Date: Apr 11, 2016

RENESAS TECHNICAL UPDATE

TOYOSU FORESIA, 3-2-24, Toyosu, Koto-ku, Tokyo 135-0061, Japan
Renesas Electronics Corporation

Product Category	MPU/MCU		Document No.	TN-RX*-A150A/E	Rev.	1.00
Title	Additions and Corrections Regarding the Descriptions of the Main Clock Oscillator in the User's Manual: Hardware		Information Category	Technical Notification		
Applicable Product	RX64M Group RX71M Group	Lot No. All	Reference Document	RX64M Group User's Manual: Hardware Rev.1.00 (R01UH0377EJ0100) RX71M Group User's Manual: Hardware Rev.1.00 (R01UH0493EJ0100)		

This document describes additions and corrections regarding the descriptions of register settings and circuit design of the main clock oscillator in the user's manual: hardware.
The page numbers, section numbers, table numbers, and figure numbers below are for the RX64M Group. Please see the table in the last page for the RX71M Group.

- Page 316 of 2903

The description is added as follows to "MODRV2[1:0] Bits (Main Clock Oscillator Driving Ability 2 Switching)" in section 9.2.18, Main Clock Oscillator Forced Oscillation Control Register (MOFCR).

Before Correction

MODRV2[1:0] Bits (Main Clock Oscillator Driving Ability 2 Switching)

These bits switch the driving ability of the main clock oscillator.

After Correction

MODRV2[1:0] Bits (Main Clock Oscillator Driving Ability 2 Switching)

These bits switch the driving ability of the main clock oscillator.
Specify the driving ability according to the frequency of a crystal connected to the main clock oscillator.
The frequency ranges specified in the bit description of the MODRV2[1:0] bits are the reference values of the crystal with capacitive load of 8 pF. A setting value may not fit within the frequency range depending on a crystal. Use values recommended by the resonator manufacturer.
In case of a ceramic resonator, it may be better to select lower frequency range than the frequency of the resonator (for example, specify 10b instead of 01b when a ceramic resonator with the frequency range from 16.1 to 20 MHz is used). Use values recommended by the resonator manufacturer.

- Page 318 of 2903

The description is added to section 9.3.1, Connecting a Crystal Resonator as follows.

Before Correction

Figure 9.2 shows an example of connecting a crystal resonator.
A damping resistor Rd should be added, if necessary. Since the resistor values vary depending on the resonator and the oscillation driving ability, use values recommended by the resonator manufacturer. If use of an external feedback resistor (Rf) is directed by the resonator manufacturer, insert an Rf between EXTAL and XTAL by following the instruction.
When connecting a resonator to supply the clock, the frequency of the resonator should be in the frequency range of the resonator for the main clock oscillator described in Table 9.1.

After Correction

Figure 9.2 shows an example of connecting a crystal.
Connect capacitors referring to the capacitive load of the crystal to be used. In addition, a damping resistor Rd should be added, if necessary. The values of capacitors and resistor vary depending on the resonator and the oscillator driving ability. Use values recommended by the resonator manufacturer. If use of an external feedback resistor (Rf) is directed by the resonator manufacturer, insert an Rf between EXTAL and XTAL by following the instruction.
When connecting a resonator to supply the clock, the frequency of the crystal must be in the frequency range of the resonator for the main clock oscillator described in Table 9.1.
When a resonator is connected, setting the MOFCR.MODRV2[1:0] bits (Main Clock Oscillator Driving Ability 2 Switching) is required.
The frequency ranges that are specified in the bit description of the MODRV2[1:0] bits are the reference values of the crystal with capacitive load of C_L = 8 pF. The setting value may not fit within the frequency range depending on a crystal. Use values recommended by the resonator manufacturer.
In case of a ceramic resonator, it may be better to select lower frequency range than the frequency of the resonator. (For example, specify 10b instead of 01b when a ceramic resonator with the frequency range of 16.1 to 20 MHz is used). Use values recommended by the resonator manufacturer.

- Page 318 of 2903

Figure 9.2 is corrected as follows.

Before Correction

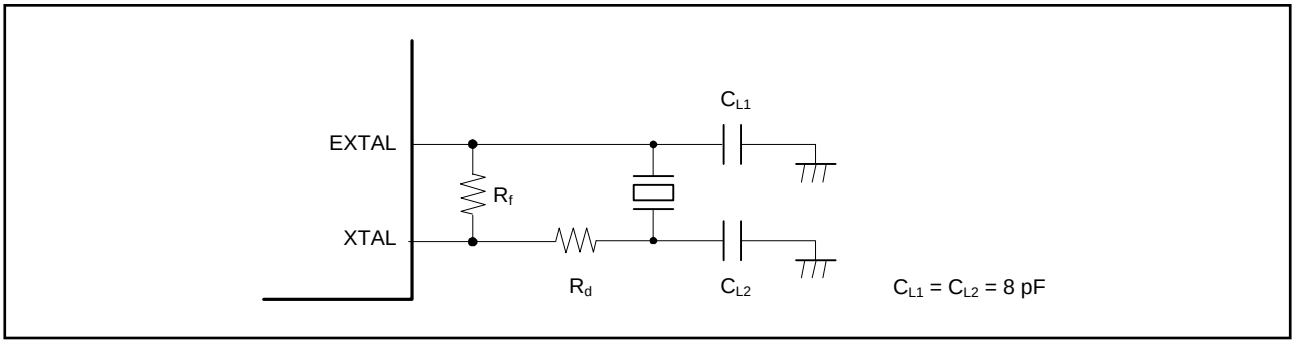

Figure 9.2 Example of Crystal Resonator Connection

After Correction

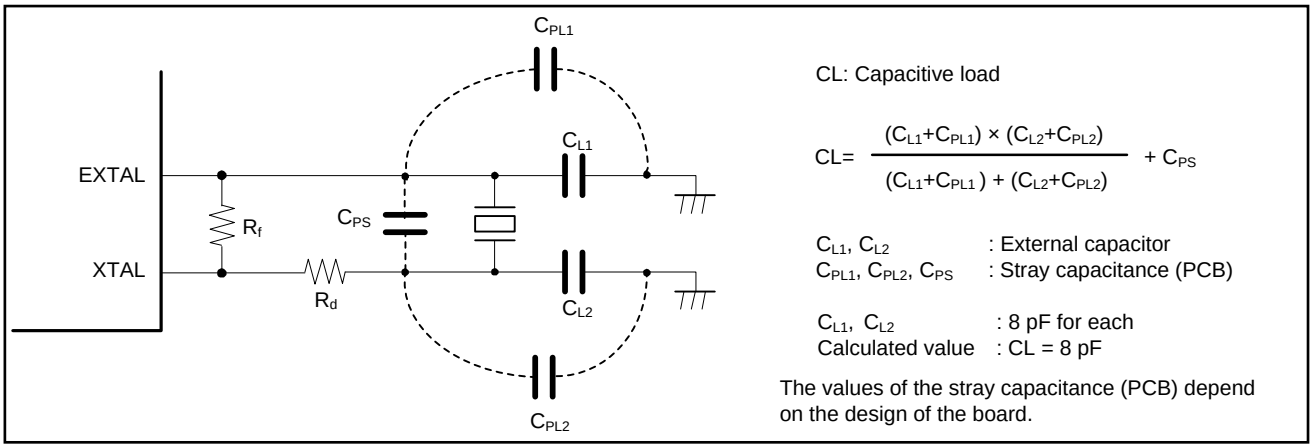

Figure 9.2 Example of Crystal Connection

- Page 318 of 2903

The Table 9.4 are corrected as follows.

Before Correction

Table 9.4 Crystal Resonator Characteristics (Reference Values)

Frequency (MHz)	8	12	16	20	24
R_S max (Ω)	300	120	120	100	100

After Correction

Table 9.4 Crystal Characteristics (Reference Values)

Frequency (MHz)	8	12	16	20	24
R_S max (Ω)	300	100	80	50	50

- List of page numbers, section numbers, figure number, and table numbers

Update	RX64M Group	RX71M Group
Description of the MOFCR register	Page 316 of 2903	Page 322 of 2923
Section No. of the description of the MOFCR register	9.2.18	9.2.19
Page number in section 9.3.1	Page 318 of 2903	Page 324 of 2923
Figure number of "Example of Crystal Resonator Connection"	Figure 9.2	Figure 9.4
Table no. of “Crystal Resonator Characteristics”	Table 9.4	Table 9.5

End of document