

RJK60S4DPE

600V - 16A - SJ MOS FET
High Speed Power Switching

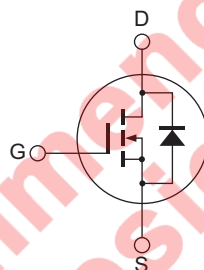
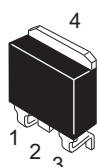
R07DS0733EJ0200
Rev.2.00
Oct 12, 2012

Features

- Superjunction MOSFET
- Low on-resistance
 $R_{DS(on)} = 0.23 \Omega$ typ. (at $I_D = 8 \text{ A}$, $V_{GS} = 10 \text{ V}$, $T_a = 25^\circ\text{C}$)
- High speed switching
 $t_f = 21 \text{ ns}$ typ. (at $I_D = 8 \text{ A}$, $V_{GS} = 10 \text{ V}$, $R_L = 37.5 \Omega$, $R_g = 10 \Omega$, $T_a = 25^\circ\text{C}$)

Outline

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



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

Absolute Maximum Ratings

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

Item	Symbol	Ratings	Unit
Drain to source voltage	V_{DSS}	600	V
Gate to source voltage	V_{GSS}	+30, -20	V
Drain current	I_D ^{Note1}	16	A
	I_D ^{Note1}	10.1	A
Drain peak current	$I_{D(pulse)}$ ^{Note1}	32	A
Body-drain diode reverse drain current	I_{DR} ^{Note1}	16	A
Body-drain diode reverse drain peak current	$I_{DR(pulse)}$ ^{Note1}	32	A
Avalanche current	I_{AP} ^{Note2}	4	A
Avalanche energy	E_{AR} ^{Note2}	0.87	mJ
Channel dissipation	P_{ch} ^{Note3}	104.1	W
Channel to case thermal impedance	θ_{ch-c}	1.2	$^\circ\text{C/W}$
Channel temperature	T_{ch}	150	$^\circ\text{C}$
Storage temperature	T_{stg}	-55 to +150	$^\circ\text{C}$

Notes: 1. Limited by T_{ch} max.
2. $ST_{ch} = 25^\circ\text{C}$, $T_{ch} \leq 150^\circ\text{C}$
3. Value at $T_c = 25^\circ\text{C}$

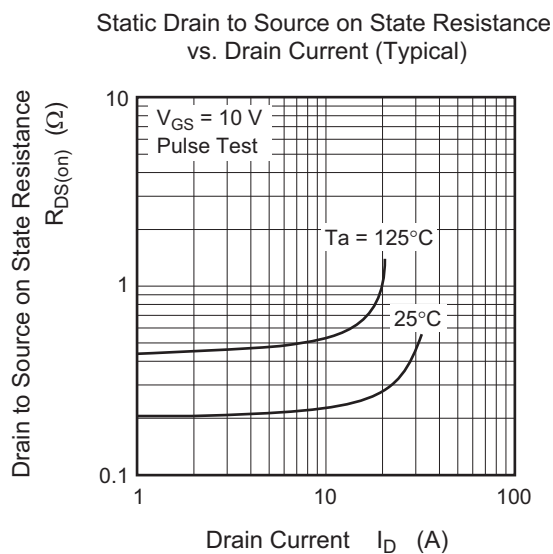
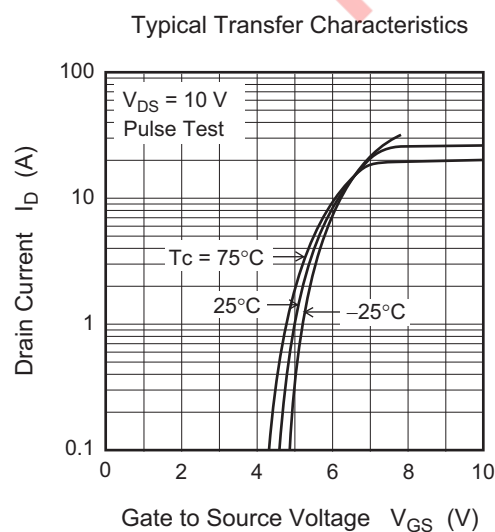
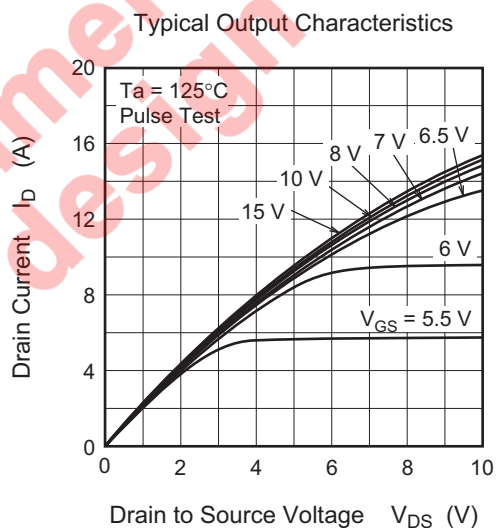
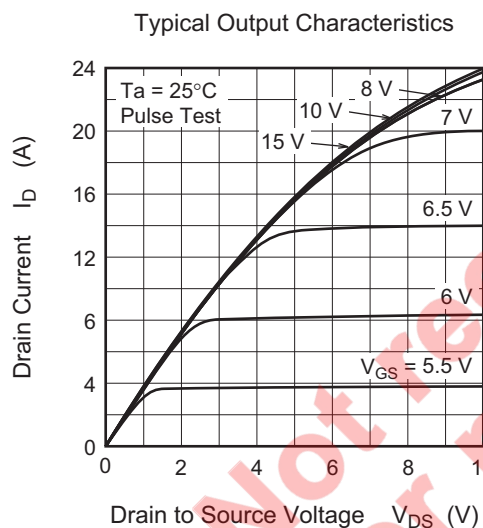
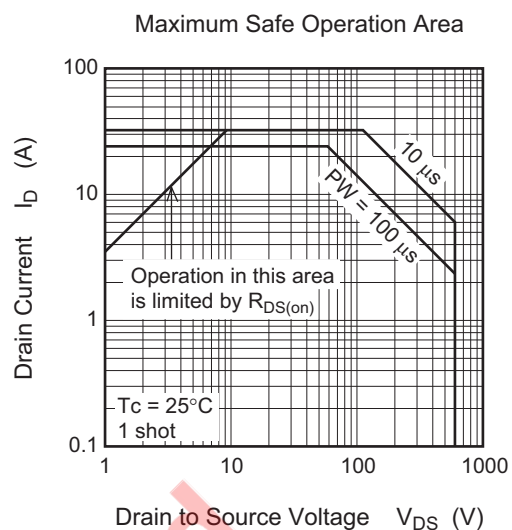
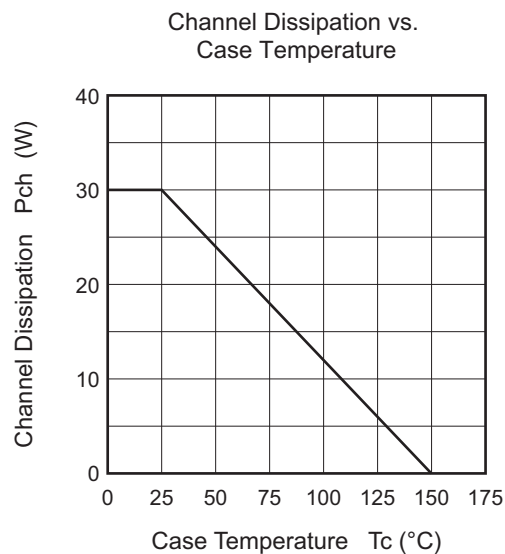
Electrical Characteristics

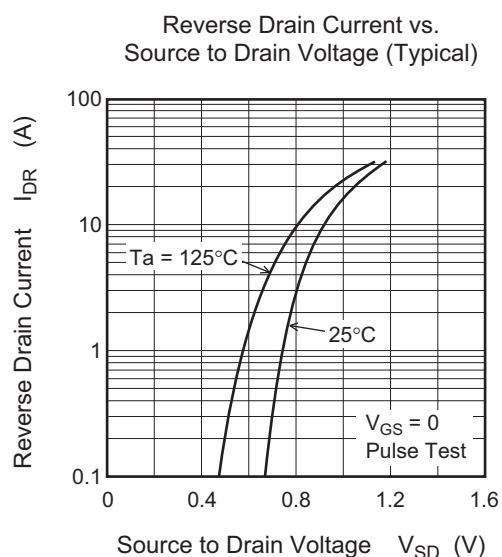
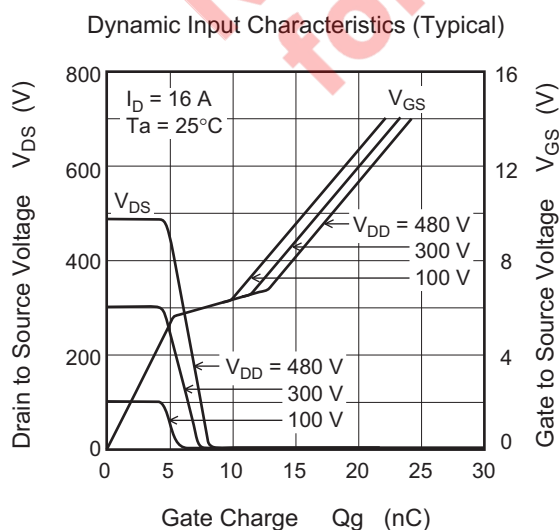
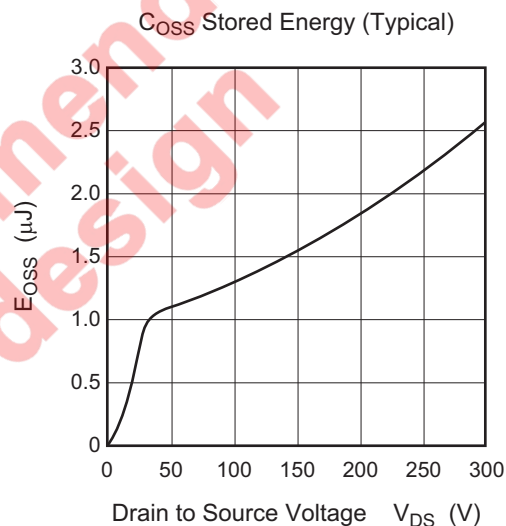
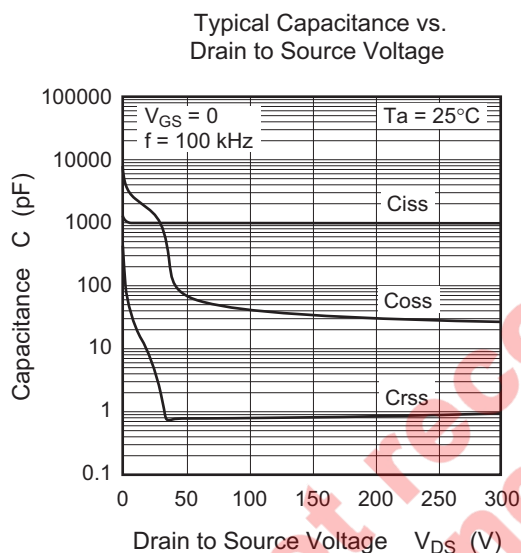
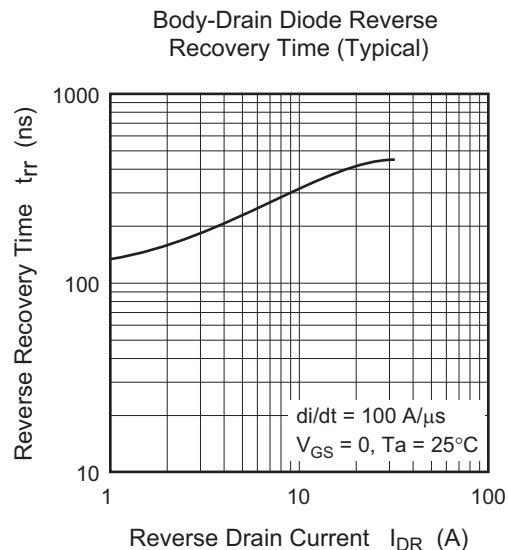
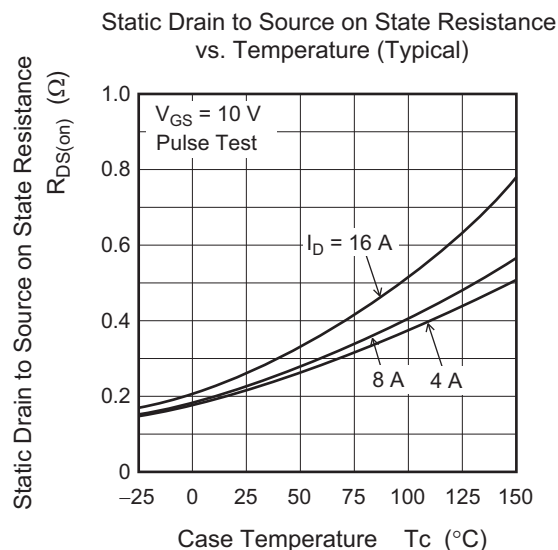
(Ta = 25°C)

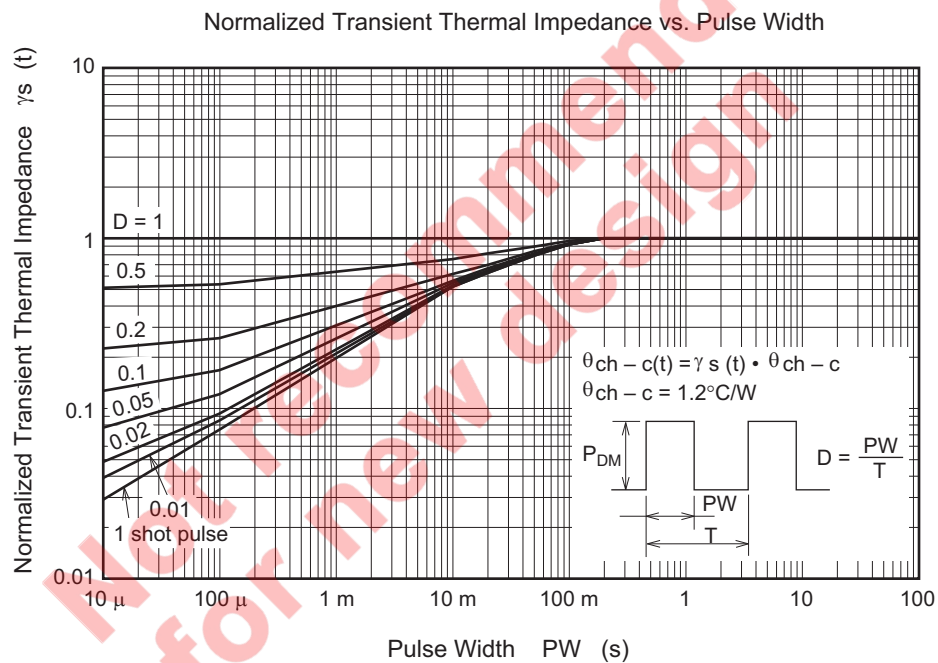
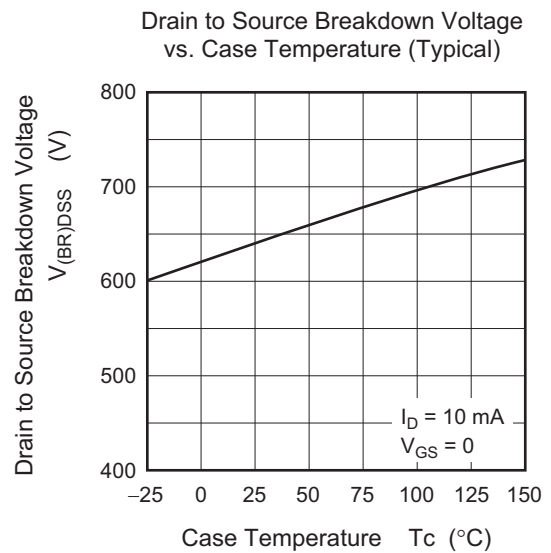
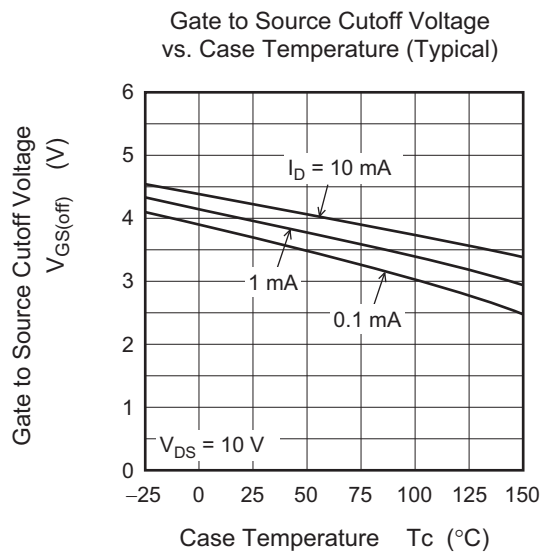
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	600	—	—	V	$I_D = 10 \text{ mA}$, $V_{GS} = 0$
Zero gate voltage drain current	I_{DSS}	—	—	1	mA	$V_{DS} = 600 \text{ V}$, $V_{GS} = 0$
Gate to source leak current	I_{GSS}	—	—	± 0.1	μA	$V_{GS} = +30\text{V}$, -20 V , $V_{DS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	3	—	5	V	$V_{DS} = 10 \text{ V}$, $I_D = 1 \text{ mA}$
Static drain to source on state resistance	$R_{DS(on)}$	—	0.23	0.29	Ω	$I_D = 8 \text{ A}$, $V_{GS} = 10 \text{ V}$ ^{Note4}
	$R_{DS(on)}$	—	0.57	—	Ω	Ta = 150°C $I_D = 8 \text{ A}$, $V_{GS} = 10 \text{ V}$ ^{Note4}
Gate resistance	R_g	—	2	—	Ω	f = 1 MHz $V_{DS} = 25 \text{ V}$, $V_{GS} = 0$
Input capacitance	C_{iss}	—	988	—	pF	$V_{DS} = 25 \text{ V}$
Output capacitance	C_{oss}	—	1415	—	pF	$V_{GS} = 0$
Reverse transfer capacitance	C_{rss}	—	5.1	—	pF	f = 100kHz
Turn-on delay time	$t_{d(on)}$	—	15	—	ns	$I_D = 8 \text{ A}$
Rise time	t_r	—	19	—	ns	$V_{GS} = 10 \text{ V}$
Turn-off delay time	$t_{d(off)}$	—	30	—	ns	$R_L = 37.5 \Omega$
Fall time	t_f	—	17	—	ns	$R_g = 10 \Omega$ ^{Note4}
Total gate charge	Q_g	—	18	—	nC	$V_{DD} = 480 \text{ V}$
Gate to source charge	Q_{gs}	—	7	—	nC	$V_{GS} = 10 \text{ V}$
Gate to drain charge	Q_{gd}	—	6	—	nC	$I_D = 16 \text{ A}$ ^{Note4}
Body-drain diode forward voltage	V_{DF}	—	1.0	1.6	V	$I_F = 16 \text{ A}$, $V_{GS} = 0$ ^{Note4}
Body-drain diode reverse recovery time	t_{rr}	—	363	—	ns	$I_F = 16 \text{ A}$
Body-drain diode reverse recovery current	I_{rr}	—	23	—	A	$V_{GS} = 0$
Body-drain diode reverse recovery charge	Q_{rr}	—	4.9	—	μC	$di_F/dt = 100 \text{ A}/\mu\text{s}$ ^{Note4}

Notes: 4. Pulse test

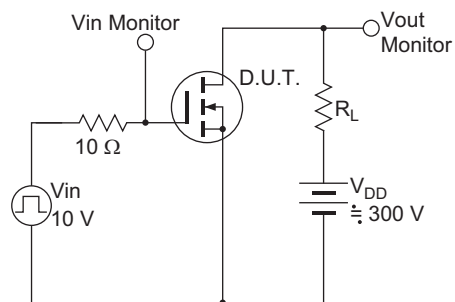
Main Characteristics



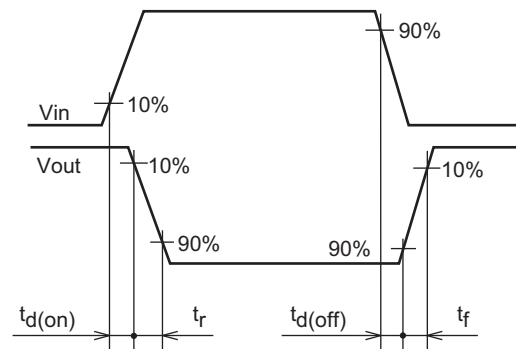




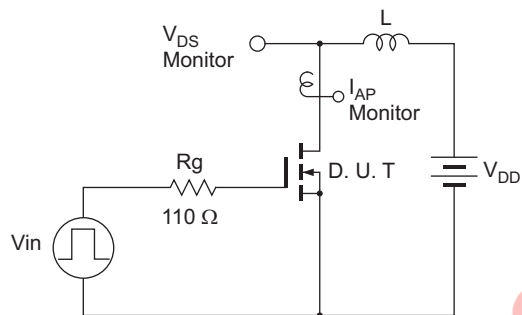
Switching Time Test Circuit



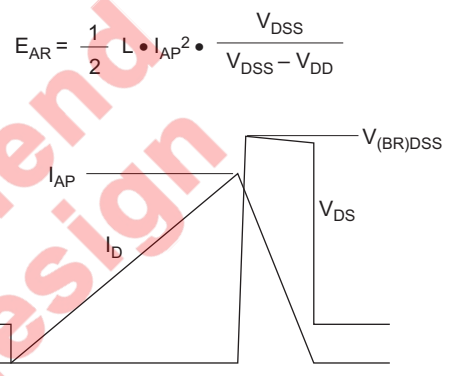
Waveform



Avalanche Test Circuit



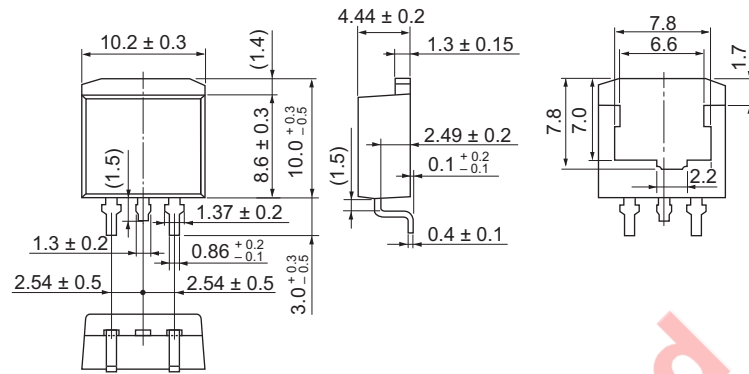
Avalanche Waveform



Package Dimension

Package Name	JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
LDBAK(S)-(1)	SC-83	PRSS0004AE-B	LDBAK(S)-(1) / LDBAK(S)-(1)V	1.30g

Unit: mm



Ordering Information

Orderable Part No.	Quantity	Shipping Container
RJK60S4DPE-00#J3	1000 pcs	Taping

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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: +60-3-7955-9390, Fax: +60-3-7955-9510

Renesas Electronics Korea Co., Ltd.

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