CR5AS-12A

Tyhristor
Medium Power Use

R07DS0332EJ0200
Rev.2.00
Sep 06, 2011

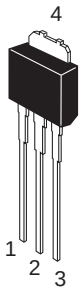
Features

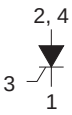
- $I_{T\,(AV)}$: 5 A
- V_{DRM} : 600 V
- I_{GT} : 100 μA
- Non-Insulated Type
- Plannar Type

Outline

RENESAS Package code: PRSS0004ZG-A (Package name: MP-3A)

PRSS0004ZD-D (Package name: DPAK(L)-(3))





1. Cathode
2. Anode
3. Gate
4. Anode

Applications

Switching mode power supply, regulator for autocycle, protective circuit for TV sets, VCRs, and printers, igniter for autocycle, electric tool, strobe flasher, and other general purpose control applications

Maximum Ratings

Parameter	Symbol	Voltage class	Unit
		12	
Repetitive peak reverse voltage	V_{RRM}	600	V
Non-repetitive peak reverse voltage	V_{RSM}	720	V
DC reverse voltage	$V_{R\,(DC)}$	480	V
Repetitive peak off-state voltage[Note1]	V_{DRM}	600	V
DC off-state voltage[Note1]	$V_{D\,(DC)}$	480	V

Notes: 1. With gate to cathode resistance R_{GK} = 220 Ω.

Parameter	Symbol	Ratings	Unit	Conditions
RMS on-state current	$I_{T\ (RMS)}$	7.8	A	
Average on-state current	$I_{T\ (AV)}$	5	A	Commercial frequency, sine half wave 180° conduction, Tc = 88°C
Surge on-state current	I_{TSM}	90	A	60Hz sine half wave 1 full cycle, peak value, non-repetitive
I^2t for fusing	I^2t	33	A^2s	Value corresponding to 1 cycle of half wave 60Hz, surge on-state current
Peak gate power dissipation	P_{GM}	0.5	W	
Average gate power dissipation	$P_{G\ (AV)}$	0.1	W	
Peak gate forward voltage	V_{FGM}	6	V	
Peak gate reverse voltage	V_{RGM}	6	V	
Peak gate forward current	I_{FGM}	0.3	A	
Junction temperature	Tj	– 40 to +125	°C	
Storage temperature	Tstg	– 40 to +125	°C	
Mass	—	0.32	g	MP-3A, Typical value
	—	0.36	g	DPAK(L)-(3), Typical value

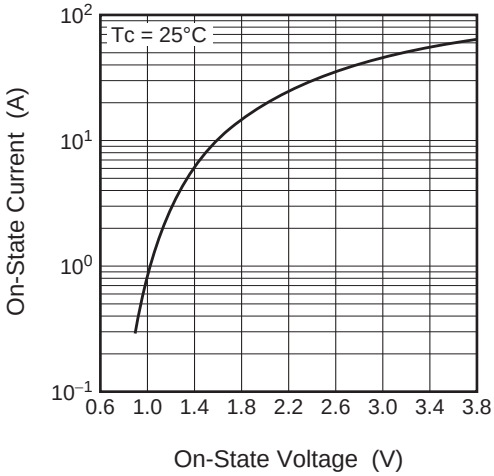
Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test conditions
Repetitive peak reverse current	I_{RRM}	—	—	1.0	mA	Tj = 125°C, V_{RRM} applied, R_{GK} = 220 Ω
Repetitive peak off-state current	I_{DRM}	—	—	1.0	mA	Tj = 125°C, V_{DRM} applied, R_{GK} = 220 Ω
On-state voltage	V_{TM}	—	—	1.8	V	Tc = 25°C, I_{TM} = 15 A, instantaneous value
Gate trigger voltage	V_{GT}	—	—	0.8	V	Tj = 25°C, V_D = 6 V, I_T = 0.1 A
Gate non-trigger voltage	V_{GD}	0.1	—	—	V	Tj = 125°C, V_D = 1/2 V_{DRM}, R_{GK} = 220 Ω
Gate trigger current	I_{GT}	1	—	100	μA	Tj = 25°C, V_D = 6 V, I_T = 0.1 A
Holding current	I_H	—	3.5	—	mA	Tj = 25°C, V_D = 12 V, R_{GK} = 220 Ω
Thermal resistance	$R_{th\ (j-c)}$	—	—	3.0	°C/W	Junction to case[Note2]

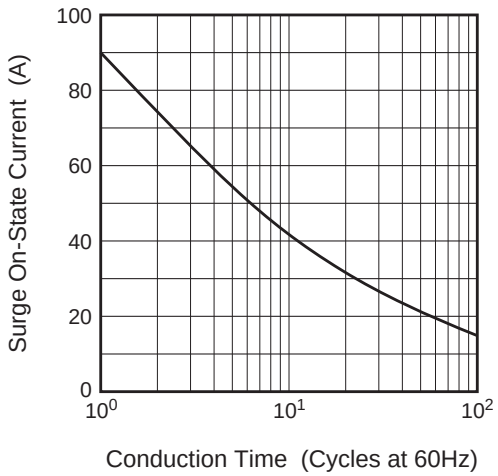
Notes: 2. The measurement point for case temperature is at anode tab.

Performance Curves

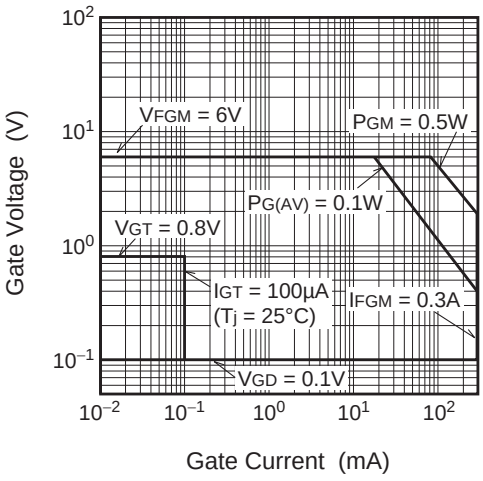
Maximum On-State Characteristics



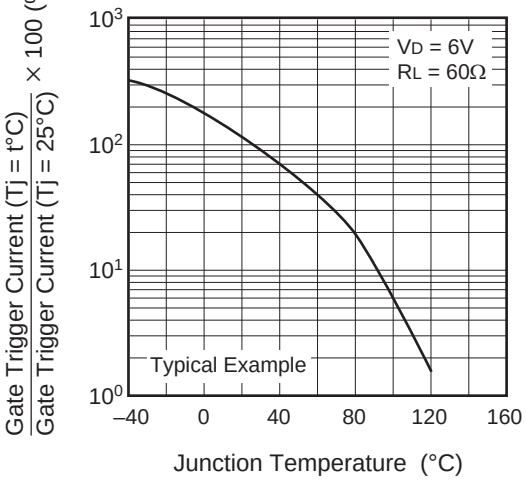
Rated Surge On-State Current



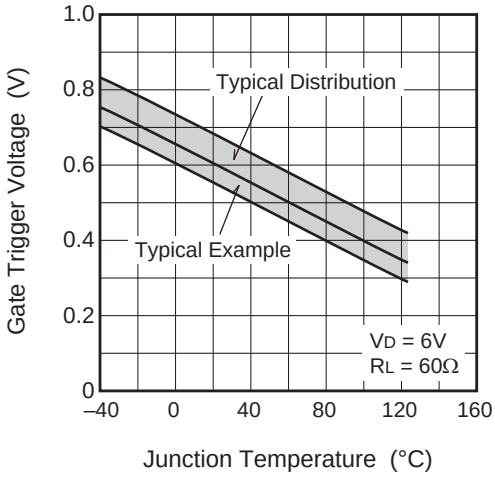
Gate Characteristics



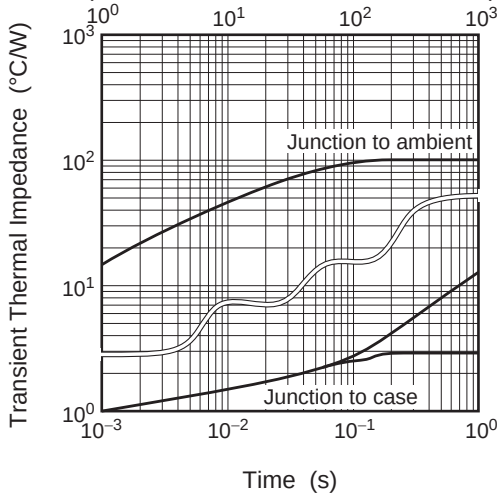
Gate Trigger Current vs. Junction Temperature



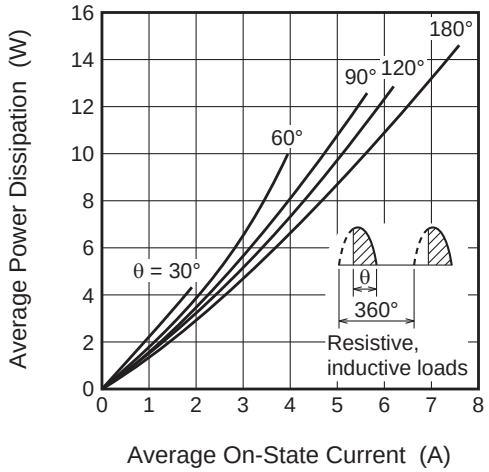
Gate Trigger Voltage vs. Junction Temperature



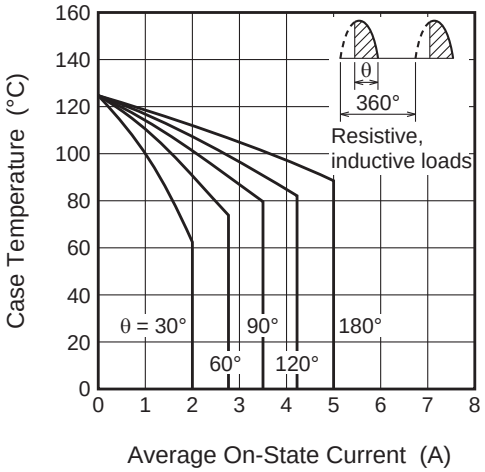
Maximum Transient Thermal Impedance Characteristics (Junction to case, Junction to ambient)



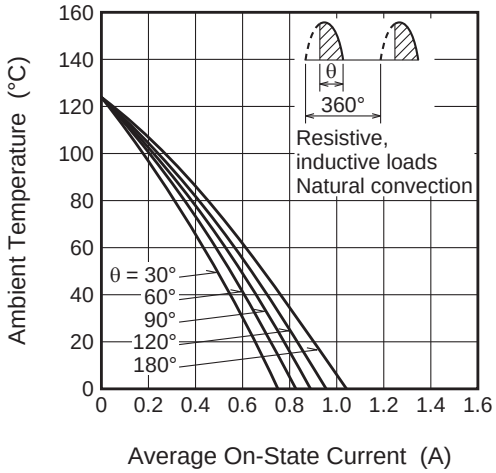
Maximum Average Power Dissipation
(Single-Phase Half Wave)



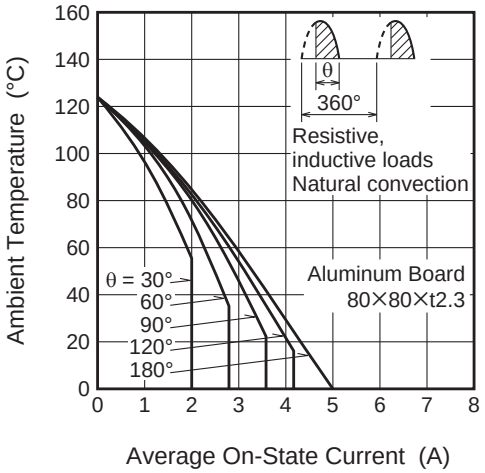
Allowable Case Temperature vs.
Average On-State Current
(Single-Phase Half Wave)



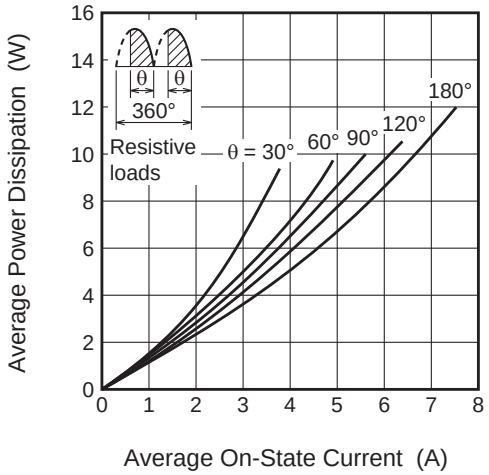
Allowable Ambient Temperature vs.
Average On-State Current
(Single-Phase Half Wave)



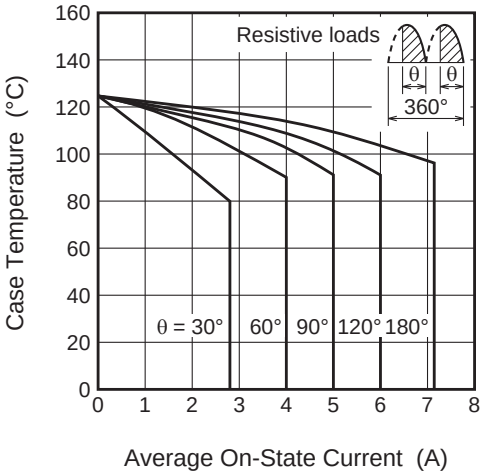
Allowable Ambient Temperature vs.
Average On-State Current
(Single-Phase Half Wave)



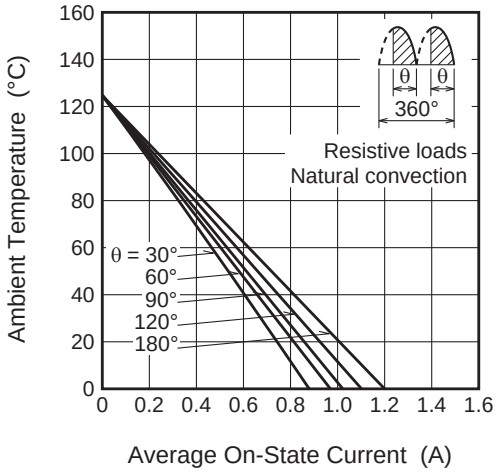
Maximum Average Power Dissipation
(Single-Phase Full Wave)



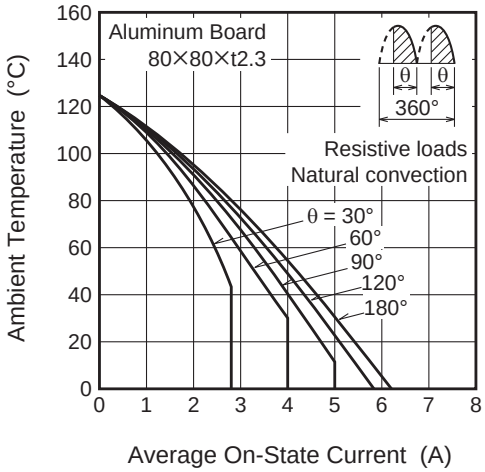
Allowable Case Temperature vs.
Average On-State Current
(Single-Phase Full Wave)



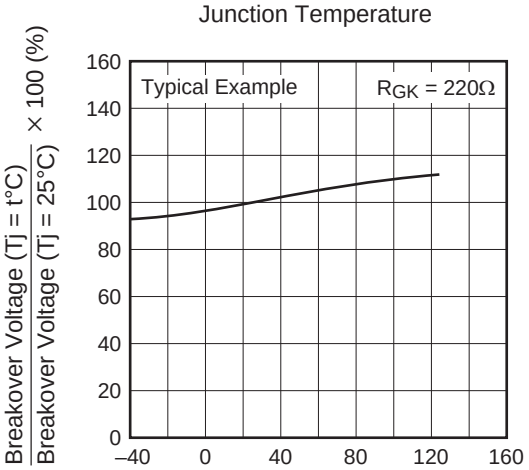
Allowable Ambient Temperature vs.
Average On-State Current
(Single-Phase Full Wave)



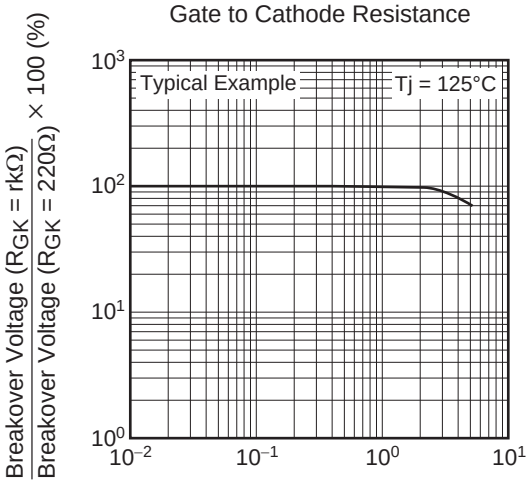
Allowable Ambient Temperature vs.
Average On-State Current
(Single-Phase Full Wave)



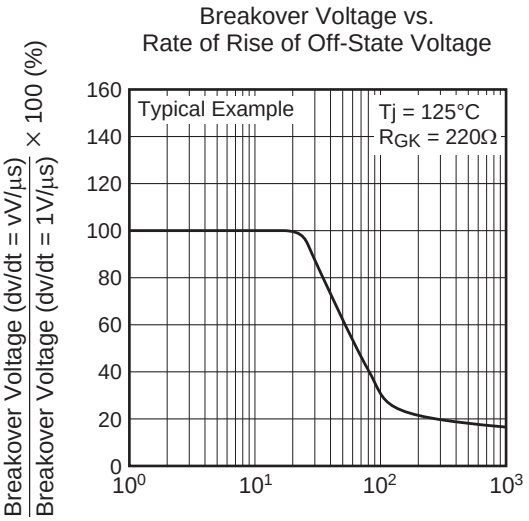
Breakover Voltage vs.
Junction Temperature



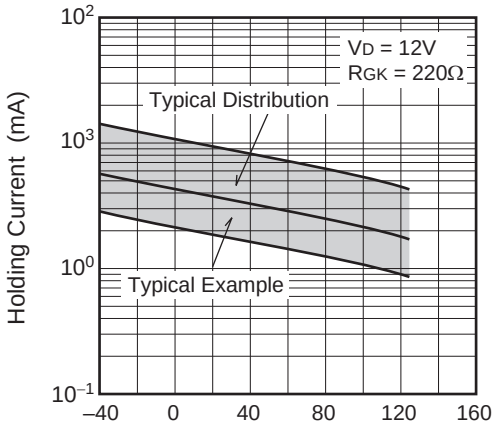
Breakover Voltage vs.
Gate to Cathode Resistance



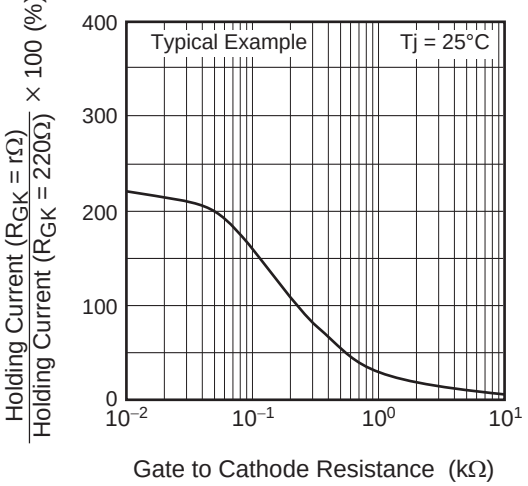
Breakover Voltage vs.
Rate of Rise of Off-State Voltage



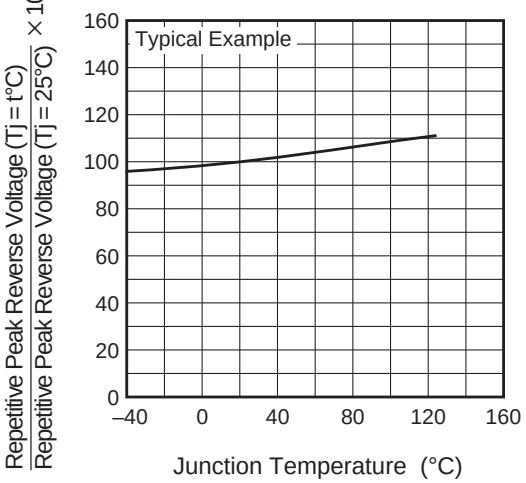
Holding Current vs.
Junction Temperature



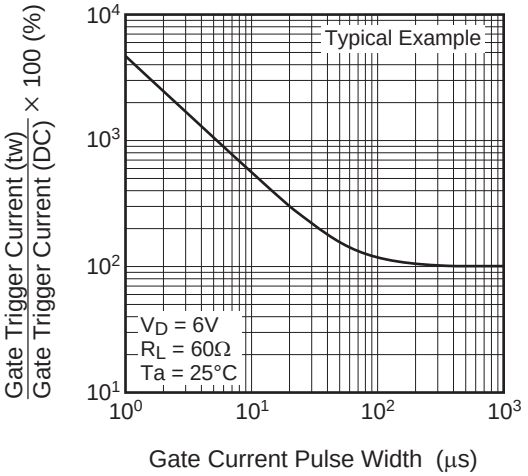
Holding Current vs.
Gate to Cathode Resistance



Repetitive Peak Reverse Voltage vs.
Junction Temperature



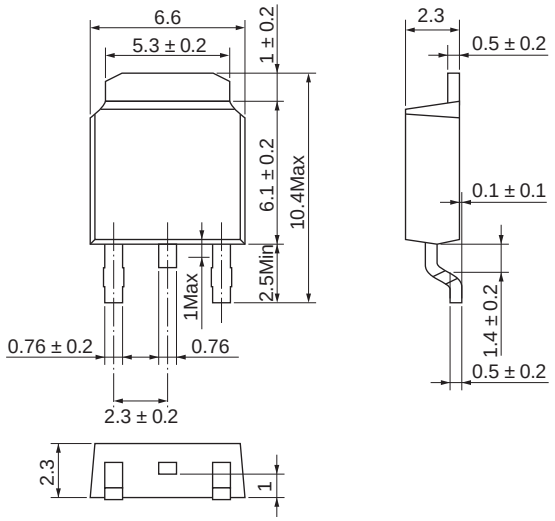
Gate Trigger Current vs.
Gate Current Pulse Width



Package Dimensions

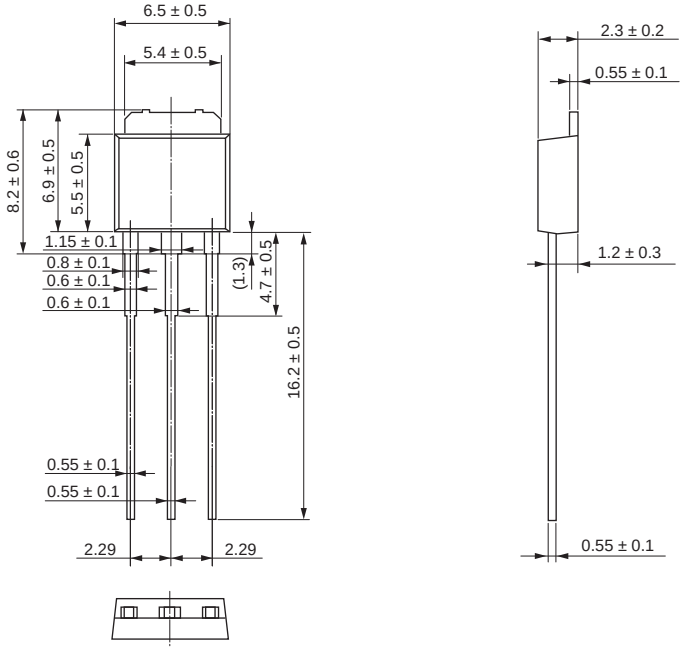
Package Name	JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
MP-3A	SC-63	PRSS0004ZG-A	TMP3	0.32g

Unit: mm



Package Name	JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
DPAK(L)-(3)	—	PRSS0004ZD-D	DPAK(L)-(3)/DPAK(L)-(3)V	0.36g

Unit: mm



Ordering Information

Orderable Part Number	Packing	Quantity	Remark
CR5AS-12A#B00	Tube	75 pcs.	MP-3A package
CR5AS-12A-T13#B00	Embossed Tape	3000 pcs.	MP-3A package, Taping direction “T1”
CR5AS-12A-A1#B00	Tube	80 pcs.	DPAK(L)-(3) package

Note : Please confirm the specification about the shipping in detail.

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

Renesas Electronics Singapore Pte. Ltd.
1 harbourFront Avenue, #06-10, keppel Bay Tower, Singapore 098632
Tel: +65-6213-0200, Fax: +65-6278-8001

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

Colophon 1.1