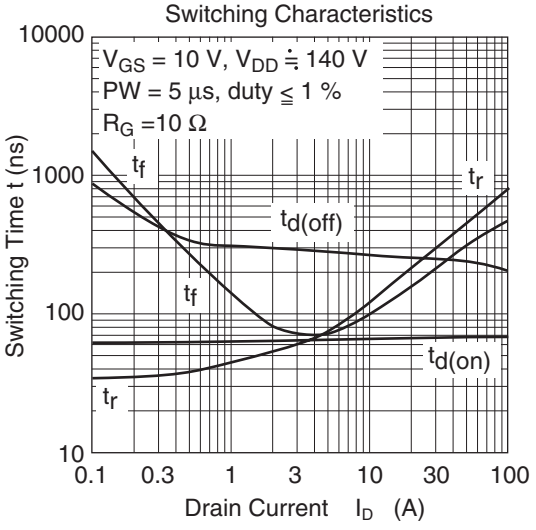
Typical Capacitance vs. Drain to Source Voltage



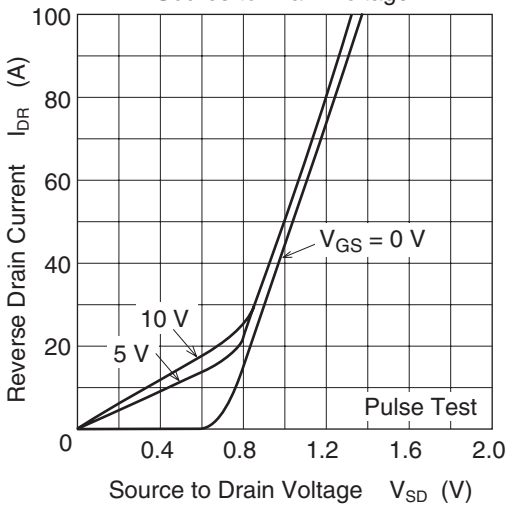
Dynamic Input Characteristics



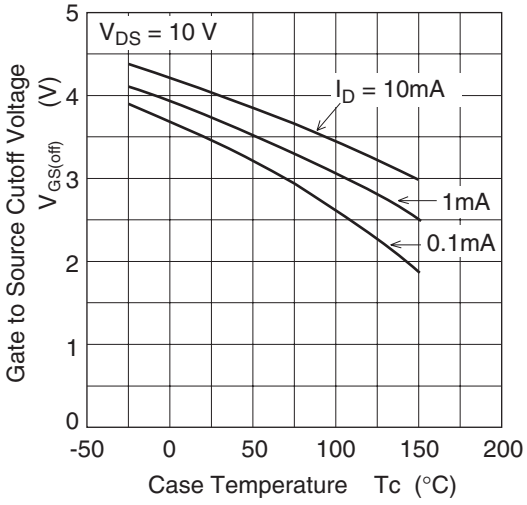
Switching Characteristics



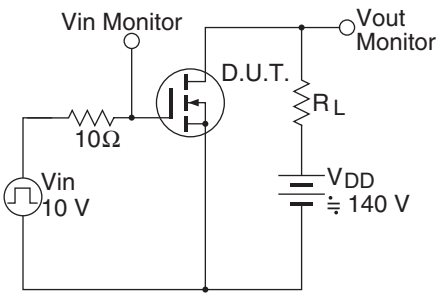
Reverse Drain Current vs. Source to Drain Voltage



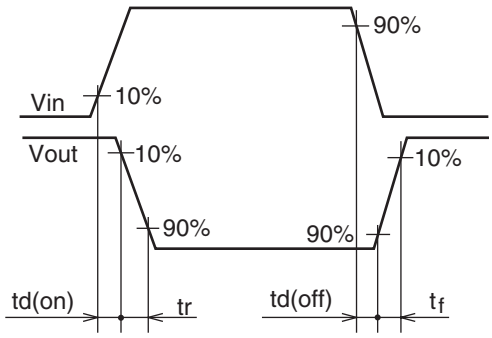
Gate to Source Cutoff Voltage vs. Case Temperature

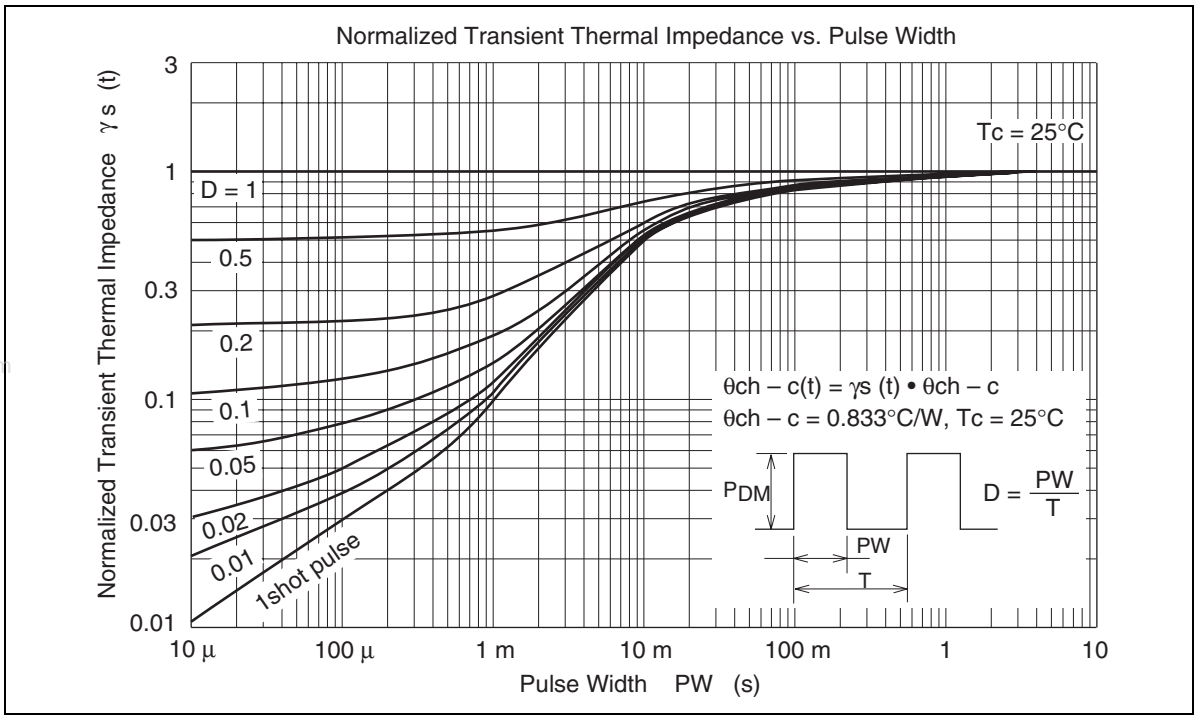


Switching Time Test Circuit



Waveform

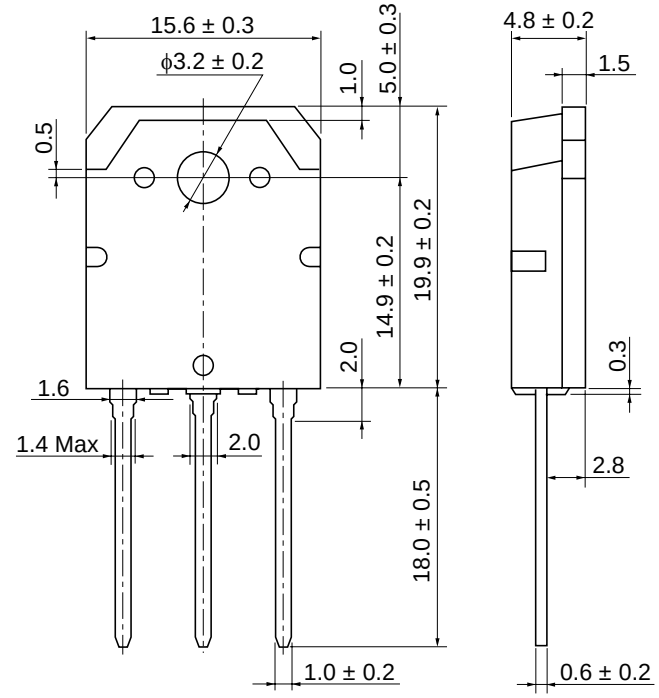


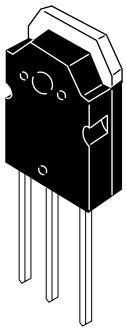


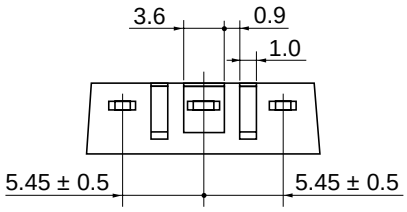
Package Dimensions

As of January, 2003

Unit: mm







Package Code	TO-3P
JEDEC	—
JEITA	Conforms
Mass (reference value)	5.0 g

Renesas Technology Corp. Sales Strategic Planning Div. Nippon Bldg., 2-6-2, Ohte-machi, Chiyoda-ku, Tokyo 100-0004, Japan

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Renesas Technology America, Inc.
450 Holger Way, San Jose, CA 95134-1368, U.S.A
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Renesas Technology Europe Limited.
Dukes Meadow, Millboard Road, Bourne End, Buckinghamshire, SL8 5FH, United Kingdom
Tel: <44> (1628) 585 100, Fax: <44> (1628) 585 900

Renesas Technology Europe GmbH
Dornacher Str. 3, D-85622 Feldkirchen, Germany
Tel: <49> (89) 380 70 0, Fax: <49> (89) 929 30 11

Renesas Technology Hong Kong Ltd.
7/F., North Tower, World Finance Centre, Harbour City, Canton Road, Hong Kong
Tel: <852> 2265-6688, Fax: <852> 2375-6836

Renesas Technology Taiwan Co., Ltd.
FL 10, #99, Fu-Hsing N. Rd., Taipei, Taiwan
Tel: <886> (2) 2715-2888, Fax: <886> (2) 2713-2999

Renesas Technology (Shanghai) Co., Ltd.
26/F., Ruijin 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

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