

ISL9104xxxxEVAL1Z, ISL9104AxxxxEVAL1Z

Evaluation Board

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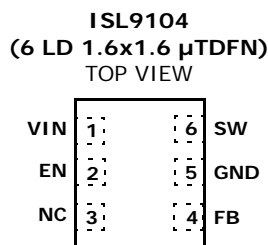
Description

The ISL9104 evaluation kit provides a test platform for the ISL9104 4.3MHz low quiescent current, high efficiency integrated step-down regulator. The ISL9104 is capable of delivering 500mA output current. For adjustable output option, the output voltage can be programmed through the external feedback resistors R1 and R2 on the board (on board the default output voltage is set to be 1.6V but it can be programmed for the range of 0.8V to V_{IN}). It is also offered in many fixed output voltage options including 1.2V, 1.5V, 1.8V, 2.0V, 2.5V, 2.8V and 3.3V.

The complete ISL9104 regulator is located at the center of the board. On the left side of the board are the connectors for the input power source (V_{IN} and GND). The output connectors are located on the right side (V_O and GND). Jumper JP1 allows the user to enable or disable the IC.

The evaluation board schematic, layout and bill of materials (BOM) can be found at the end of this application note.

Pinout



Features

- A Complete Evaluation Platform for ISL9104, ISL9104A
- Convenient Jumpers for Enable/Disable Operation
- Pb-Free (RoHS Compliant)

Recommended Equipment

The following instruments are recommended for testing:

- Power supplies: DC 6.5V/1A
- Electronic load: 0mA to 500mA
- Multimeters
- Function generator
- Oscilloscope
- Cables and wires

Recommended Operating Conditions

- Input voltage: from 2.7V or ($V_{OUT} + V_{DROP}$) whichever is higher to 6.0V. Here $V_{DROP} = I_{LOAD} * (r_{DSON_PFET} + R_L)$. r_{DSON_PFET} is the ON-resistance of the high-side power P-MOSFET and R_L is the DCR of the inductor.
- Loading current: 0mA ~ 500mA
- Ambient temperature range: -40°C ~ +85°C

NOTE: For the fixed output options, the output voltage is pre-set in the factory. For the adjustable output options, the output voltage can be programmed through the external resistor network from V_{OUT} to FB to GND, where $V_{OUT} = 0.8V * (1 + R2/R1)$, please refer to ISL9104, ISL9104A data sheet [FN6829](#) for recommended component values. On board, the default output voltage is set at 1.6V for the adjustable output options.

Setup Guide

1. Place shunt on JP1 at the position of "Enable" to enable the device. Put shunt on JP1 at the position of "Disable" will disable the device.
2. Connect the DC power supply between V_{IN} and GND connectors. Make sure the power supply has enough supply current capability. Do not adjust the V_{IN} higher than the recommended maximum supply voltage (6.0V).
3. Connect the output to a load (resistor or electronic load).
4. Turn on the input power supply and evaluate the device.

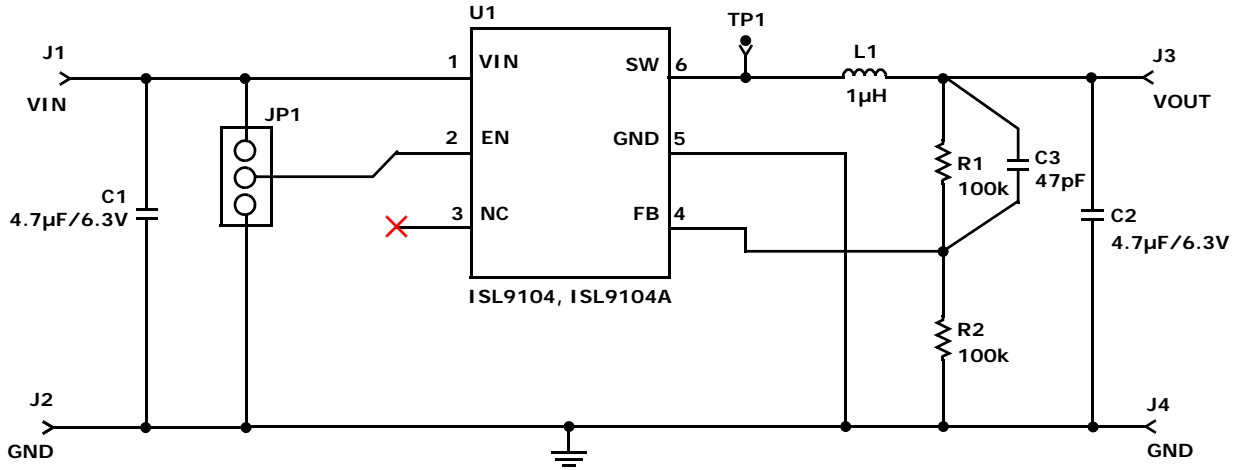
Ordering Information

PART NUMBER	DESCRIPTION
ISL9104IRUNEVAL1Z	Evaluation Board for ISL9104IRUNZ-T (3.3V)
ISL9104IRUJEVAL1Z	Evaluation Board for ISL9104IRUJZ-T (2.8V)
ISL9104IRUFEVAL1Z	Evaluation Board for ISL9104IRUFZ-T (2.5V)
ISL9104IRUDEVAL1Z	Evaluation Board for ISL9104IRUDZ-T (2.0V)
ISL9104IRUCEVAL1Z	Evaluation Board for ISL9104IRUCZ-T (1.8V)
ISL9104IRUBEVAL1Z	Evaluation Board for ISL9104IRUBZ-T (1.5V)
ISL9104IRUWEVAL1Z	Evaluation Board for ISL9104IRUWZ-T (1.2V)
ISL9104IRUAEVAL1Z	Evaluation Board for ISL9104IRUAZ-T (Adjustable)
ISL9104AIRUNEVAL1Z	Evaluation Board for ISL9104AIRUNZ-T (3.3V)

Ordering Information (Continued)

PART NUMBER	DESCRIPTION
ISL9104 AIRUJ EVAL1Z	Evaluation Board for ISL9104AIRUJZ-T (2.8V)
ISL9104 AIRUF EVAL1Z	Evaluation Board for ISL9104AIRUFZ-T (2.5V)
ISL9104 AIRUD EVAL1Z	Evaluation Board for ISL9104AIRUDZ-T (2.0V)
ISL9104 AIRUC EVAL1Z	Evaluation Board for ISL9104AIRUCZ-T (1.8V)
ISL9104 AIRUB EVAL1Z	Evaluation Board for ISL9104AIRUBZ-T (1.5V)
ISL9104 AIRUW EVAL1Z	Evaluation Board for ISL9104AIRUWZ-T (1.2V)
ISL9104 AIRUA EVAL1Z	Evaluation Board for ISL9104AIRUAZ-T (Adjustable)

Evaluation Board Schematic



NOTE: FOR THE FIXED OUTPUT VOLTAGE OPTIONS, R1 = 0, C3 AND R2 NOT POPULATED

FIGURE 1. ISL9104, ISL9104A EVALUATION BOARD SCHEMATIC

Bill of Materials (BOM)

ITEM	QTY	REFERENCE	PART DESCRIPTION	PCB FOOTPRINT	PART NUMBER	VENDOR	NOTE
1	1	U1	ISL9104 or ISL9104A	1.6x1.6 6 Ld μ TDFN		Intersil	
2	2	C1, C2	Capacitor, SMD, 4.7 μ F, 10%, X5R	0603	GRM188R60J475KE19D	Murata	
3	1	C3	Capacitor, SMD 47pF, 5%, X7R	0402	GRM36COG470J050AQ	Murata	Only populated for boards with part numbers
4	1	R1	Resistor, SMD, 100k Ω , 1%, 0.1W	0402	ERJ2RKF1003	Panasonic	ISL9104IRUAEVAL1Z and ISL9104AIRUAEVAL1Z. For boards with other part numbers, it is unpopulated.
5	1	R1	Resistor, SMD, 0 Ω	0402	Generic	Generic	Populated for all boards with other part numbers EXCEPT ISL9104IRUAEVAL1Z and ISL9104AIRUAEVAL1Z
6	1	R2	Resistor, SMD, 100k Ω , 1%	0402	ERJ2RKF1003	Panasonic	Only populated for boards with part numbers ISL9104IRUAEVAL1Z and ISL9104AIRUAEVAL1Z. For boards with other part numbers, it is unpopulated.
7	1	L1	Inductor, 1 μ H		L1207C1R0MPWS	KEMET	
8	4	VIN, VO, GND(x2)	Connector	-	3156-1-00-15-00-00-08-0	Mill-Max	
9	1	TP1	Scope Probe Test Point	-	131503100	Tektronix	Not populated
10	1	JP1	Connect Header, 1X3	-	68000-236-1X3	BERG/FCI	

PCB Layout

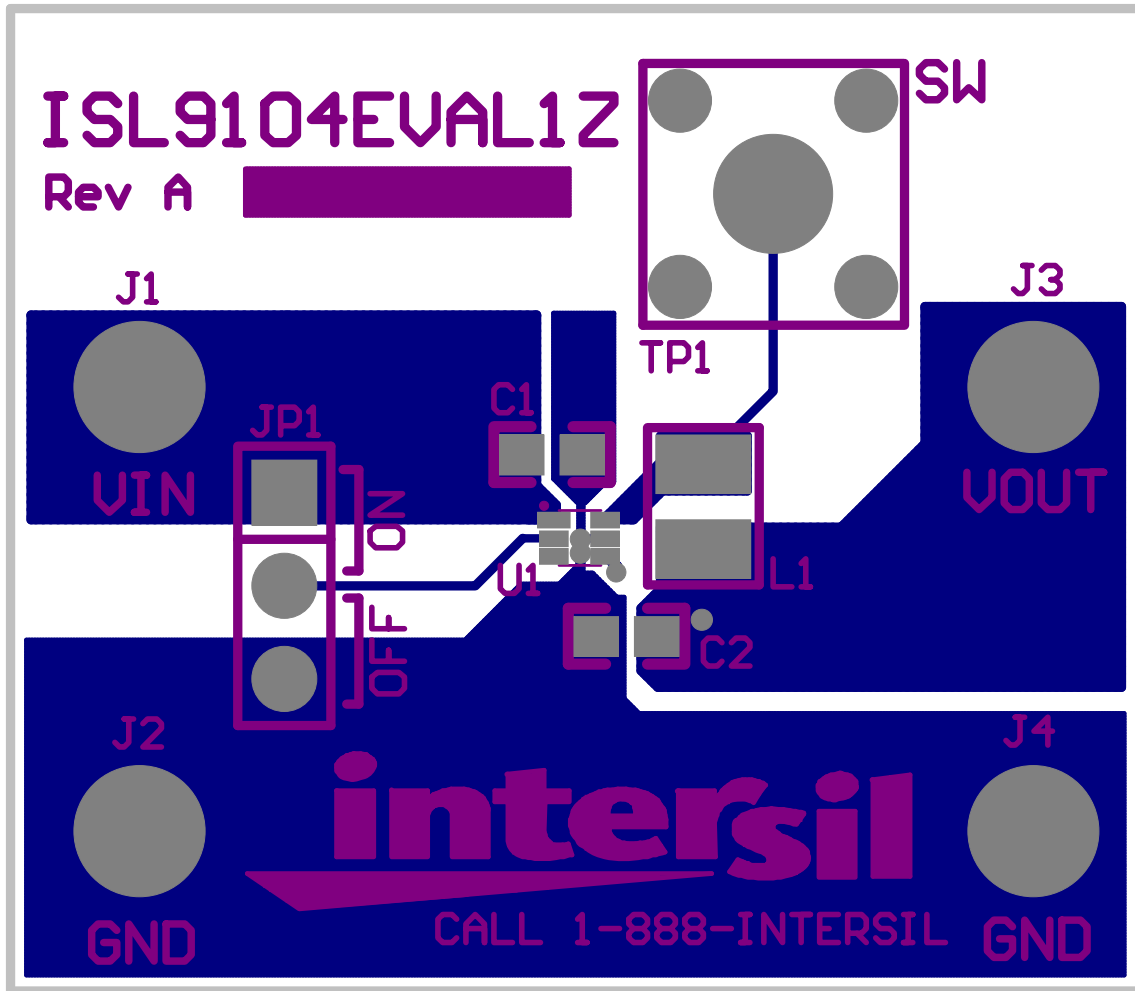


FIGURE 2. TOP SILK LAYER

PCB Layout (Continued)

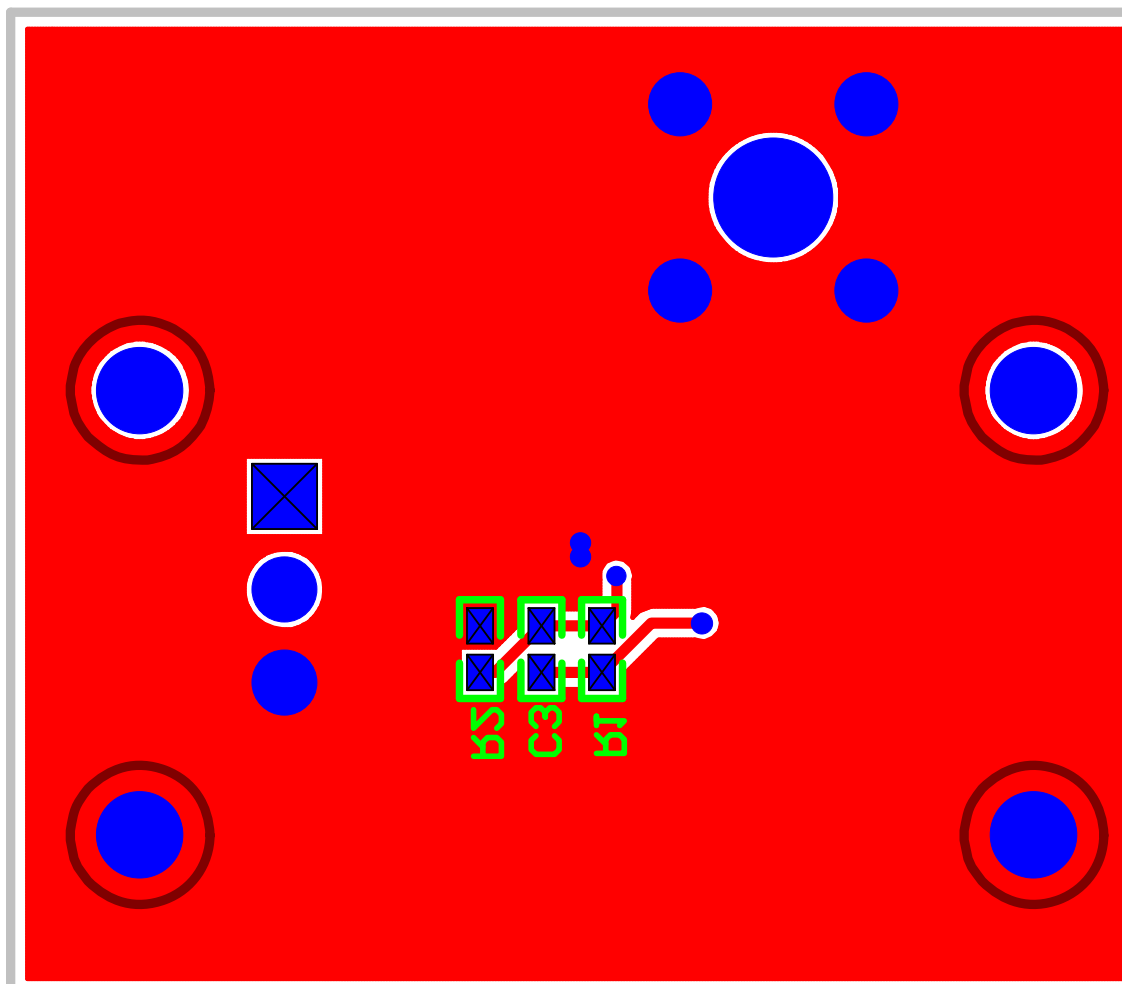


FIGURE 3. BOTTOM SILK LAYER

PCB Layout (Continued)

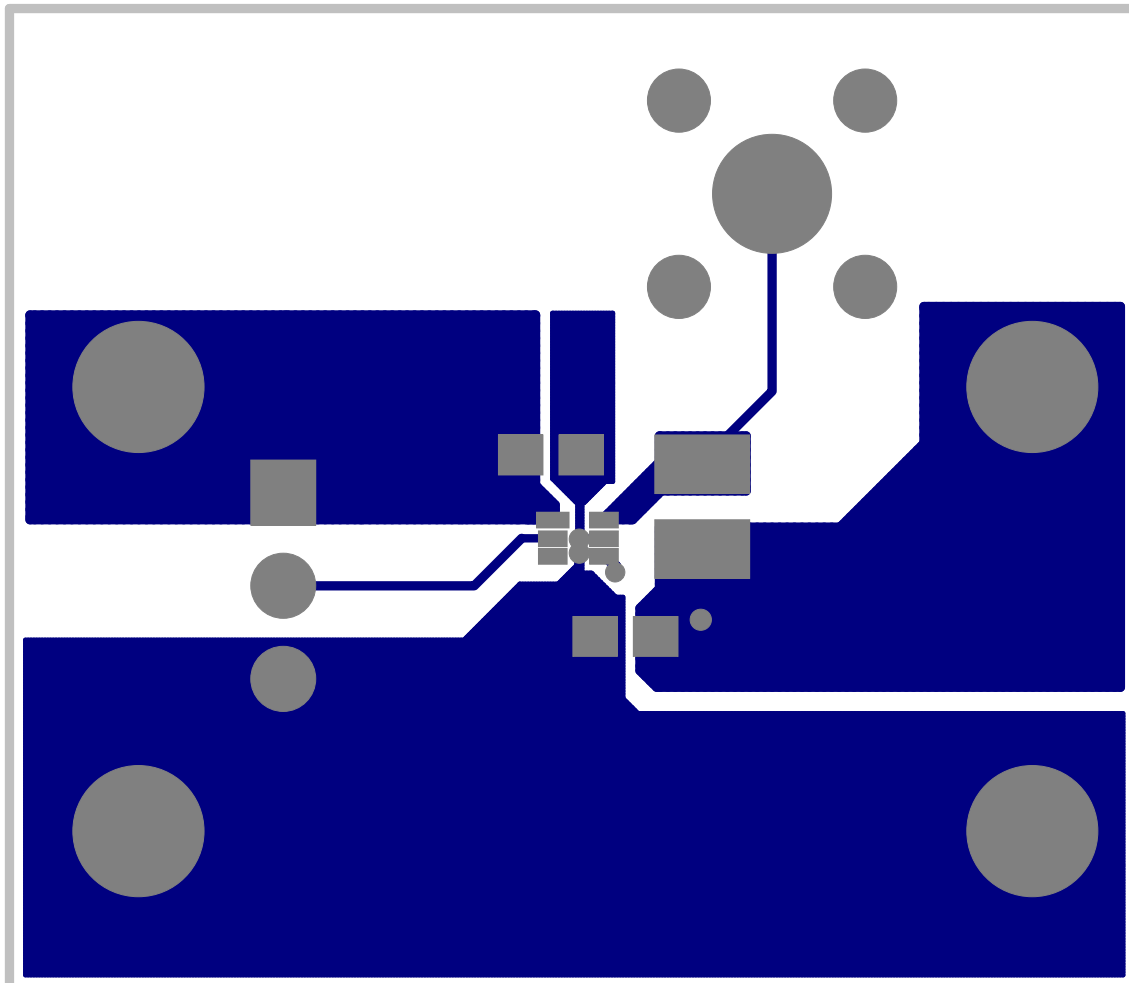


FIGURE 4. TOP LAYER

PCB Layout (Continued)

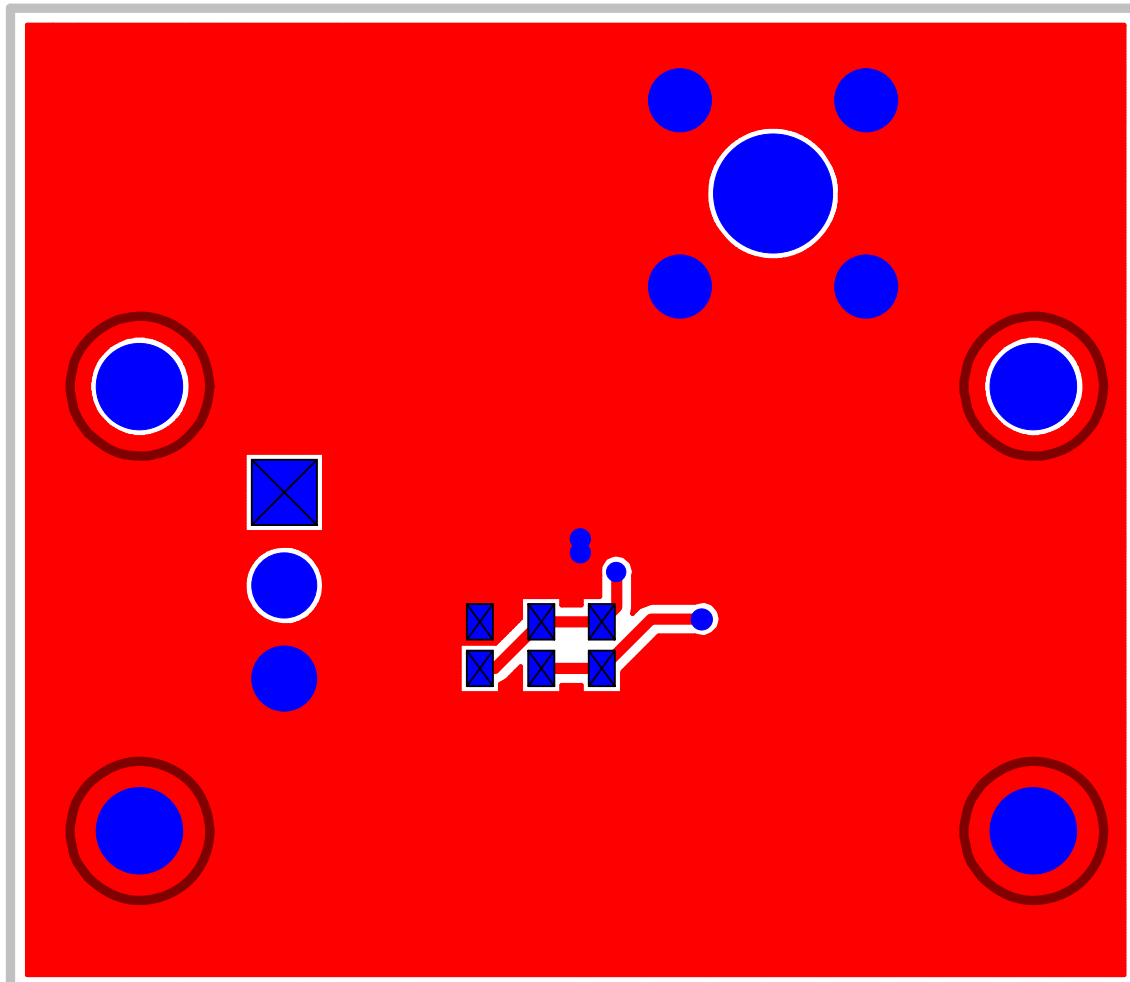


FIGURE 5. BOTTOM LAYER

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Renesas Electronics America Inc.
1001 Murphy Ranch Road, Milpitas, CA 95035, U.S.A.
Tel: +1-408-432-8888, Fax: +1-408-434-5351

Renesas Electronics Canada Limited
9251 Yonge Street, Suite 8309 Richmond Hill, Ontario Canada L4C 9T3
Tel: +1-905-237-2004

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: +49-211-6503-0, Fax: +49-211-6503-1327

Renesas Electronics (China) Co., Ltd.
Room 1709 Quantum Plaza, No.27 ZhichunLu, Haidian District, Beijing, 100191 P. R. China
Tel: +86-10-8235-1155, Fax: +86-10-8235-7679

Renesas Electronics (Shanghai) Co., Ltd.
Unit 301, Tower A, Central Towers, 555 Langao Road, Putuo District, Shanghai, 200333 P. R. China
Tel: +86-21-2226-0888, Fax: +86-21-2226-0999

Renesas Electronics Hong Kong Limited
Unit 1601-1611, 16/F., Tower 2, Grand Century Place, 193 Prince Edward Road West, Mongkok, Kowloon, Hong Kong
Tel: +852-2265-6688, Fax: +852-2886-9022

Renesas Electronics Taiwan Co., Ltd.
13F, No. 363, Fu Shing North Road, Taipei 10543, 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 1207, 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 India Pvt. Ltd.
No.777C, 100 Feet Road, HAL 2nd Stage, Indiranagar, Bangalore 560 038, India
Tel: +91-80-67208700, Fax: +91-80-67208777

Renesas Electronics Korea Co., Ltd.
17F, KAMCO Yangjae Tower, 262, Gangnam-daero, Gangnam-gu, Seoul, 06265 Korea
Tel: +82-2-558-3737, Fax: +82-2-558-5338