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April 1st, 2010
Renesas Electronics Corporation

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R0E436049CFJ10

Converter Board for 80-pin 0.65-mm-pitch QFP for H8/36049 Group

User's Manual

* IC149-080-017-B5 is a trademark of Yamaichi Electronics Co., Ltd.

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1. Outline

The R0E436049CFJ10 is a converter board for connecting the compact emulator R0E436640CPE00 for H8/300H Tiny Series to a foot pattern for 80-pin 0.65-mm-pitch QFP (PRQP0080JB-A) of H8/36049 Group.

2. Package Components (See Figure 1)

Item	Quantity
(1) R0E436049CFJ10 (150mm FFC cable and Base board R0E436049EPBS0 included)	1 pc.
(2) IC149-080-017-B5 (made by Yamaichi Electronics Co., Ltd)	1 pkg.
Screws (M2 x 12mm)	4 pcs.
Flat washers (for fixing the converter board)	4 pcs.
IC socket	1 pc.
Socket cover	1 pc.
Screws (M2 x 8mm)	4 pcs.
Flat washers (for on-board evaluation)	4 pcs.
(3) R0E436049CFJ10 User's Manual (This manual)	1 pc.

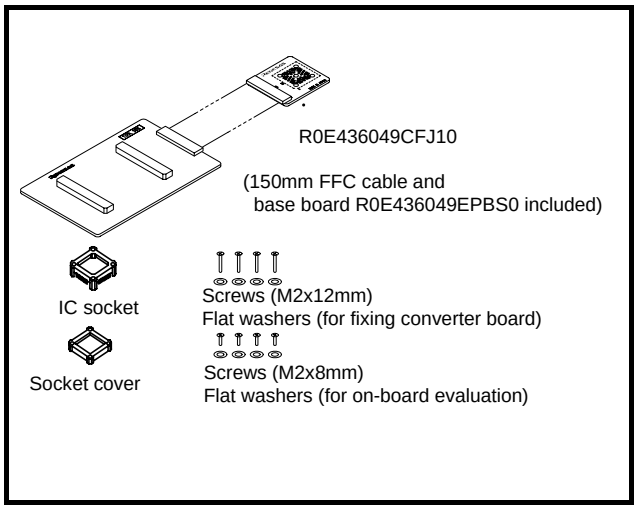

Figure 1 Package components of the R0E436049CFJ10

3. Specifications

Table 1 Specifications

Applicable group	H8/36049 Group
Applicable package	PRQP0080JB-A *Previous Code FP-80A (80-pin 0.65-mm-pitch QFP)
Insertion/removal iterations of connector	Between R0E436640CPE00 and R0E436049CFJ10: 50 times guaranteed

4. Usage (See Figure 2)

The R0E436049CFJ10 can be used for debugging and board mounted evaluation in common by mounting an IC socket on the user system.

(1) For debugging
Mount the IC socket on the foot pattern of the user system in that order.
After connecting the R0E436640CPE00 and R0E436049EPBS0, connect the R0E436049CFJ10 to the IC socket. And fix them with the screws (M2 x 12mm) included with the R0E436049CFJ10.
Even if the H8/36049 Group MCU is emulated without connecting to the user system, the R0E436049CFJ10 needs to be connected to the R0E436640CPE00.

(2) For onboard evaluation
Mount an H8/300H Tiny Series MCU in that order on the IC socket on the user system. And fix them with the screws (M2 x 8mm) included with the R0E436049CFJ10.

Before using the R0E436049CFJ10, be sure to read "7. Precautions" on page 4 and the R0E436640CPE00 User's Manual.

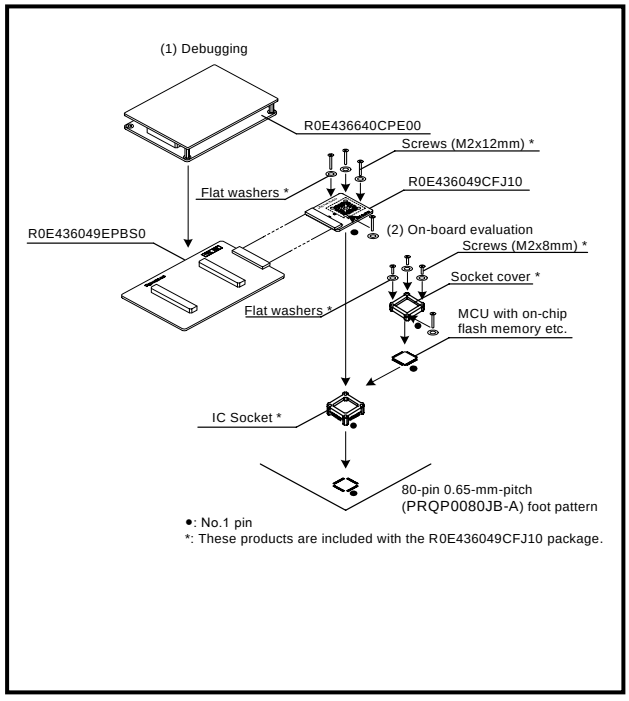

Figure 2 Usage of the R0E436049CFJ10

5. Connection Procedure (See Figure 3)

The procedure for connecting the R0E436049CFJ10 is shown below.

(1) Mount the IC socket on the user system.
(2) Connect the R0E436640CPE00 and R0E436049EPBS0.
(3) Connect the R0E436049CFJ10 and IC socket.
Fasten the IC socket to the socket cover with the four screws (M2 x 12 mm) provided. Each screw should be tightened a little at a time, alternating between screws on opposing corners. Take special care, such as manually securing the IC socket soldered area, to prevent the soldered IC socket from being damaged by overtightening the screws or twisting the components.

- **When connecting the IC socket and socket cover, use a Phillips-type screwdriver whose head matches the screw head.**
- **If the applied torque cannot be accurately measured, stop tightening when the force required to turn the screw becomes significantly greater than that needed when first tightening (The tightening torque must be 0.0785 N•m or less). If a screw is tightened too much, the screw head may break or an IC socket contact error may be caused by a crack in the IC socket solder**.
- **If the emulator does not operate correctly, cracks might have occurred in the solder. Check conduction with a tester and re-solder the IC socket if necessary.**

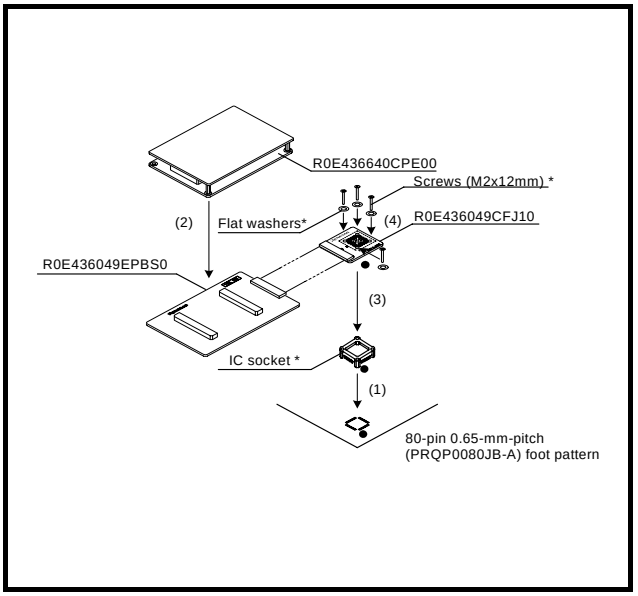

Figure 3 Connection procedure of the R0E436049CFJ10

6. External Dimensions and a Recommended Foot Pattern (See Figure 4)

Note that the dimensions of the recommended foot pattern in Figure 4 are somewhat different from those of the actual foot pattern.

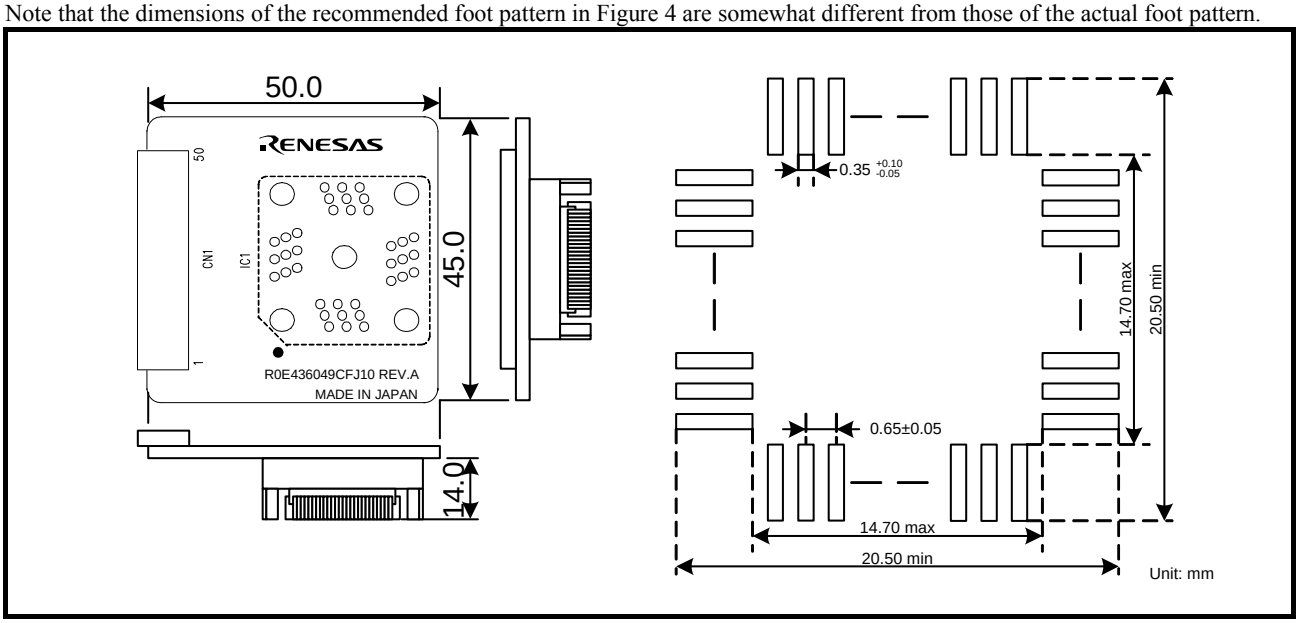

Figure 4 External dimensions and a recommended foot pattern of the R0E436049CFJ10

7. Precautions

7.1 Restriction for Using the Emulator

(1) Precautions for the register access

Please take notice the following precautions for register access because there are differences between the product chip and an evaluation chip.

- The description given in the hardware manual is "Initial value: 0. Reserved. These bits are always read as 0". However, the description in the evaluation chip is "Always specify 0. These bits are always read as the specify values".

  Target address and bit: Bits 7, 6 and 5 of address H'FFFFE2 (Port mode register 3)
  Bits 7 and 6 of address H'FFFFF5 (Interrupt enable register 2)
  Bit 7 of address H'FFFFF9 (Module standby control register 1)
  Bits 6, 5 and 3 of address H'FFFFFA (Module standby control register 2)

- The description in the hardware manual is "Reserved". However, the description in the evaluation chip is "Always specify 0. These bits are always read as the specified values".

  Target address and bit: Bit 0 of address H'FFFFFB

- The hardware manual shows registers at the addresses given below. For these locations, however, the applicable description in the evaluation chip is "Writing has no effect. These bits are always read as undefined values", because there are no registers at these locations of the evaluation chip.

  Target address: H'FFF730 (Low-voltage-detection control register)
  H'FFF731 (Low-voltage-detection status register)
  H'FFFF90 (Flash memory control register 1)
  H'FFFF91 (Flash memory control register 2)
  H'FFFF92 (Flash memory power control register)
  H'FFFF93 (Erase block register 1)
  H'FFFF9B (Flash memory enable register)

(2) Note on Power-on Reset and Low-voltage Detection Circuit Functions

The product chip has optional functions of power-on reset and low-voltage detection circuit and can select them. However, since the evaluation chip does not support these functions, software debugging cannot be performed in the emulator. Be sure to evaluate your system and make final confirmation with a product chip.

(3) Note on Serial Interface SCI3_3

Because the evaluation chip does not incorporate the SCI3_3 module, it emulates the SCI3_3 function by connecting an external circuit on the R0E436049CFJ10. When using the SCI3_3, be sure to set the multiplexed port control registers (PCR: P90, P91 and P92) to "0" (input) beforehand. If using emulators, set the bit 3 of the address H'FFF608 (Serial mode control register3) to "1".

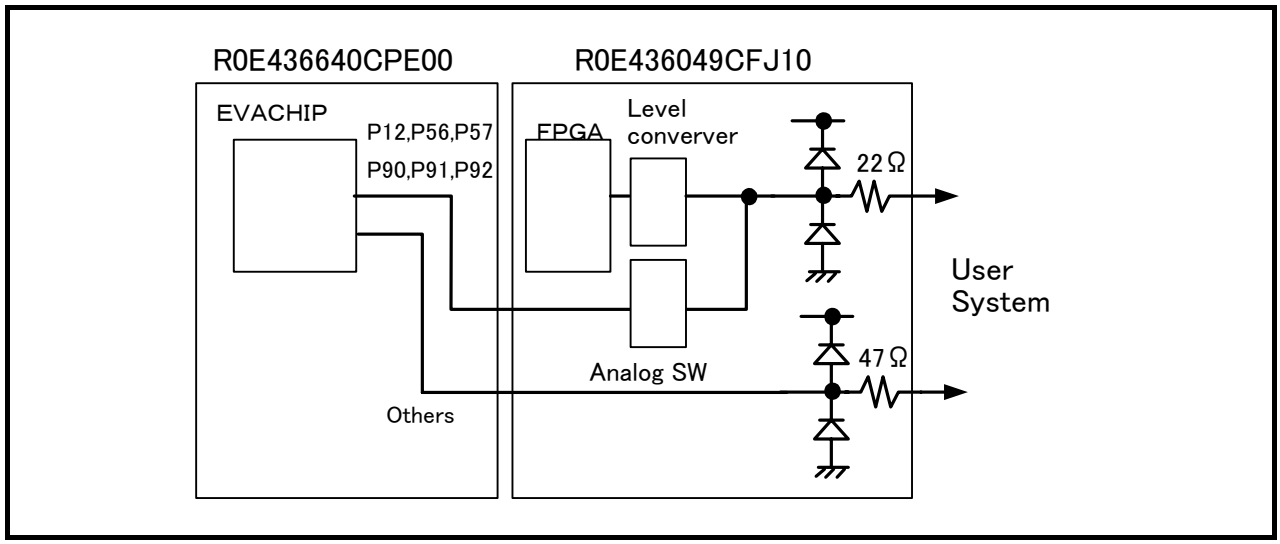

Figure 5 Connections of the R0E436049CFJ10

Table 2　Differences between the emulator and H8/36049 registers

	Address	Registers	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
	H'F608	-	-	-	-	-	("1")*1	NFEN_3	TXD_3	MSTS3_3
	H'F730	-	-	-	-	-	-	-	-	-
	H'F731	-	-	-	-	-	-	-	-	-
	H'FF90	-	-	-	-	-	-	-	-	-
	H'FF91	-	-	-	-	-	-	-	-	-
	H'FF92	-	-	-	-	-	-	-	-	-
	H'FF93	-	-	-	-	-	-	-	-	-
	H'FF9B	-	-	-	-	-	-	-	-	-
Emulator	H'FFE0	PMR1	IRQ3	IRQ2	IRQ1	IRQ0	TXD2	PWM	TXD	TMOW
	H'FFE1	PMR5	POF57	POF56	WKP5	WKP4	WKP3	WKP2	WKP1	WKP0
	H'FFE2	PMR3	POF27	POF26	POF25	POF24	POF23	-	-	-
	H'FFF1	SYSCR2	SMSEL	LSON	DTON	MA2	MA1	MA0	SA1	SA0
	H'FFF2	IEGR1	NMIEG	-	-	-	IEG3	IEG2	IEG1	IEG0
	H'FFF4	IENR1	IENDT	IENTA	IENWP	-	IEN3	IEN2	IEN1	IEN0
	H'FFF5	IENR2	IENTB3	IENTB2	IENTB1	-	-	-	-	-
	H'FFF9	MSTCR1	MSTS4	MSTIIC	MSTS3	MSTAD	MSTWD	MSTTW	MSTTV	MSTTA
	H'FFFA	MSTCR2	MSTS3_2	MSTTB3	MSTTB2	MSTTB1	MSTTX	-	MSTTZ	MSTPWM
	H'FFFB	MSTCR3	-	-	-	-	-	-	-	MSTS4_2

*1 If using emulators, set the bit 3 of the address H'FFF608 (Serial mode control register) to "1".

	Address	Registers	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
	H'F608	-	-	-	-	-	-	NFEN_3	TXD_3	MSTS3_3
	H'F730	LVDCR	LVDE	-	-	-	LVDSEL	LVDRE	LVDDE	LVDUE
	H'F731	LVDSR	-	-	-	-	-	-	LVDDF	LVDUF
	H'FF90	FLMCR1	-	SWE	ESU	PSU	EV	PV	E	P
	H'FF91	FLMCR2	FLER	-	-	-	-	-	-	-
	H'FF92	FLPWCR	PDWND	-	-	-	-	-	-	-
	H'FF93	EBR1	EB7	EB6	EB5	EB4	EB3	EB2	EB1	EB0
	H'FF9B	FENR	FLSHE	-	-	-	-	-	-	-
H8/36049	H'FFE0	PMR1	IRQ3	IRQ2	IRQ1	IRQ0	TXD2	PWM	TXD	TMOW
	H'FFE1	PMR5	POF57	POF56	WKP5	WKP4	WKP3	WKP2	WKP1	WKP0
	H'FFE2	PMR3	-	-	-	POF24	POF23	-	-	-
	H'FFF1	SYSCR2	SMSEL	LSON	DTON	MA2	MA1	MA0	SA1	SA0
	H'FFF2	IEGR1	NMIEG	-	-	-	IEG3	IEG2	IEG1	IEG0
	H'FFF4	IENR1	IENDT	IENTA	IENWP	-	IEN3	IEN2	IEN1	IEN0
	H'FFF5	IENR2	-	-	IENTB1	-	-	-	-	-
	H'FFF9	MSTCR1	-	MSTIIC	MSTS3	MSTAD	MSTWD	MSTTW	MSTTV	MSTTA
	H'FFFA	MSTCR2	MSTS3_2	-	-	MSTTB1	-	-	MSTTZ	MSTPWM
	H'FFFB	-	-	-	-	-	-	-	-	-

Note: The thick boxes indicate differences

7.2 Notes on Using the Product

⚠ CAUTION

Cautions to Be Taken for This Product:

- Do not connect anything to the NC pins.
- Do not pull or excessively flex the cable. The cable may cause a break.
- When connecting the emulator and IC socket, be sure to use the included screws (M2 x 12mm).
- When connecting the IC socket and socket cover, be sure to use the included screws (M2 x 8mm).
- When connecting the IC socket and socket cover, use a Phillips-type screwdriver whose head matches the screw head.
- If the applied torque cannot be accurately measured, stop tightening when the force required to turn the screw becomes significantly greater than that needed when first tightening (The tightening torque must be 0.0785 N•m or less). If a screw is tightened too much, the screw head may break or an IC socket contact error may be caused by a crack in the IC socket solder.
- If the emulator does not operate correctly, cracks might have occurred in the solder. Check conduction with a tester and re-solder the IC socket if necessary.
- Fasten the IC socket to the socket cover with the four screws (M2 x 8 mm, with flat washers) provided. Each screw should be tightened a little at a time, alternating between screws on opposing corners. Take special care, such as manually securing the IC socket soldered area, to prevent the soldered IC socket from being damaged by overtightening the screws or twisting the components.
- After checking the location of pin 1 on the IC socket, apply epoxy resin adhesive to the bottom of the IC socket, and fasten it to the user system before soldering.
- Be sure to completely solder the leads so that the solder slops gently over the leads and forms solder fillets. (Use slightly more solder than the MCU.)

IMPORTANT

Notes on This Product:

- We cannot accept any request for repair.
- For purchasing the IC149-080-017-B5, contact the following:
  Yamaichi Electronics Co., Ltd. http://www.yamaichi.com/
- For inquiries about the product or the contents of this manual, contact your local distributor.
  Renesas Tools Homepage http://www.renesas.com/en/tools

7.3 How to add the MCU and IO File

If there is no “h836049.mcu” in the file selection dialog box of the emulator debugger, it is necessary to add the information specific to the H8/36049 group MCU. Add the MCU and IO files following the procedure below.

(1) Please download the MCU and IO files installer from the web site below.
http://tool-support.renesas.com/eng/toolnews/n060216/download.htm
Files to be downloaded: MCUIO_Files_install_cpe_h8tiny_060202.exe

(2) Execute the downloaded installer to add the MCU and IO files to the emulator debugger.