To all our customers

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Renesas Technology Corp.
Customer Support Dept.
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Connection of H8S/2339F E10A Emulator

HS2339KCM01H

HS2339KCI01H

with User System

1. Connecting the E10A Emulator with the User system

Before connecting an E10A emulator (here after referred to as emulator) with the user system, a connector must be installed in the user system so that an user I/F cable can be connected to the connector. When designing the user system, refer to the connector and recommended circuits shown below.
Before designing the user system, be sure to read the H8S/2339F E10A user's manual.

2. Installation of Connector in the User System

Table 2.1 shows the Hitachi-UDI port connector for the emulator.

Table 2.1 Recommended Connector

Type Number	Manufacturer	Specifications
2514-6002xx*	3M Limited	14-pin straight type

Note: xx means plated version.

Note: When the connector is used, do not install any components within 3 mm of the Hitachi-UDI port connector.

3. Pin Arrangement of the H-UDI Port Connector

Figure 3.1 shows the pin arrangement of the Hitachi-UDI port connector.

Pin No.	Signal			Input/Output *1
	H8S/2339EF	H8S/2329EF	H8S/2319EF	
1	P62	P61	P35	Input
2	P34	P34	P21	Input
3	P63	P63	P31	Output
4	#RES *2	#RES *2	#RES *2	Input
5	P60	P60	P20	Input
6	P61	P62	P33	Input
7	#RES *2	#RES *2	#RES *2	Output
8 to 10 12 to 14	GND *3	GND *3	GND *3	—
11	Vcc *4	Vcc *4	Vcc *4	Input

Note: 1. Input or output from the user system.
2. The symbol (#) means that the signal is active-low.
3. By detecting GND on the user system side, connection or disconnection with the user system can be determined.
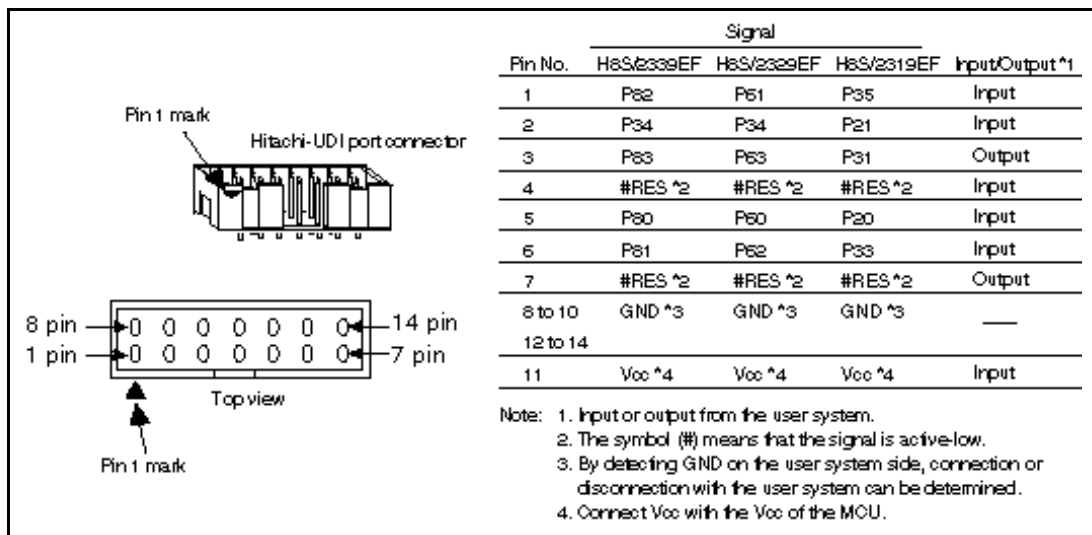4. Connect Vcc with the Vcc of the MCU.

Figure 3.1   Pin Arrangement of the Hitachi-UDI Port Connector

4. Example of Emulator Connection

The following shows an example of connecting the user system to the emulator.
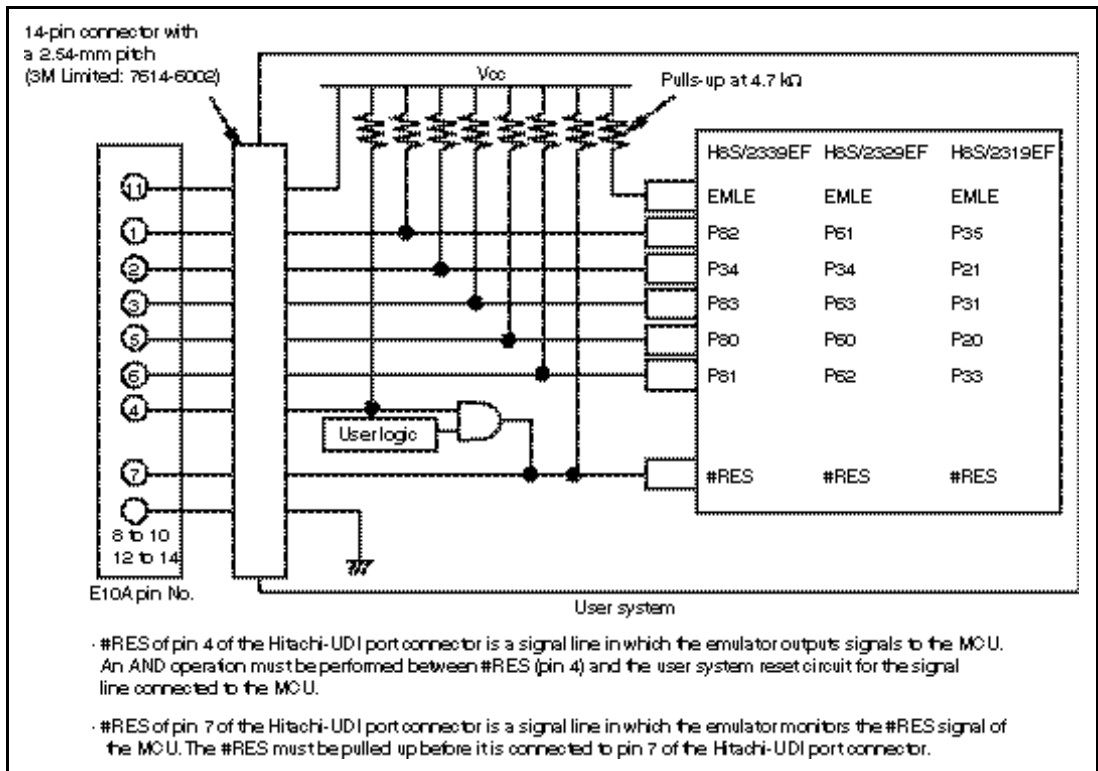

Figure 4.1   Example of Emulator Connection

**Notes: 1. P34 and P80 to P83 are used by the emulator for H8S/2339EF, P34 and P60 to P63
are used by the emulator for H8S/2329EF, and P20 to P21, P31, P33, and P35 are
used by the emulator for H8S/2319EF. Pull up and connect the emulator and
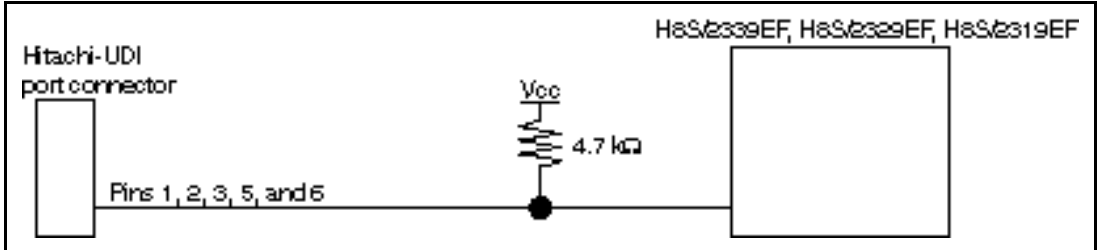MCU pins.**

Figure 4.2   Connection of Emulator and MCU

2. **Pin EMLE of the H8S/2339EF, H8S/2329EF, and H8S/2319EF must be pulled up before connecting the emulator to the user system. If the emulator is not connected to the user system, ground pin EMLE.**
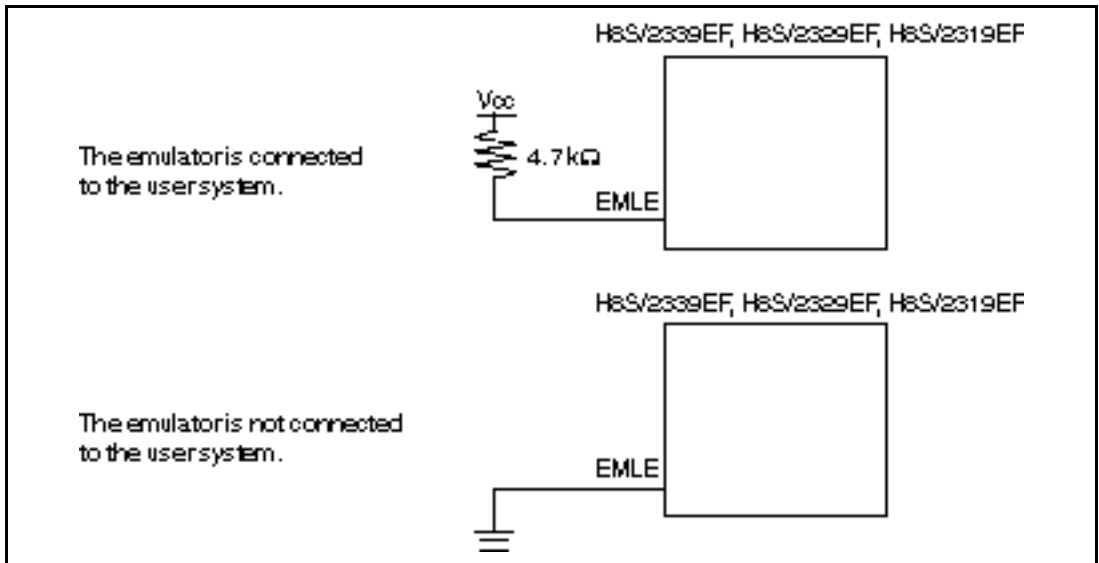

Figure 4.3   E10A Emulator and EMLE Pin

3. **#RES of pin 4 of the Hitachi-UDI port connector is a signal line in which the emulator outputs signals to the MCU. An AND operation must be performed between #RES (pin 7) and the user system reset circuit for the signal line connected to the MCU.**
   #RES of pin 7 of the Hitachi-UDI port connector is a signal line in which the emulator monitors the #RES signal of the MCU.
   The #RES must be pulled up before it is connected to pin 7 of the Hitachi-UDI port connector.
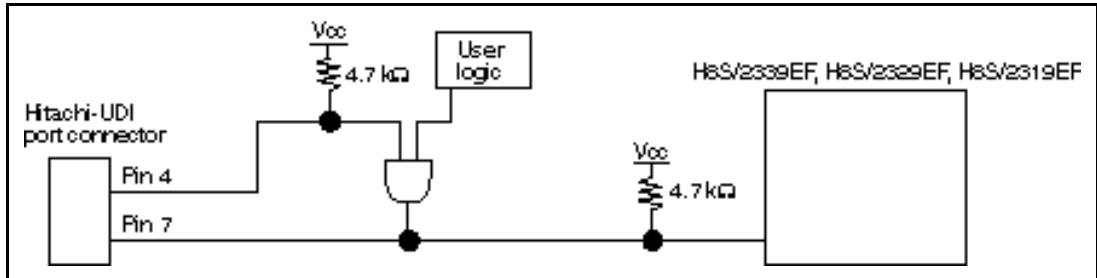

Figure 4.4   Examples of Reset Circuits

4. **Ground pins 8 to 10 and 12 to 14 of the Hitachi-UDI port connector.**

5. **Pin 11 of the Hitachi-UDI port connector must be connected to the user system Vcc (power supply). The amount of voltage permitted to input to the Hitachi-UDI port connector must be within the guaranteed range of the microcomputer.**

6. **Figure 4.5 shows the interface circuit in the emulator. Use this figure as a reference when determining the pull-up resistance value.**
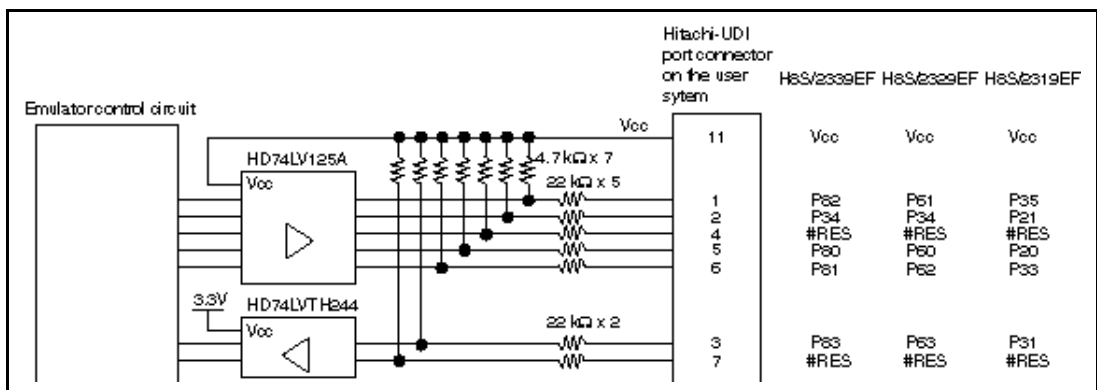

Figure 4.5   Interface Circuit in the Emulator (Reference)

7. **In the H8S/2339, H8S/2329, and H8S/2319 series, only H8S/2339EF, H8S/2329EF, and H8S/2319EF can be connected to the emulator. H8S/2339F, H8S/2329F, and H8S/2319F for general use cannot be used.**

8. **When H8S/2339EF and H8S/2329EF are connected to the emulator, SCI0 (serial communication interface channel 0) cannot be used.**

9. **When H8S/2319EF is connected to the emulator, SCI1 (serial communication interface channel 1) cannot be used.**

10. **When H8S/2339EF, H8S/2329EF, and H8S/2319EF are connected to the emulator, the following pin functions cannot be used.**

Table 4.1   Unavailable Pin Functions

H8S/2339EF	H8S/2329EF	H8S/2319EF
P34 and P80 to P82	P34 and P60 to P62	P20, P21, P31, P33, and P35
FWE	FWE	FWE
SCK0	SCK0	SCK1, TxD1, and RxD1
#DREQ0 and #DRERQ1	#DREQ0 and #DRERQ1	#IRQ5
#TEND0	#TEND0	TIOCA3 and TIOCB3
–	#CS4 and #CS5	–

Note: The symbol "#" means that the signal is active-low.