To our customers,

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Renesas Electronics website: http://www.renesas.com

April 1st, 2010
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (http://www.renesas.com)

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Renesas Technology Corp.
Customer Support Dept.
April 1, 2003

User's Manual

Connection of SH7058RFCC E10A Emulator

HS7058KCM01H HS7058KCM02H HS7058KCI01H HS7058KCI02H with User System

Renesas Electronics
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Rev.A

1. Connecting the Emulator with the User System

To connect the E10A emulator (hereinafter referred to as the emulator), the H-UDI port connector must be installed on the user system to connect the user system interface cable. When designing the user system, refer to the recommended circuit between the H-UDI port connector and the device. In addition, read the E10A emulator user's manual and hardware manual of the related device.

Table 1.1 shows the type numbers of the emulator, the corresponding connector types, and the use of AUD function.

Table 1.1 Type Number, AUD Function, and Connector Type

Type Number	Connector	AUD Function
HS7058KCM02H, HS7058KCI02H	36-pin connector	Available
HS7058KCM01H, HS7058KCI01H	14-pin connector	Not available

The H-UDI port connector has the 36-pin and 14-pin types as described below. Use them according to the purpose of the usage.

1. 36-pin type (with AUD function)
   The AUD trace function is supported. A large amount of trace information can be acquired in realtime. The RAM monitoring function, which accesses (reads or writes) the memory contents during program execution, is also supported.
2. 14-pin type (without AUD function)
   The user cannot use the AUD trace function because only the H-UDI function is supported. For tracing, only the internal trace function is supported. Since the 14-pin type connector is smaller than the 36-pin type (1/2.5), the area where the connector is installed on the user system can be reduced.

2. Installing the H-UDI Port Connector on the User System

Table 2.1 shows the recommended H-UDI port connector for the emulator.

Table 2.1 Recommended H-UDI Port Connector

Connector	Type Number	Manufacturer	Specifications
36-pin connector	DX10M-36S	Hirose Electric Co., Ltd.	Screw type
	DX10M-36SE, DX10G1M-36SE		Lock-pin type
14-pin connector	2514-6002	Sumitomo 3M Limited	14-pin straight type

Note: When the 36-pin connector is used, do not connect any components under the H-UDI connector. When the 14-pin connector is used, do not install any components within 3 mm of the H-UDI port connector.

3. Pin Arrangement of the H-UDI Port Connector

Figures 3.1 and 3.2 show the pin arrangement of the 36-pin and 14-pin H-UDI port connectors, respectively.

Note: Note that the pin number assignment of the H-UDI port connector shown below differs from that of the connector manufacturer.

Pin No.	Signal	Input/ Output *1	SH7058 RFCC Pin No.	Note	Pin No.	Signal	Input/ Output *1	SH7058 RFCC Pin No.	Note
1	AUDCK	I/O	245		19	TMS	Input	232	
2	GND	——			20	GND	——		
3	AUDATA0	I/O	241		21*2	/TRST	Input	233	
4	GND	——			22	GND	——		
5	AUDATA1	I/O	242		23	TDI	Input	234	
6	GND	——			24	GND	——		
7	AUDATA2	I/O	243		25	TDO	Output	235	
8	GND	——			26	GND	——		
9	AUDATA3	I/O	244		27	NC	——		
10	GND	——			28	GND	——		
11*2	/AUDSYNC	I/O	246		29	CK	Output	48	
12	GND	——			30	GND	——		
13*2	/AUDRST	Input	238		31*2	/RES	Output	58	User reset
14	GND	——			32	GND	——		
15	AUDMD	Input	240		33	GND	——		
16	GND	——			34	GND	——		
17	TCK	Input	236		35	NC	——		
18	GND	——			36	GND	——		

Notes: 1. Input to or output from the user system.
2. The slash (/) means that the signal is active-low.
3. The emulator monitors the GND signal of the user system and detects whether or not the user system is connected.

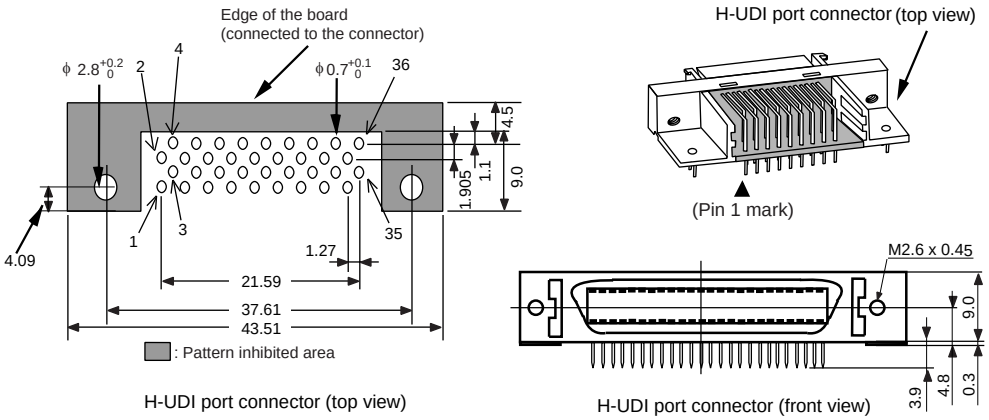
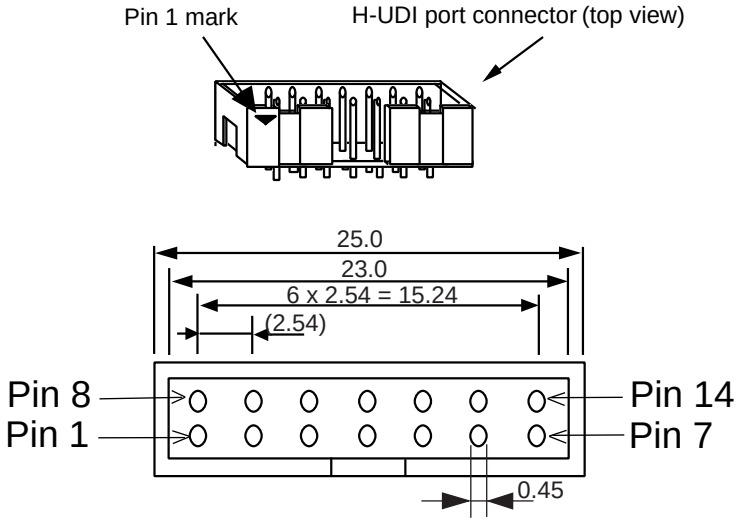


Figure 3.1 Pin Arrangement of the H-UDI Port Connector (36 Pins)

Pin No.	Signal	Input/ Output*[1]	SH7058 RFCC Pin No.
1	TCK	Input	236
2*[2]	/TRST	Input	233
3	TDO	Output	235
4	N.C.	—	—
5	TMS	Input	232
6	TDI	Input	234
7*[2]	/RES	Output	58
11	N.C.	—	—
8 to 10 and 12 to 13	GND	—	—
14*[3]	GND	Output	—

Notes: 1. Input to or output from the user system.
2. The slash (/) means that the signal is active-low.
3. The emulator monitors the GND signal of the user system and detects whether or not the user system is connected.



H-UDI port connector (top view)

Figure 3.2 Pin Arrangement of the H-UDI Port Connector (14 Pins)

4. Recommended Circuit between the H-UDI Port Connector and the Device

4.1 Recommended Circuit (36-Pin Type)

Figure 4.1 shows a recommended circuit between the H-UDI port connector (36 pins) and the device.

Notes: 1. Do not connect anything to the N.C. pin of the H-UDI port connector.

2. The reset signal in the user system is input to the RES pin of the SH7058RFCC (pin 58). Connect this signal to the H-UDI port connector as the output from the user system.
3. When a joined resistance is used for pull-up, it may be affected by a noise. Separate TCK from other resistances.
4. When the emulator is used, the AUDCK pin must be an end resistance (pulled up or down by a resistance of several kilo-ohms) because it may be affected by a reflected noise from the user system interface cable.
5. When the emulator is used, connect the CK pin between the H-UDI port connector and the SH7058RFCC via a buffer (74LVC125 is recommended) as shown in figure 4.1.
6. The pattern between the H-UDI port connector and the device must be as short as possible. Do not connect the signal lines to other components on the board.
7. The resistance values shown in figure 4.1 are recommended.
8. For the pin processing when the emulator is not used, refer to the hardware manual of the related device.

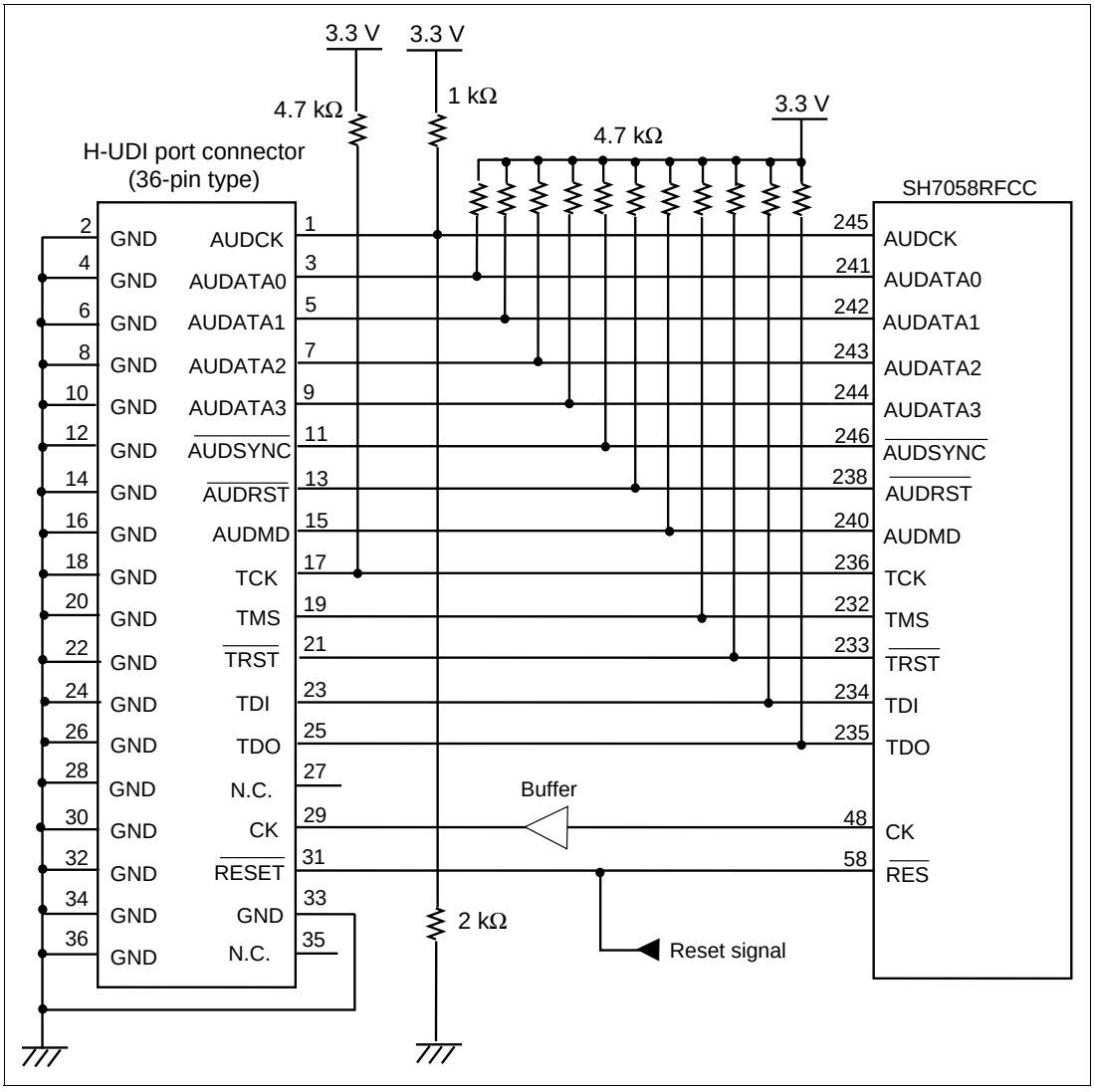


Figure 4.1 Recommended Circuit for Connection between the H-UDI Port Connector and the Device (36-Pin Type)

4.2 Recommended Circuit (14-Pin Type)

Figure 4.2 shows a recommended circuit between the H-UDI port connector (14 pins) and the device.

Notes: 1. Do not connect anything to the N.C. pin of the H-UDI port connector.

2. The reset signal in the user system is input to the RES pin of the SH7058RFCC (pin 58). Connect this signal to the H-UDI port connector as the output from the user system.
3. When a joined resistance is used for pull-up, it may be affected by a noise. Separate TCK from other resistances.
4. The pattern between the H-UDI port connector and the device must be as short as possible. Do not connect the signal lines to other components on the board.
5. The resistance values shown in figure 4.2 are recommended.
6. For the pin processing when the emulator is not used, refer to the hardware manual of the related device.

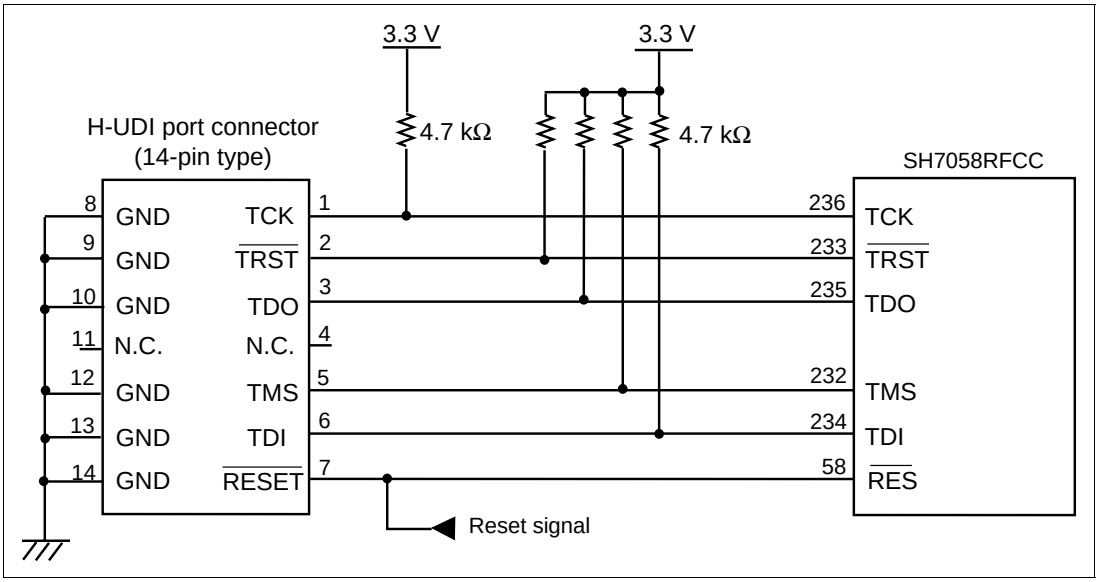


Figure 4.2 Recommended Circuit for Connection between the H-UDI Port Connector and the Device (14-Pin Type)