

# RJK2062JPK

200 V - 80 A - N Channel Power MOS FET  
High Speed Power Switching

R07DS0488EJ0100

Rev.1.00

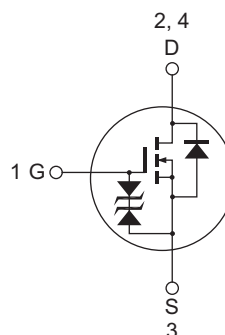
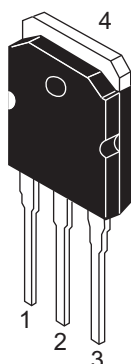
Sep 19, 2012

## Features

- For Automotive applications
- AEC-Q101 compliant
- Low on-resistance :  $R_{DS(on)} = 17 \text{ m}\Omega$  typ.
- Low input capacitance :  $C_{iss} = 6800 \text{ pF}$  typ

## Outline

RENESAS Package code: PRSS0004ZE-A  
(Package name: TO-3P)



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	$V_{DSS}$	200	V
Gate to source voltage	$V_{GSS}$	$\pm 20$	V
Drain current	$I_D$	80	A
Drain peak current	$I_D$ (pulse) <sup>Note1</sup>	160	A
Body-Drain diode reverse Drain current	$I_{DR}$	80	A
Body-Drain diode reverse Drain peak current	$I_{DR}$ (pulse) <sup>Note1</sup>	160	A
Avalanche current	$I_{AP}$ <sup>Note2</sup>	40	A
Avalanche energy	$E_{AR}$ <sup>Note2</sup>	107	mJ
Channel dissipation	$P_{ch}$ <sup>Note3</sup>	180	W
Channel temperature	$T_{ch}$ <sup>Note4</sup>	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  $\theta_{ch-c}$ :  $0.833^\circ\text{C/W}$

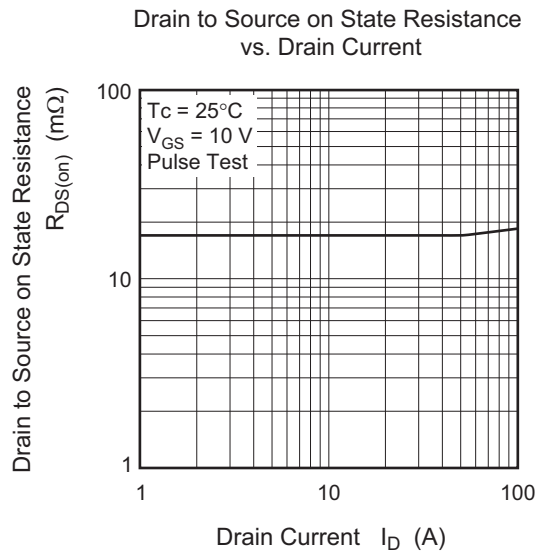
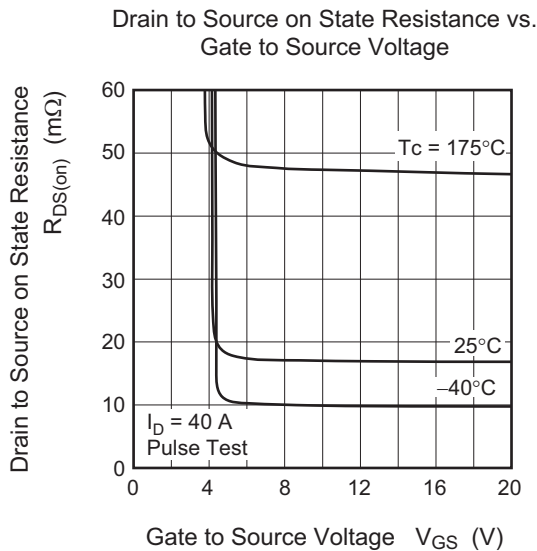
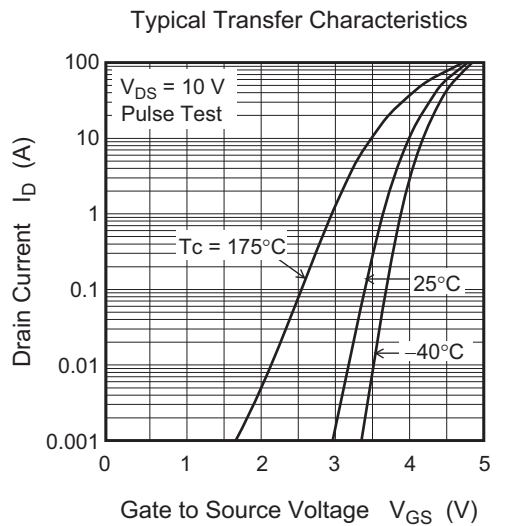
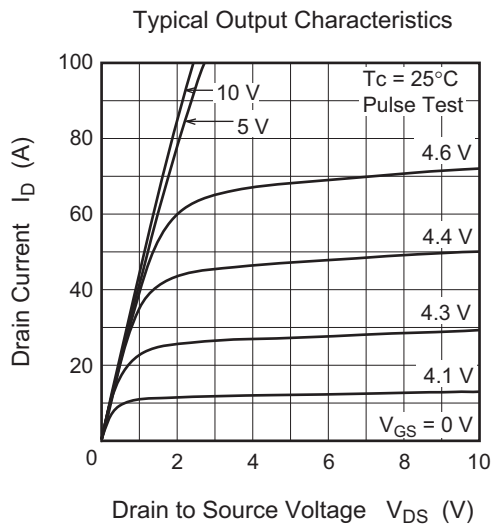
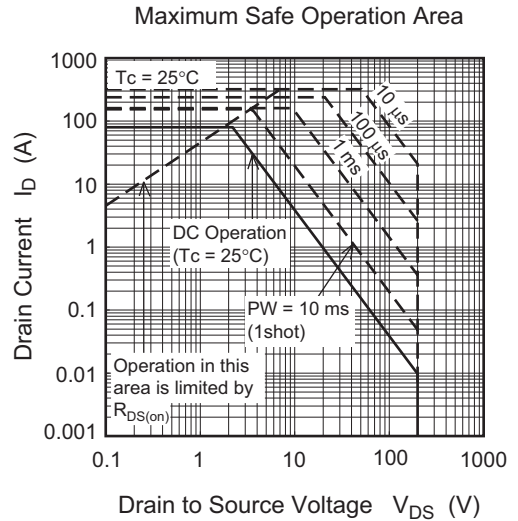
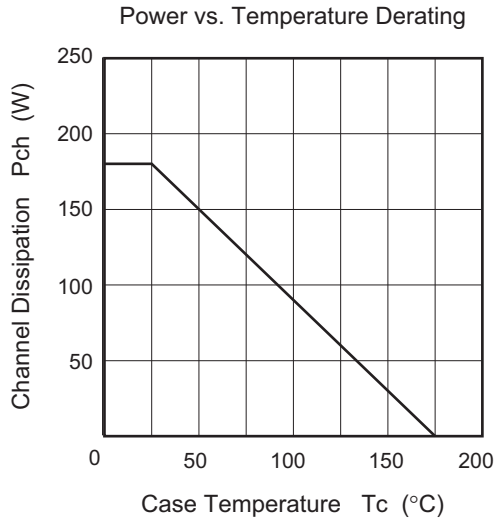
## Electrical Characteristics

(Ta = 25°C)

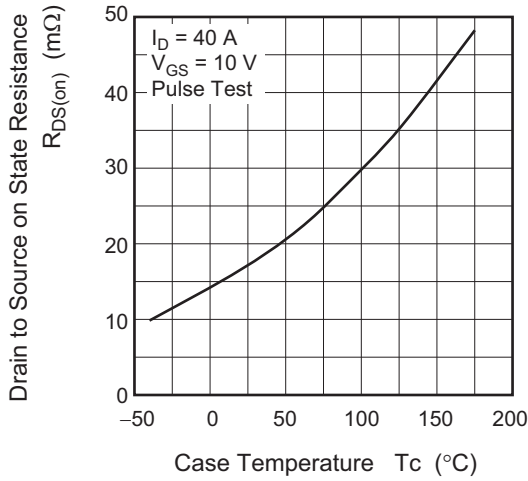
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Gate to source leak current	$I_{GSS}$	—	—	±10	μA	$V_{GS} = \pm 20\text{ V}, V_{DS} = 0$
Zero gate voltage drain current	$I_{DSS}$	—	—	10	μA	$V_{DS} = 200\text{ V}, V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	2.5	—	3.5	V	$I_D = 1\text{ mA}, V_{DS} = 10\text{ V}$
Static drain to source on state resistance	$R_{DS(on)}$	—	17	22	mΩ	$I_D = 40\text{ A}, V_{GS} = 10\text{ V}$ <sup>Note5</sup>
Input capacitance	$C_{iss}$	—	6800	—	pF	$V_{DS} = 10\text{ V}, V_{GS} = 0,$ $f = 1\text{ MHz}$
Output capacitance	$C_{oss}$	—	1200	—	pF	
Reverse transfer capacitance	$C_{rss}$	—	190	—	pF	
Total gate charge	$Q_g$	—	95	—	nC	$V_{DD} = 25\text{ V}, V_{GS} = 10\text{ V},$ $I_D = 40\text{ A}$
Gate to source charge	$Q_{gs}$	—	28	—	nC	
Gate to drain charge	$Q_{gd}$	—	15	—	nC	
Turn-on delay time	$t_{d(on)}$	—	35	—	ns	$I_D = 40\text{ A}, R_L = 0.75\ \Omega,$ $V_{GS} = 10\text{ V}, R_G = 4.7\ \Omega$
Rise time	$t_r$	—	11	—	ns	
Turn-off delay time	$t_{d(off)}$	—	90	—	ns	
Fall time	$t_f$	—	8.5	—	ns	
Body-drain diode forward voltage	$V_{DF}$	—	0.9	1.17	V	$I_F = 80\text{ A}, V_{GS} = 0$ <sup>Note5</sup>
Body-drain diode reverse recovery time	$t_{rr}$	—	180	—	ns	$I_F = 80\text{ A}, V_{GS} = 0$ $di_F/dt = 100\text{ A}/\mu\text{s}$

Note: 5. Pulse test

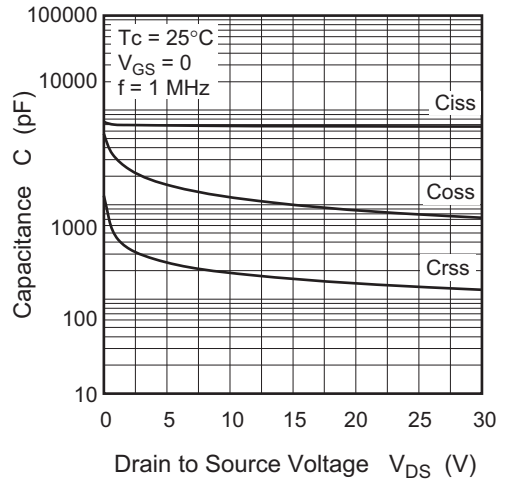
### Main Characteristics



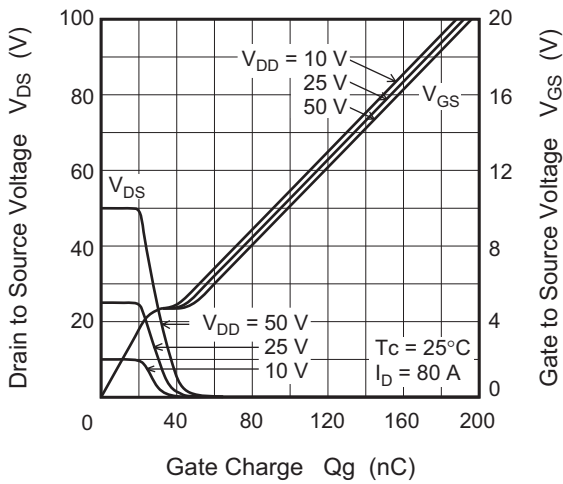
Drain to Source on State Resistance vs. Temperature



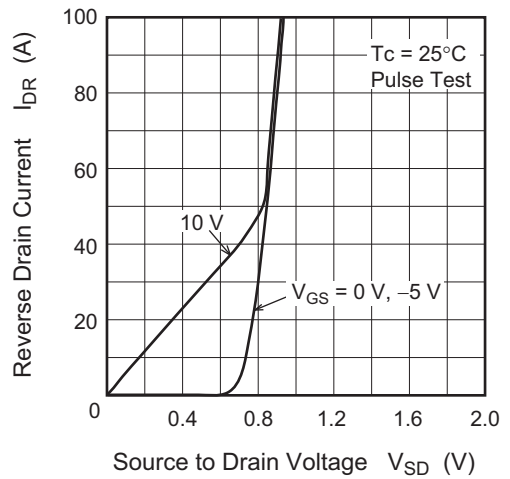
Typical Capacitance vs. Drain to Source Voltage



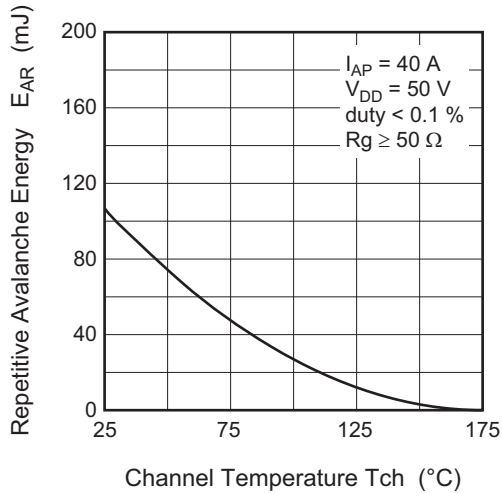
Dynamic Input Characteristics



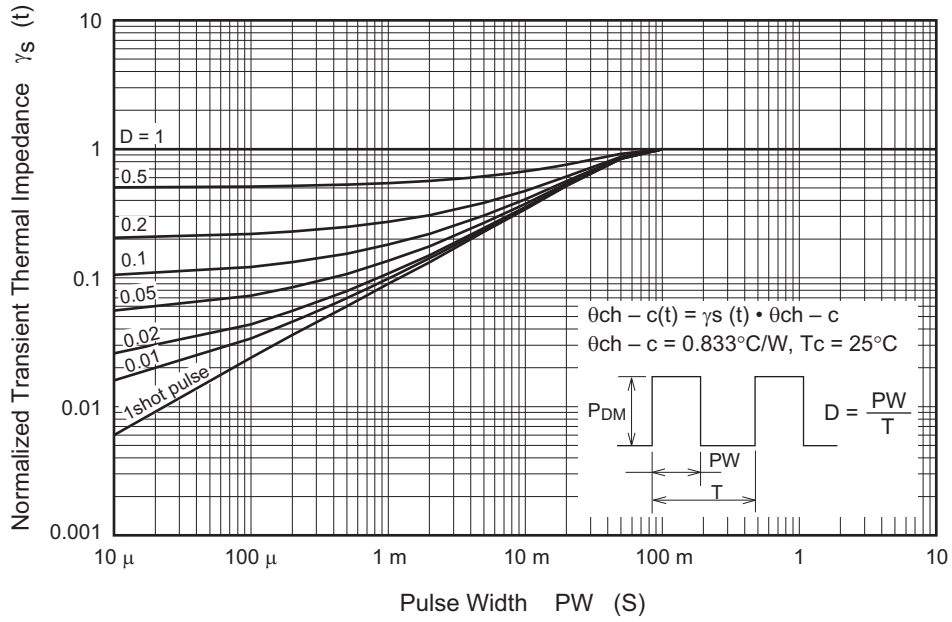
Reverse Drain Current vs. Source to Drain Voltage



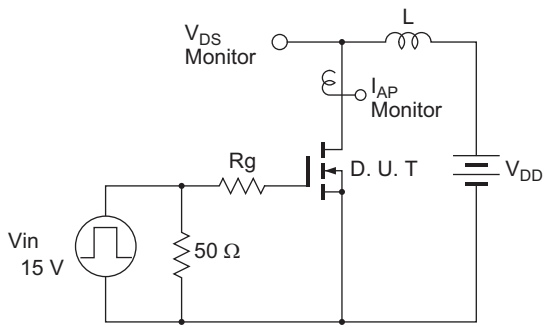
Maximum Avalanche Energy vs. Channel Temperature Derating



Normalized Transient Thermal Impedance vs. Pulse Width

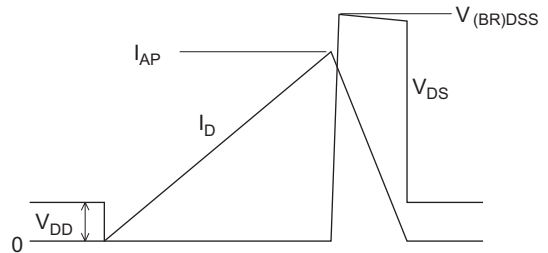


Avalanche Test Circuit

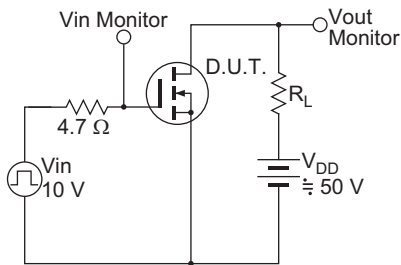


Avalanche Waveform

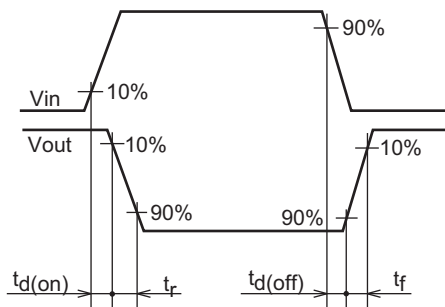
$$E_{AR} = \frac{1}{2} L \cdot I_{AP}^2 \cdot \frac{V_{DSS}}{V_{DSS} - V_{DD}}$$



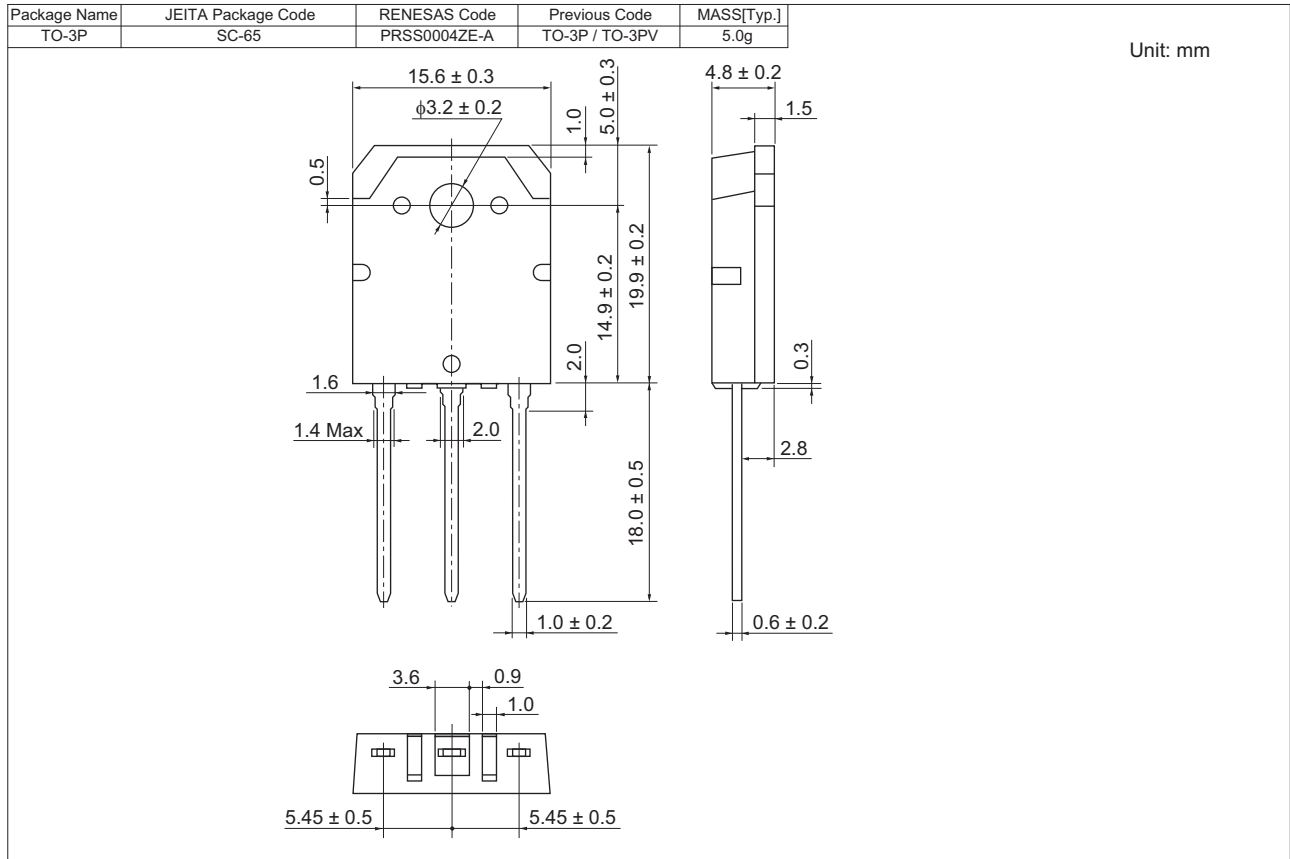
Switching Time Test Circuit



Waveform



### Package Dimensions



### Ordering Information

Orderable Part Number	Quantity	Shipping Container
RJK2062JPK-00-T0	360 pcs	Box (Tube)

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

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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

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

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