

RJH60F4DPK

Silicon N Channel IGBT High Speed Power Switching

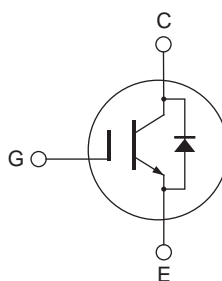
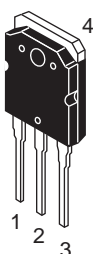
R07DS0235EJ0300
(Previous: REJ03G1835-0200)
Rev.3.00
Nov 17, 2010

Features

- Low collector to emitter saturation voltage
 $V_{CE(sat)} = 1.4 \text{ V typ. (at } I_C = 30 \text{ A, } V_{GE} = 15 \text{ V, } T_a = 25^\circ\text{C)}$
- Built in fast recovery diode in one package
- Trench gate and thin wafer technology
- High speed switching
 $t_f = 80 \text{ ns typ. (at } I_C = 30 \text{ A, } V_{CE} = 400 \text{ V, } V_{GE} = 15 \text{ V, } R_g = 5 \Omega, T_a = 25^\circ\text{C, inductive load)}$

Outline

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



1. Gate
2. Collector
3. Emitter
4. Collector (Flange)

Absolute Maximum Ratings

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

Item	Symbol	Ratings	Unit	
Collector to emitter voltage	V_{CES}	600	V	
Gate to emitter voltage	V_{GES}	± 30	V	
Collector current	$T_c = 25^\circ\text{C}$	I_C ^{Note1}	60	A
	$T_c = 100^\circ\text{C}$	I_C ^{Note1}	30	A
Collector peak current	$i_C(\text{peak})$ ^{Note1}	120	A	
Collector to emitter diode forward peak current	$i_{DF}(\text{peak})$ ^{Note2}	100	A	
Collector dissipation	P_C	235.8	W	
Junction to case thermal impedance	θ_{j-c}	0.53	$^\circ\text{C/W}$	
Junction temperature	T_j	150	$^\circ\text{C}$	
Storage temperature	T_{stg}	-55 to +150	$^\circ\text{C}$	

- Notes: 1. Pulse width limited by safe operating area.
2. $PW \leq 5 \mu\text{s}$, duty cycle $\leq 1\%$

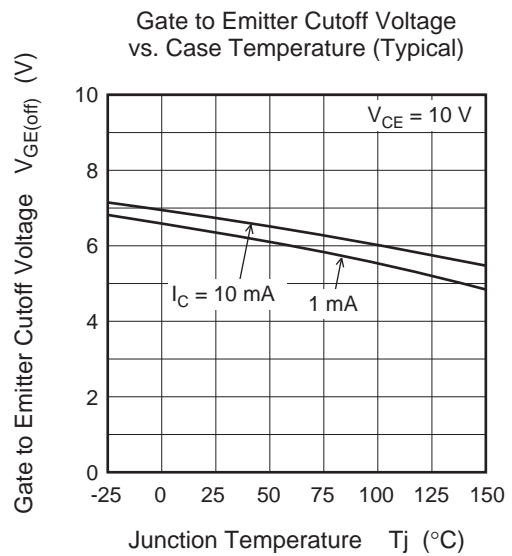
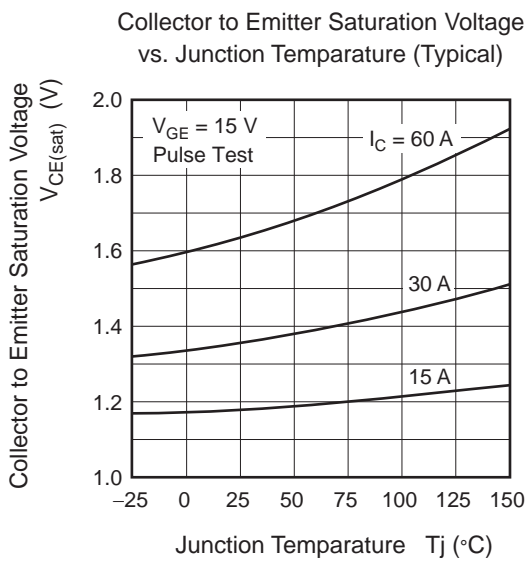
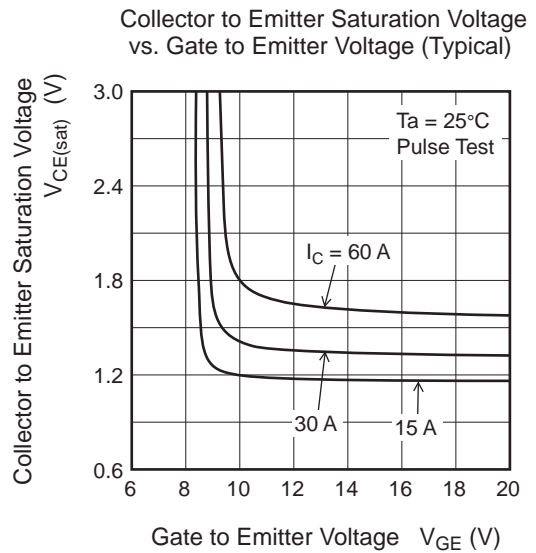
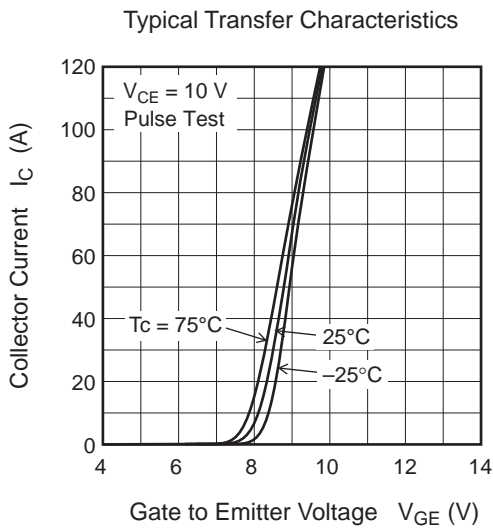
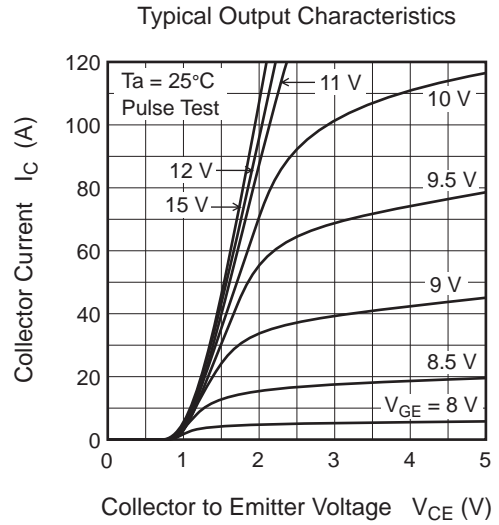
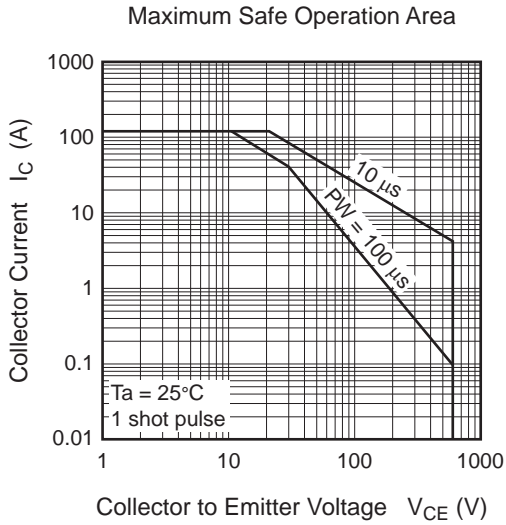
Electrical Characteristics

(T_j = 25°C)

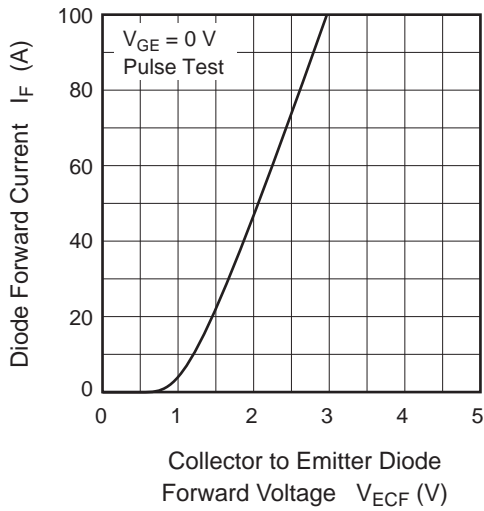
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Zero gate voltage collector current	I _{CES}	—	—	100	μA	V _{CE} = 600V, V _{GE} = 0
Gate to emitter leak current	I _{GES}	—	—	±1	μA	V _{GE} = ±30 V, V _{CE} = 0
Gate to emitter cutoff voltage	V _{GE(off)}	4	—	8	V	V _{CE} = 10V, I _C = 1 mA
Collector to emitter saturation voltage	V _{CE(sat)}	—	1.4	1.82	V	I _C = 30 A, V _{GE} = 15V ^{Note3}
	V _{CE(sat)}	—	1.7	—	V	I _C = 60 A, V _{GE} = 15V ^{Note3}
Input capacitance	C _{ies}	—	1900	—	pF	V _{CE} = 25 V
Output capacitance	C _{oes}	—	93	—	pF	V _{GE} = 0 V
Reverse transfer capacitance	C _{res}	—	33	—	pF	f = 1 MHz
Switching time	t _{d(on)}	—	45	—	ns	I _C = 30 A, V _{CE} = 400 V, V _{GE} = 15 V R _g = 5 Ω ^{Note3} Inductive load
	t _r	—	150	—	ns	
	t _{d(off)}	—	85	—	ns	
	t _f	—	80	—	ns	
C-E diode forward voltage	V _{ECF1}	—	1.6	2.1	V	I _F = 20 A ^{Note3}
	V _{ECF2}	—	1.8	—	V	I _F = 40 A ^{Note3}
C-E diode reverse recovery time	t _{rr}	—	140	—	ns	I _F = 20 A di _F /dt = 100 A/μs

Notes: 3. Pulse test

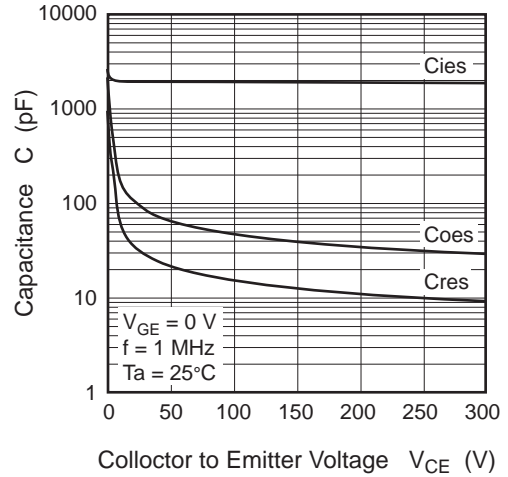
Main Characteristics



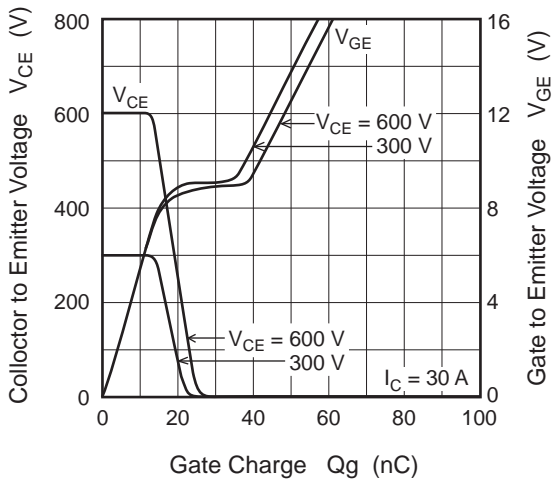
Collector to Emitter Diode Forward Voltage vs. Diode Forward Current Characteristics (Typical)



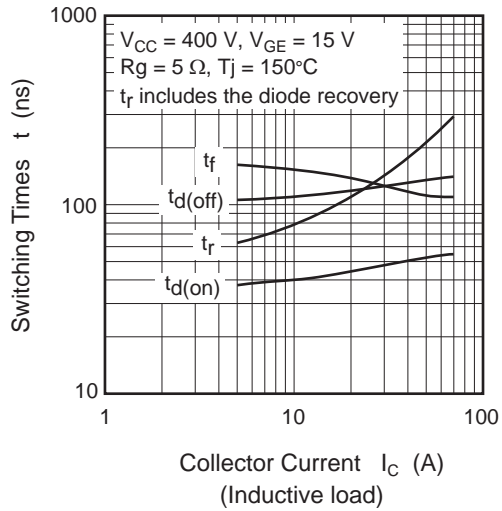
Typical Capacitance vs. Collector to Emitter Voltage



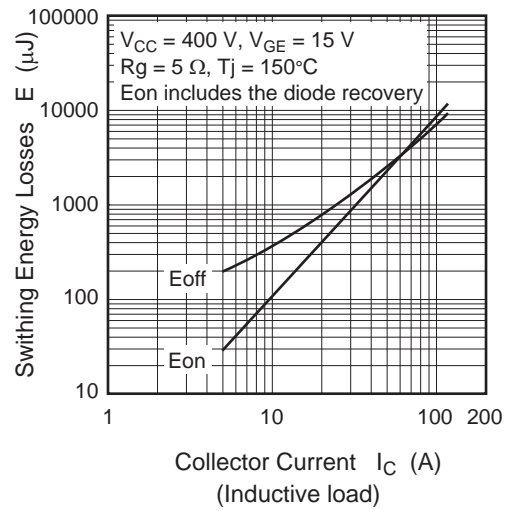
Dynamic Input Characteristics (Typical)



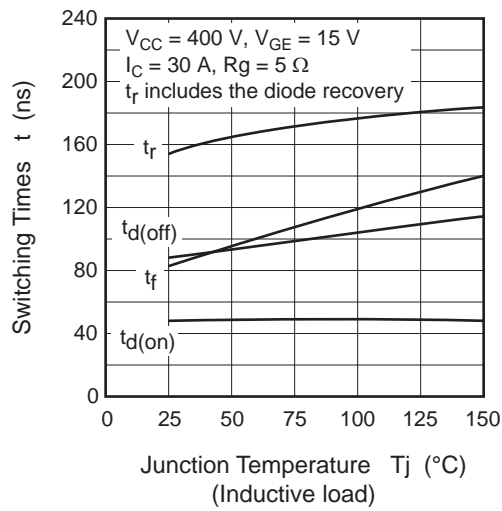
Switching Characteristics (Typical) (1)



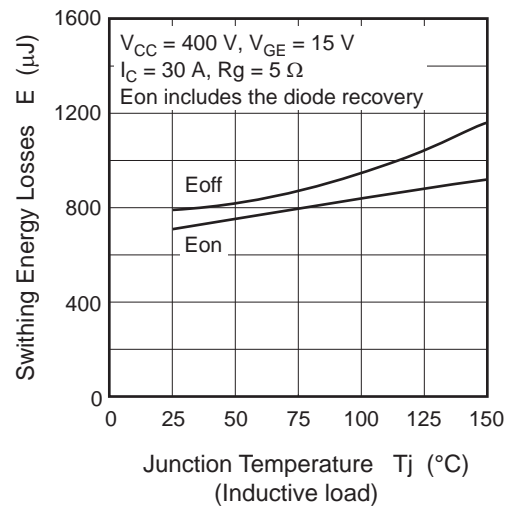
Switching Characteristics (Typical) (2)

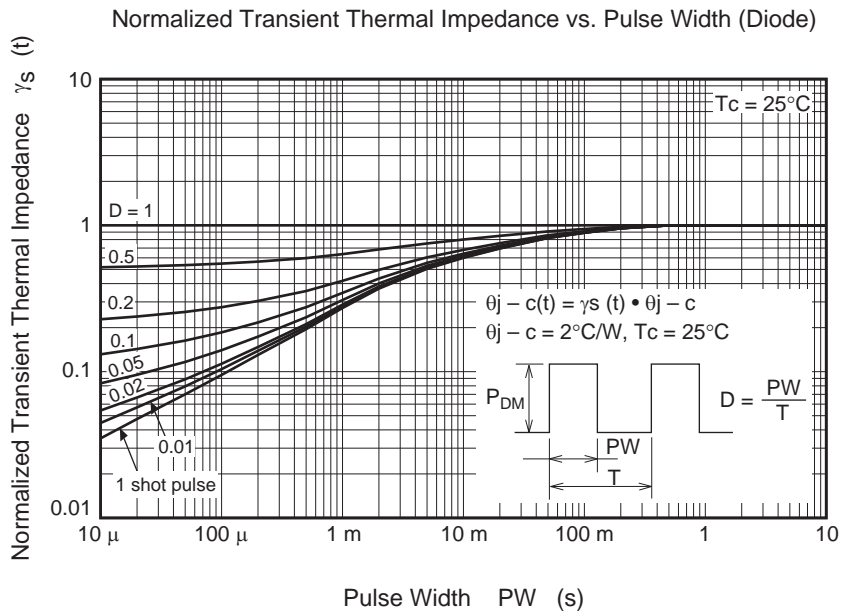
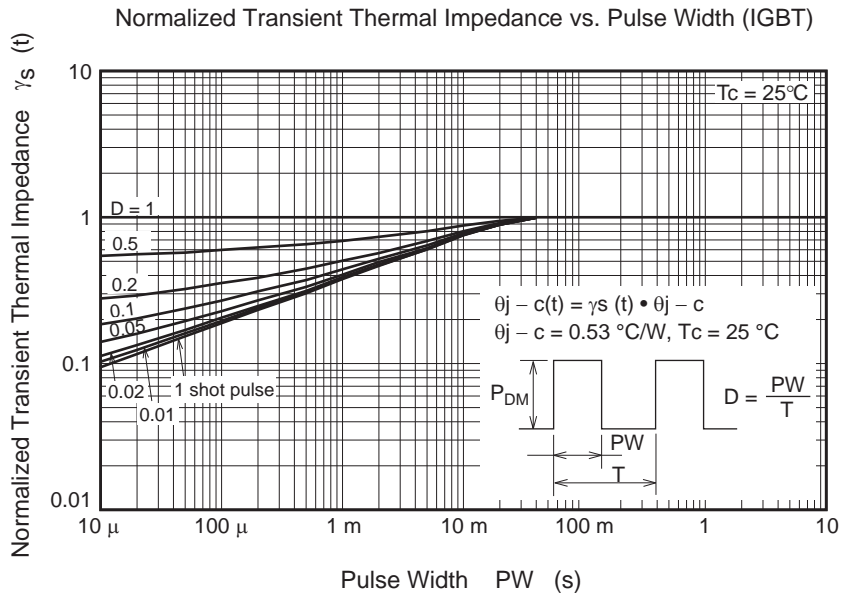


Switching Characteristics (Typical) (3)

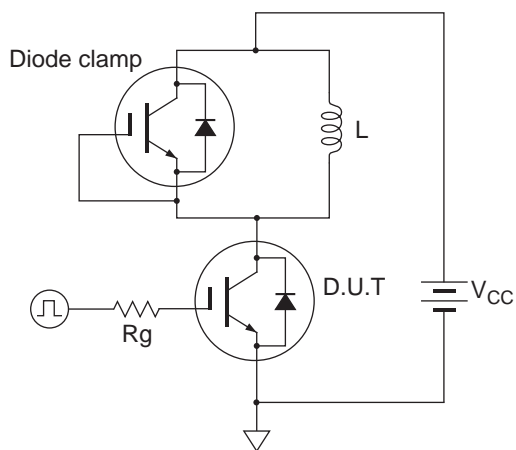


Switching Characteristics (Typical) (4)

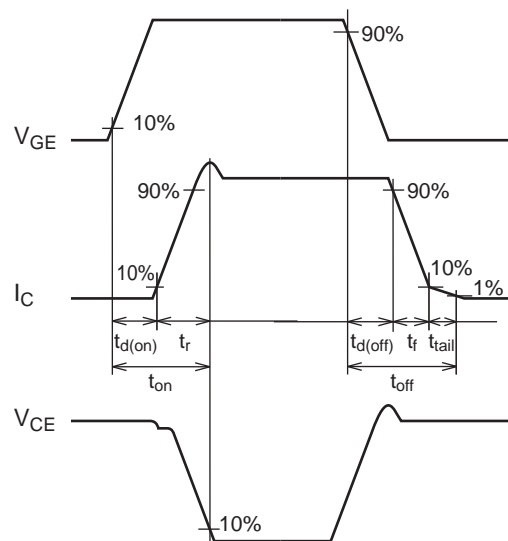




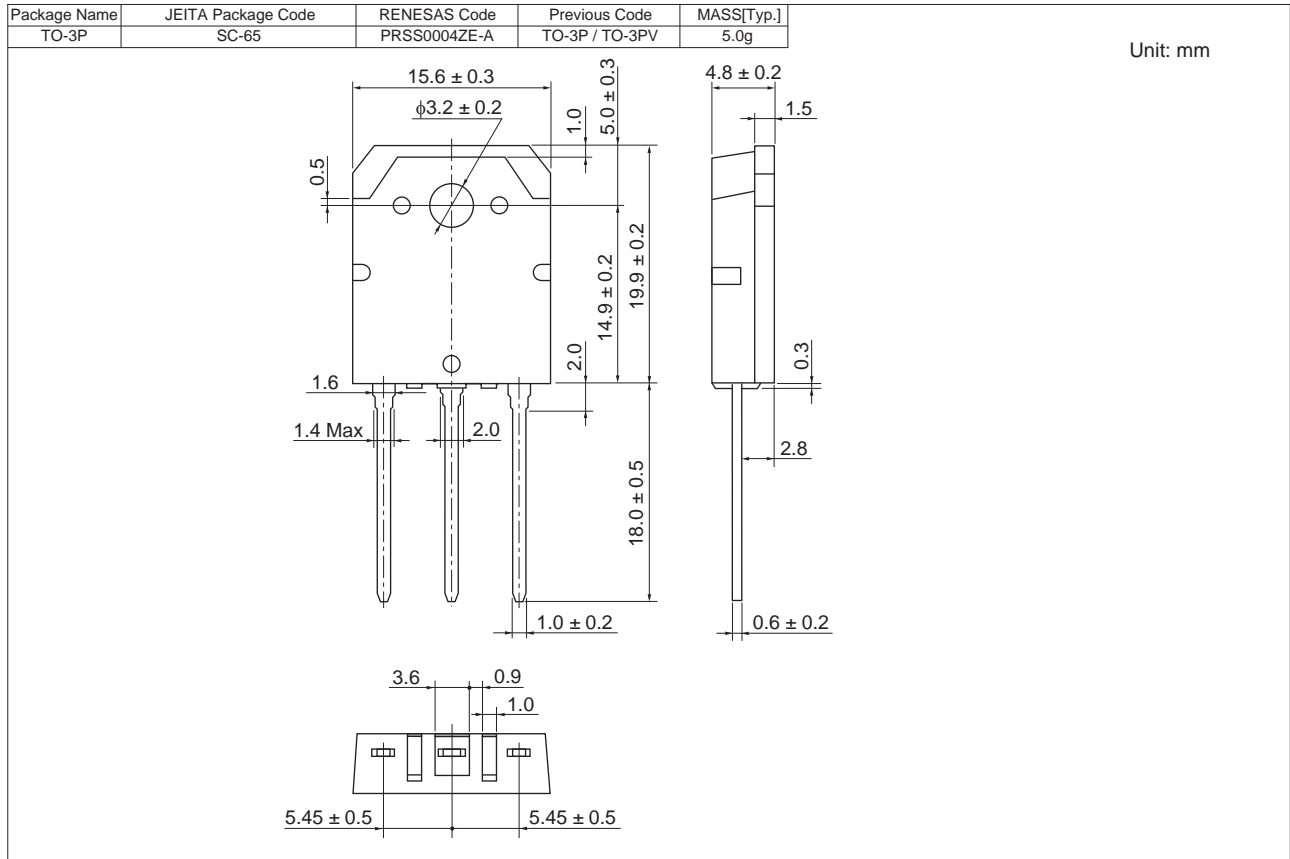
Switching Time Test Circuit



Waveform



Package Dimensions



Ordering Information

Orderable Part Number	Quantity	Shipping Container
RJH60F4DPK-00-T0	360 pcs	Box (Tube)

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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: +44-1628-585-100, Fax: +44-1628-585-900

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.
7F, No. 363 Fu Shing North Road Taipei, Taiwan
Tel: +886-2-8175-9600, Fax: +886-2-8175-9670

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1 HarbourFront Avenue, #06-10, Keppel Bay Tower, Singapore 098632
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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: +60-3-7955-9390, Fax: +60-3-7955-9510

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Тел: +7 (812) 336 43 04 (многоканальный)

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