

RJK0631JPE

Silicon N Channel Power MOS FET
High Speed Power Switching

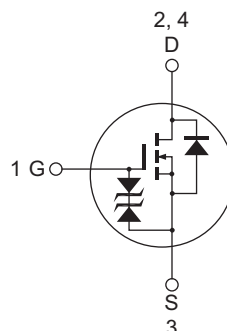
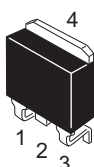
R07DS0341EJ0300
Rev.3.00
Jul 24, 2013

Features

- For Automotive application
- AEC-Q101 compliant
- Low on-resistance : $R_{DS(on)} = 12 \text{ m}\Omega$ typ.
- Capable of 4.5 V gate drive
- Low input capacitance: $C_{iss} = 1350 \text{ pF}$ typ

Outline

RENESAS Package code: PRSS0004AE-B
(Package name: LDKPAK (S)-(1))



1. Gate
2. Drain
3. Source
4. Drain

Absolute Maximum Ratings

($T_a = 25^\circ\text{C}$)

Item	Symbol	Value	Unit
Drain to source voltage	V_{DSS}	60	V
Gate to source voltage	V_{GSS}	± 20	V
Drain current	I_D	30	A
Drain peak current	$I_{D(pulse)}$ ^{Note1}	120	A
Body-drain diode reverse drain current	I_{DR}	30	A
Body-drain diode reverse drain peak current	$I_{DR(pulse)}$ ^{Note1}	120	A
Avalanche current	I_{AP} ^{Note2}	18	A
Avalanche energy	E_{AR} ^{Note2}	27.8	mJ
Channel dissipation	P_{ch} ^{Note3}	60	W
Channel temperature	T_{ch} ^{Note4}	175	$^\circ\text{C}$
Storage temperature	T_{stg}	-55 to +150	$^\circ\text{C}$

- Notes: 1. $PW \leq 10\mu\text{s}$ duty cycle $\leq 1\%$
 2. $T_{ch} = 25^\circ\text{C}$, $R_g \geq 50 \Omega$
 3. $T_c = 25^\circ\text{C}$
 4. AEC-Q101 compliant

Thermal Impedance Characteristics

- Channel to case thermal impedance θ_{ch-c} : $2.5^\circ\text{C}/\text{W}$

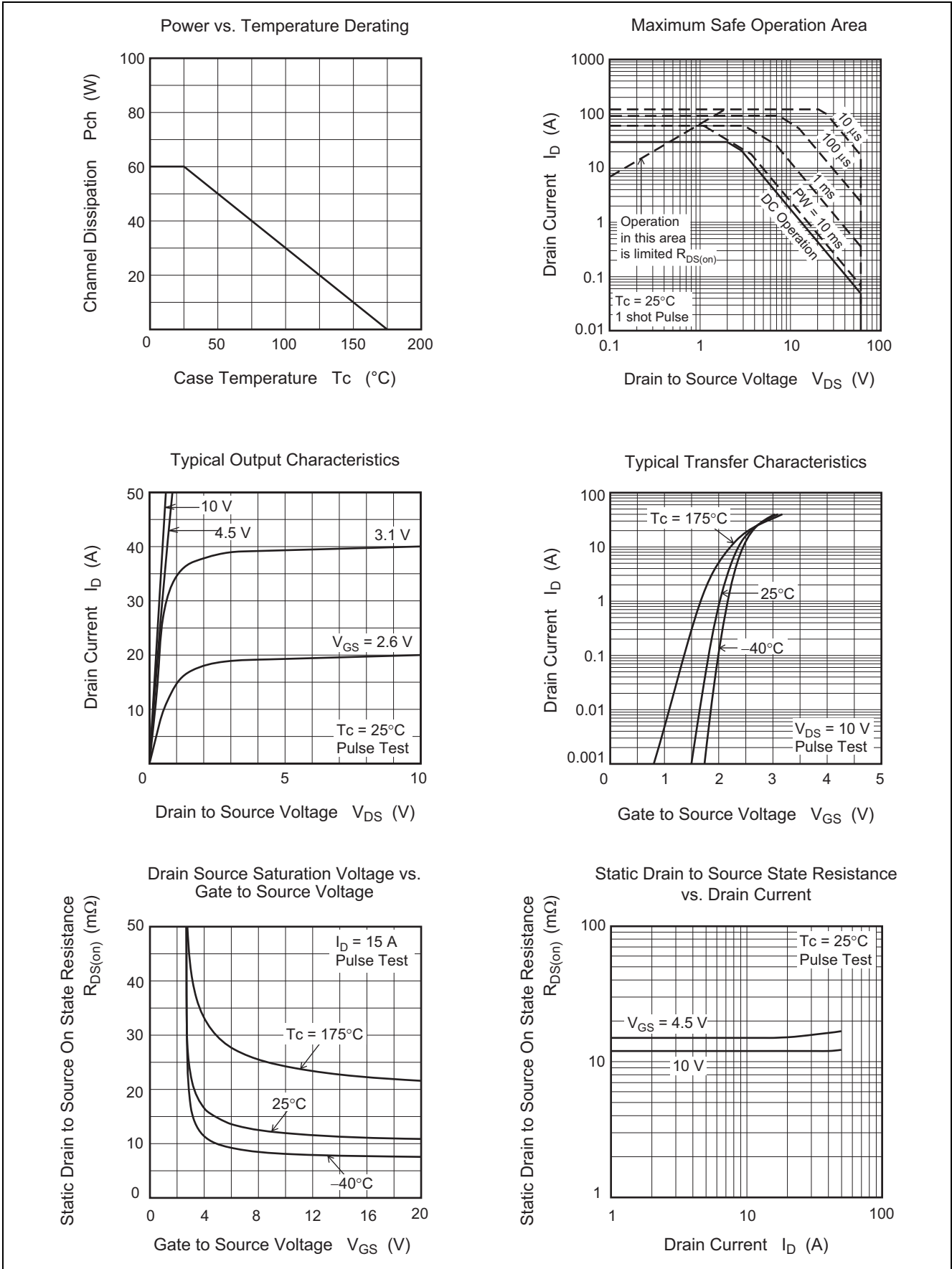
Electrical Characteristics

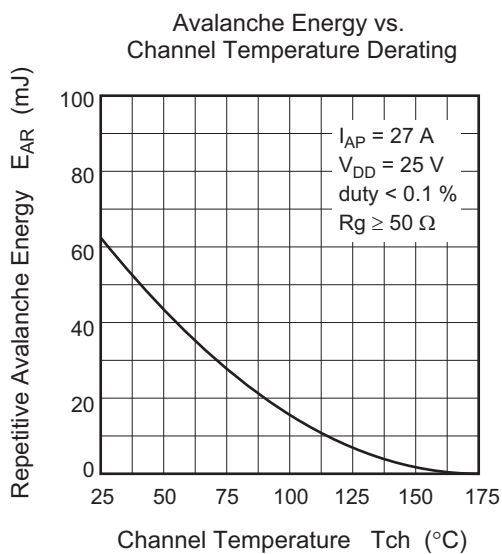
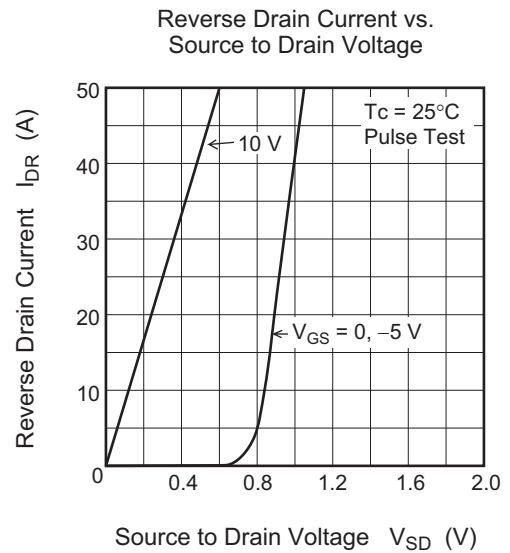
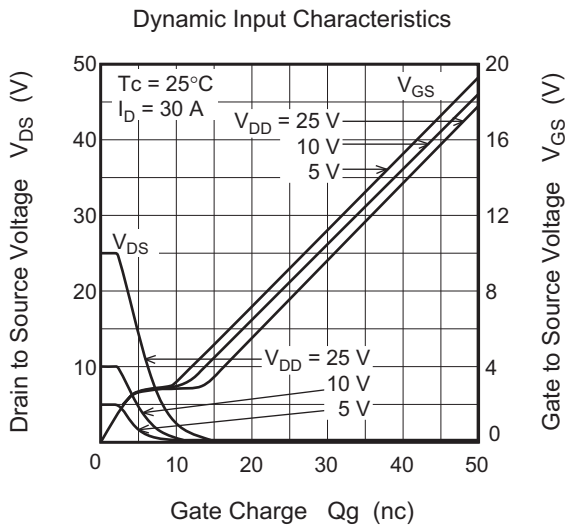
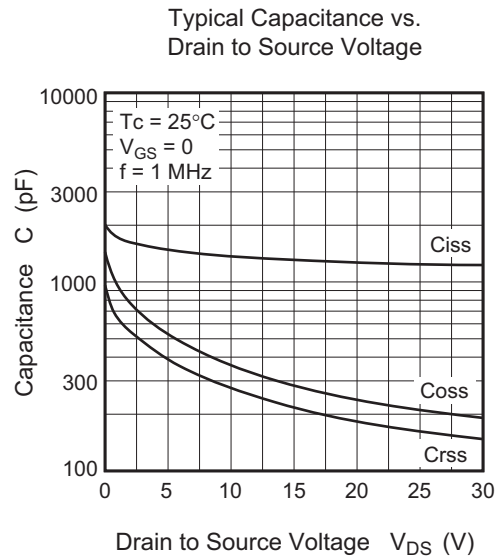
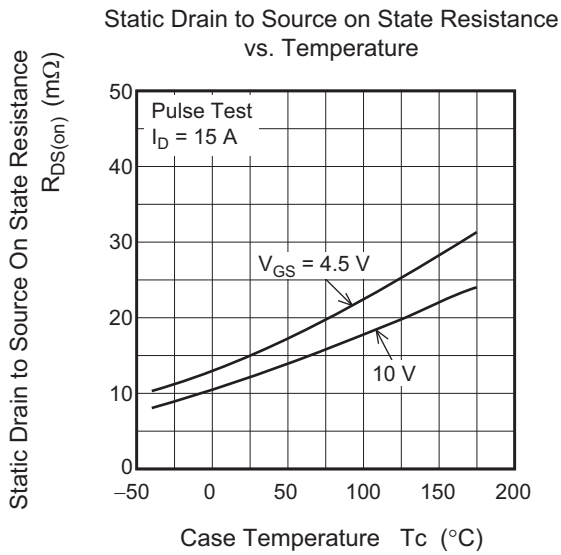
(Ta = 25°C)

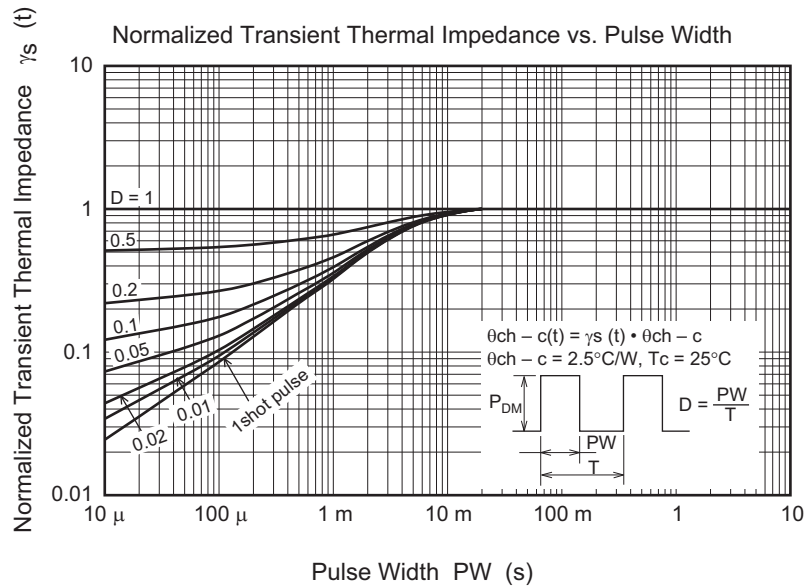
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Gate to source leak current	I_{GSS}	—	—	±10	μA	$V_{GS} = \pm 20V, V_{DS} = 0$
Zero gate voltage drain current	I_{DSS}	—	—	1	μA	$V_{DS} = 60V, V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	1.0	—	2.0	V	$I_D = 1mA, V_{DS} = 10V$
Static drain to source on state resistance	$R_{DS(on)}$	—	12	15	mΩ	$I_D = 15A, V_{GS} = 10V$ ^{Note5}
		—	15	20	mΩ	$I_D = 15A, V_{GS} = 4.5V$ ^{Note5}
Input capacitance	C_{iss}	—	1350	—	pF	$V_{DS} = 10V, V_{GS} = 0,$ $f = 1MHz$
Output capacitance	C_{oss}	—	360	—	pF	
Reverse transfer capacitance	C_{rss}	—	270	—	pF	
Total gate charge	Q_g	—	32	—	nC	$V_{DD} = 25V, V_{GS} = 10V,$ $I_D = 30A$
Gate to source charge	Q_{gs}	—	3.6	—	nC	
Gate to drain charge	Q_{gd}	—	10	—	nC	
Turn-on delay time	$t_{d(on)}$	—	13	—	ns	$I_D = 15A, R_L = 2\Omega,$ $V_{GS} = 10V, R_G = 4.7\Omega$
Rise time	t_r	—	15	—	ns	
Turn-off delay time	$t_{d(off)}$	—	60	—	ns	
Fall time	t_f	—	15	—	ns	
Body-drain diode forward voltage	V_{DF}	—	0.94	1.22	V	$I_F = 30A, V_{GS} = 0$ ^{Note5}
Body-drain diode reverse recovery time	t_{rr}	—	40	—	ns	$I_F = 30A, V_{GS} = 0$ $di_F/dt = 100A/\mu s$

Note: 5. Pulse test

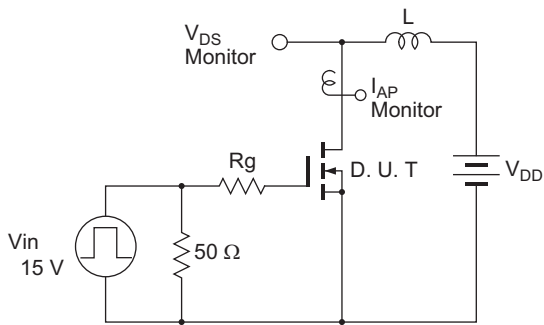
Main Characteristics



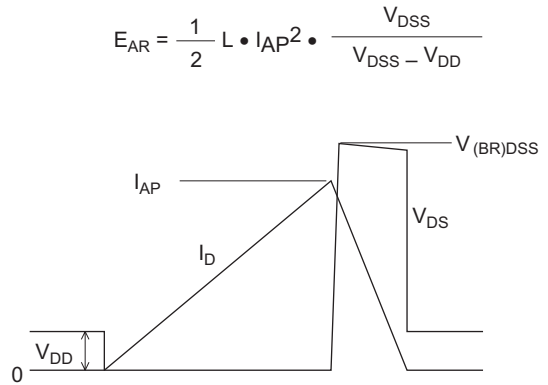




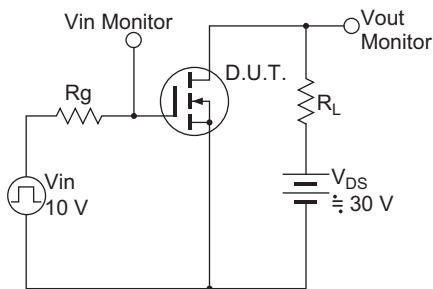
Avalanche Test Circuit



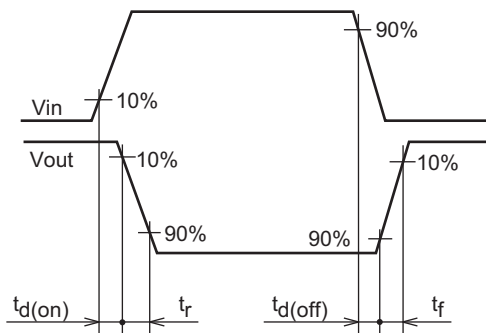
Avalanche Waveform



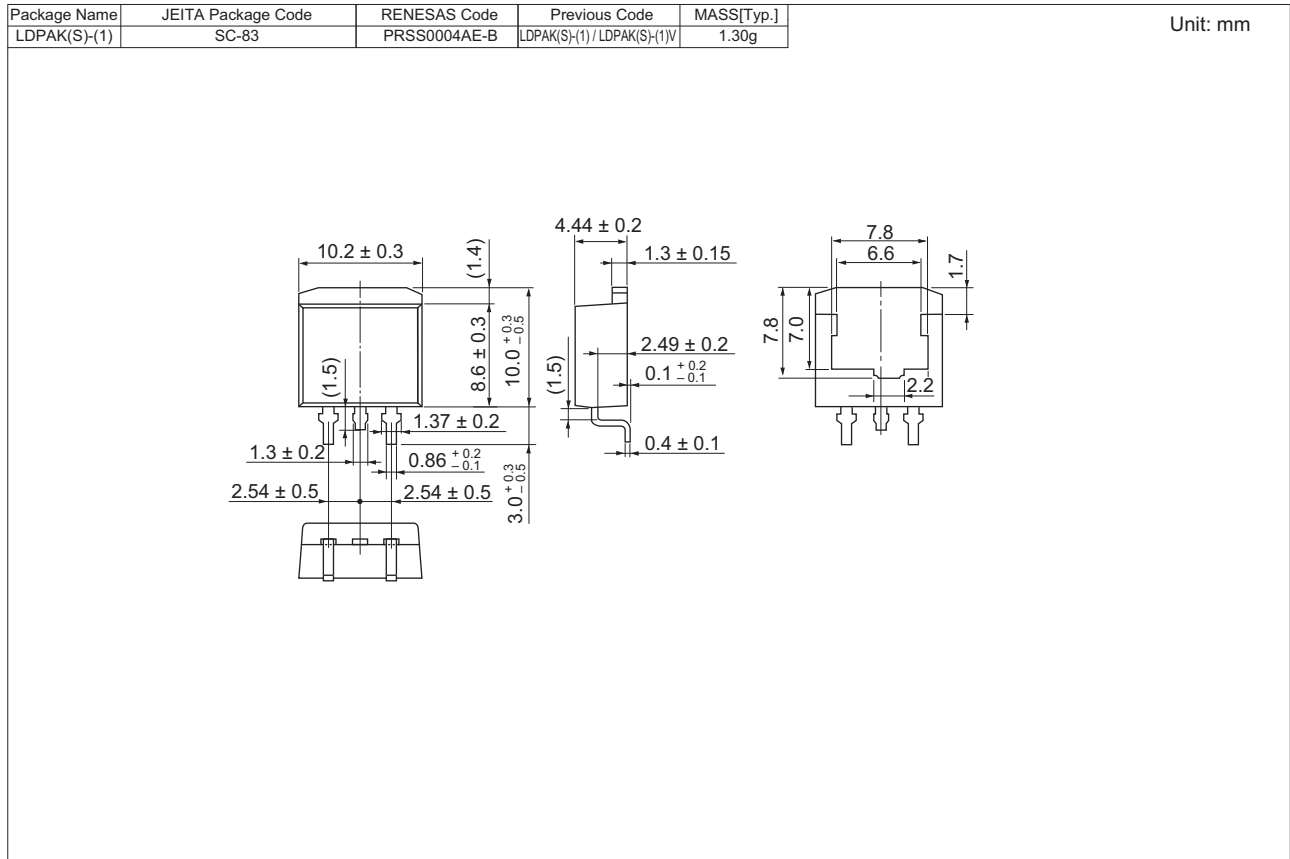
Switching Time Test Circuit



Switching Time Waveform



Package Dimensions



Ordering Information

Orderable Part Number	Quantity	Shipping Container
RJK0631JPE-00-J3	1000 pcs	Taping (Left-winded)

Note: The symbol of 2nd "-" is occasionally presented as "#".

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Renesas Electronics America Inc.
2880 Scott Boulevard Santa Clara, CA 95050-2554, U.S.A.
Tel: +1-408-588-6000, Fax: +1-408-588-6130

Renesas Electronics Canada Limited
1101 Nicholson Road, Newmarket, Ontario L3Y 9C3, Canada
Tel: +1-905-898-5441, Fax: +1-905-898-3220

Renesas Electronics Europe Limited
Dukes Meadow, Millboard Road, Bourne End, Buckinghamshire, SL8 5FH, U.K.
Tel: +44-1628-651-700, Fax: +44-1628-651-804

Renesas Electronics Europe GmbH
Arcadiastrasse 10, 40472 Düsseldorf, Germany
Tel: +49-211-65030, Fax: +49-211-6503-1327

Renesas Electronics (China) Co., Ltd.
7th Floor, Quantum Plaza, No.27 ZhiChunLu Haidian District, Beijing 100083, P.R.China
Tel: +86-10-8235-1155, Fax: +86-10-8235-7679

Renesas Electronics (Shanghai) Co., Ltd.
Unit 204, 205, AZIA Center, No.1233 Lujiazui Ring Rd., Pudong District, Shanghai 200120, China
Tel: +86-21-5877-1818, Fax: +86-21-6887-7858 / -7898

Renesas Electronics Hong Kong Limited
Unit 1601-1613, 16/F., Tower 2, Grand Century Place, 193 Prince Edward Road West, Mongkok, Kowloon, Hong Kong
Tel: +852-2886-9318, Fax: +852 2886-9022/9044

Renesas Electronics Taiwan Co., Ltd.
13F, No. 363, Fu Shing North Road, Taipei, Taiwan
Tel: +886-2-8175-9600, Fax: +886 2-8175-9670

Renesas Electronics Singapore Pte. Ltd.
80 Bendemeer Road, Unit #06-02 Hyflux Innovation Centre Singapore 339949
Tel: +65-6213-0200, Fax: +65-6213-0300

Renesas Electronics Malaysia Sdn.Bhd.
Unit 906, Block B, Menara Amcorp, Amcorp Trade Centre, No. 18, Jln Persiaran Barat, 46050 Petaling Jaya, Selangor Darul Ehsan, Malaysia
Tel: +60-3-7955-3390, Fax: +60-3-7955-9510

Renesas Electronics Korea Co., Ltd.
11F., Samik Laviel' or Bldg., 720-2 Yeoksam-Dong, Kangnam-Ku, Seoul 135-080, Korea
Tel: +82-2-558-3737, Fax: +82-2-558-5141