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Renesas Electronics Corporation

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User's Manual

Tiny/Super Low Power E7 Emulator

Additional Document for User's Manual Notes on Connecting the H8/38602RF

Renesas Microcomputer Development Environment System
H8 Family / H8/300H Tiny Series

Tiny/Super Low Power E7 HS0007TCU01HEP8

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Table 1.1 Recommended Connector

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

Connect pins 2, 4, 6, 10, 12, and 14 of the user system connector to GND firmly on the
These pins are used as electrical GND and to monitor the connection of the user system
Note the pin assignments of the user system connector.

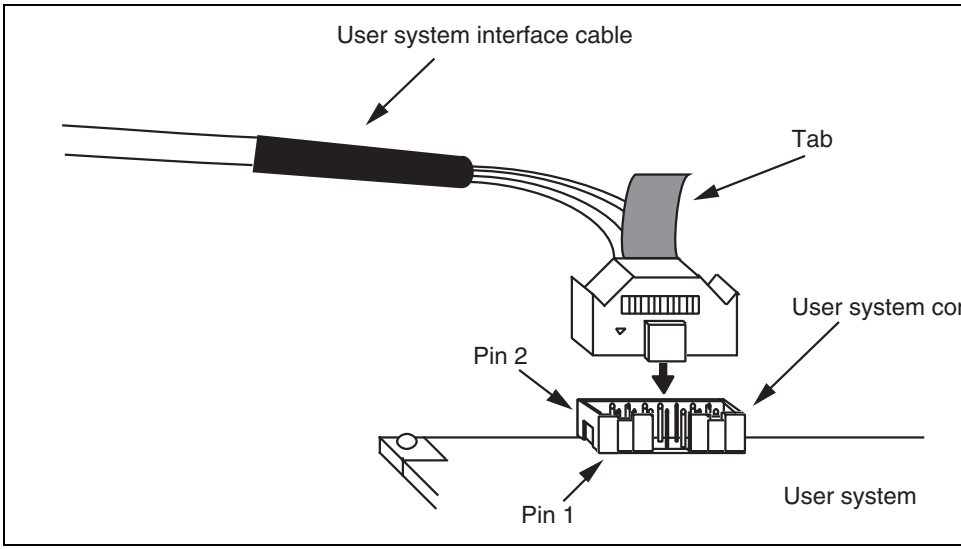
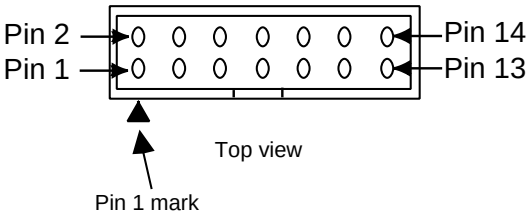


Figure 1.1 Connecting the User System Interface Cable to the User Syste



5	E7_1
6	Vss
7	NMI# *
8	Vcc
9	N.C.
10	Vss
11	E7_0
12	Vss
13	RES#*
14	Vss

Note:
The symbol (#) means that the signal is

Figure 2.1 Pin Assignments of the Connector

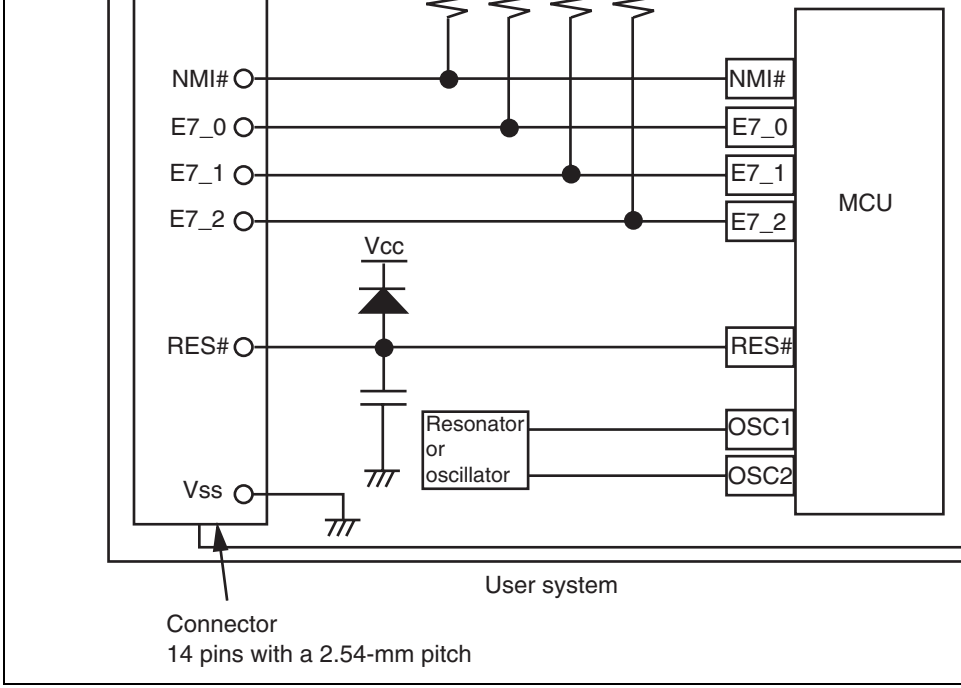


Figure 3.1 Example of Emulator Connection

2. The NMI# signal is used for forced break control by the emulator. Connect t emulator and MCU pins directly. In debugging without forced break control the mode with the HEW. Then, when the user logic is connected with the op collector output buffer, the NMI# pin can be used in the user system (howeve power-on, the NMI# pin is used by the emulator).

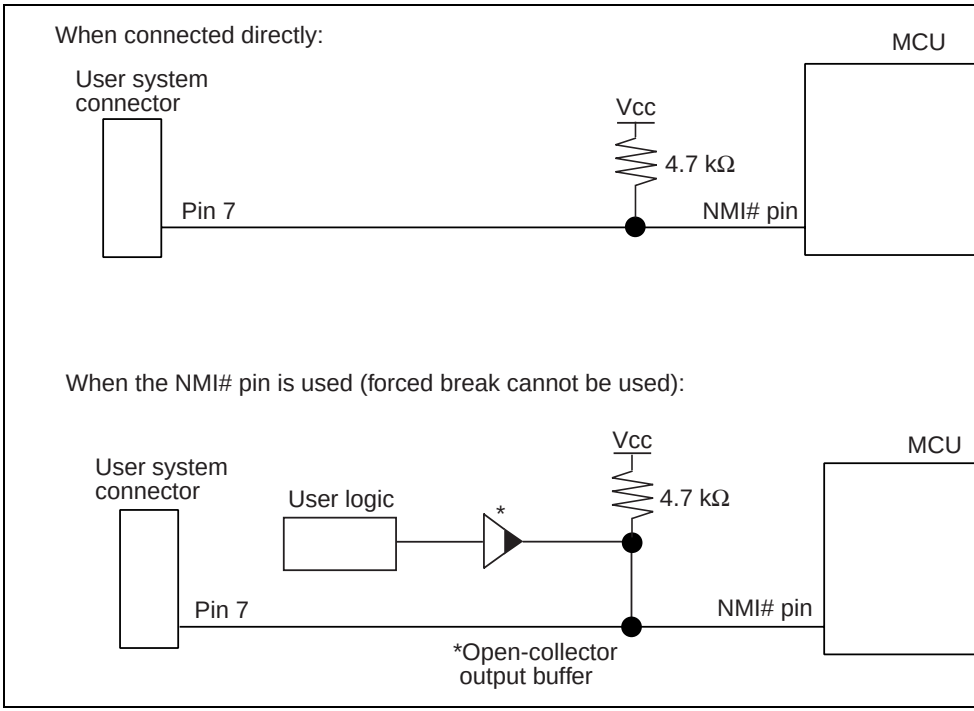


Figure 3.3 Connection of Emulator and NMI# Pin

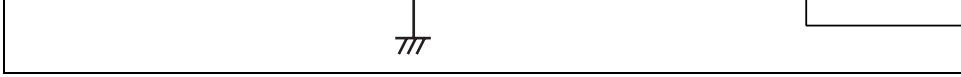
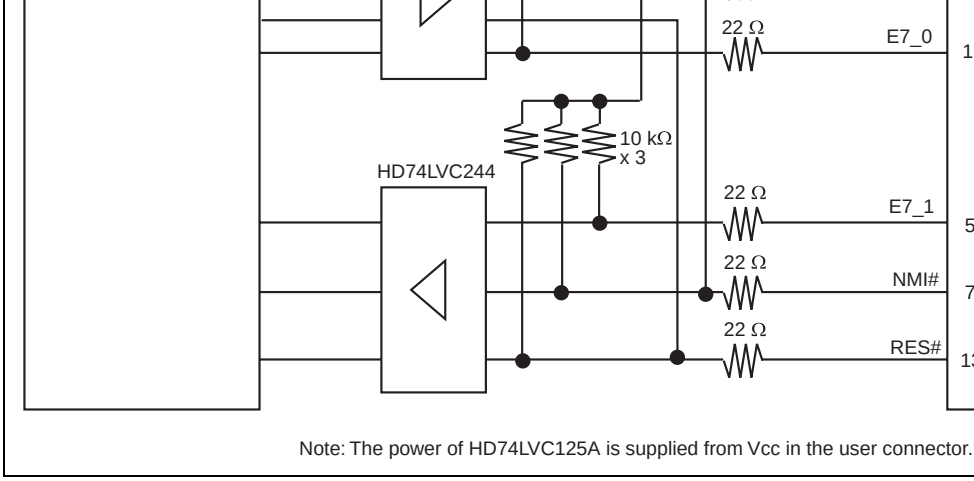


Figure 3.4 Example of a Reset Circuit

4. Connect Vss and Vcc with the Vss and Vcc of the MCU, respectively.
5. Connect nothing with N.C.
6. The input voltage, Vcc, must be connected to the user system Vcc (power su
   The amount of voltage permitted to input to Vcc must be within the guarant
   of the microcomputer.
7. Refer to the hardware manual for the recommended capacitance of the capa
   is connected to the RES# pin.
8. Use of the internal oscillator circuit is available in the H8/38602RF. Howev
   resonator or an oscillator must be connected to OSC1 and OSC2 pins when
   emulator is connected.



Note: The power of HD74LVC125A is supplied from Vcc in the user connector.

Figure 3.5 Interface Circuit in the Emulator (Reference)

ER0 to ER6	H’0000
ER7 (SP)	H'FF80
CCR	H’80

2. Low-Power Mode

   During a user program break, the CPU operating frequency is forced to a system clo
   high-speed operation.

3. RES# Signal

   The MCU signals are only valid during user program execution started with clicking
   or STEP-type button. During a user program break, the RES# signal is not sent to th

Note: Do not start user program execution or access the memory while control input s
(RES#) is being low. A TIMEOUT error will occur.

4. System Control Register

   In the emulator, the internal I/O registers can be accessed from the [IO] window. Ho
   careful when accessing the system control register. The emulator saves the register
   the system control register at a break and returns the value when the user program is
   Since this is done during a break, do not rewrite the system control register in the [IO
   window.

5. Memory Access during Emulation

   If the memory contents are referenced or modified during emulation, realtime emula
   cannot be performed because the user program is temporarily halted.

9. The power consumed by the MCU can reach several milliamperes. This is because t
power supply drives one HD74LVC125A to make the communication signal level m
user-system power-supply voltage. The power consumed rises little during user prog
execution since the emulator does not perform communication; it rises more during a

10. Program Area for the Emulator
Do not access a part of areas in the flash memory or the internal RAM since the emu
program uses these areas. If the contents of the program area for the emulator are ch
the emulator will not operate normally. In this case, restart the emulator with the Do
emulator firmware mode.

Table 4.2 Program Area for the E7 Emulator

MCU Name	Program Area
H8/38602RF	Flash memory: H'4000 to H'4FFF
	Internal RAM: H'F780 to H'FB7F
	Vector, etc.: H'0002 to H'000F, H'0018 to H'0019, H'4FF8 to H'

11. The emulator uses a two-word stack pointer for values stored on a user program brea
Therefore, the stack area must accept two-word addresses.

12. Do not use an MCU that has been used for debugging.
If the flash memory is rewritten many times, data may be lost due to retention proble
the emulator has been left for a few days and the data will be erased. If an error mes
displayed, exchange the MCU for a new one.

Be sure to initialize the following internal I/O registers by the user program since the
initialized by selecting [Debug] – [Reset CPU] or using the RESET command:
SYSCR1, SYSCR2, IEGR, IENR1, and IRR1

16. Step Execution of the SLEEP Instruction

    When the interrupt mask bit (I) in the condition code register (CCR) is 1, do not perf
    execution of the SLEEP instruction. If the step execution is performed and not finis
    correctly, restart the emulator.

17. Use of the internal oscillator circuit is available in the H8/38602RF. However, a reso
    an oscillator must be connected to OSC1 and OSC2 pins when the emulator is conne

18. Processing at Emulator Activation

    When the emulator is activated, the watchdog timer is not active; the operation of the
    differs from that of the actual MCU.

19. Hardware Break Functions

    - In the H8/38602RF E7 emulator, conditions of Break Condition 1,2 can be set. T
      lists the items that can be specified.

20. Restriction on Software Write Enable (SWE) Bit

    If the SWE bit is set to 1 during execution of the user program, a communication tim
    will occur. Do not set this bit to 1.

dialog box.

Table 4.4 Conditions Set in [Break condition] Dialog Box

Dialog Box	Condition		
	Address Bus Condition	Data Condition	Read or Write Condition
[Break condition 1]	O	O	O
[Break condition 2]	O	X	X

Note: O: Can be set by checking the radio button in the dialog box.

Table 4.5 lists the combinations of conditions that can be set by the BREAKCON
SET command.

Table 4.5 Conditions Set by BREAKCONDITION_SET Command

Channel	Condition		
	Address Bus Condition (<addropt> option)	Data Condition (<dataopt> option)	Read or Write Condition (<r/wopt> opti
Break condition 1	O	O	O
Break condition 2	O	X	X

Note: O: Can be set by the BREAKCONDITION_SET command.

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