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RENESAS TECHNICAL UPDATE

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Product Category	MPU/MCU		Document No.	TN-RX*-A0224B/E	Rev.	2.00
Title	RX Family Note on Rewriting the System Clock Control Register 3 (SCKCR3)		Information Category	Technical Notification		
Applicable Product	RX110 Group, RX111 Group, RX113 Group, RX130 Group, RX13T Group, RX210 Group, RX21A Group, RX220 Group, RX230 Group, RX231 Group, RX23T Group, RX23E-A Group, RX23W Group, RX24T Group, RX24U Group, RX630 Group, RX63N Group, RX631 Group, RX63T Group, RX634 Group, RX64M Group, RX65N Group, RX651 Group, RX66T Group, RX66N Group, RX71M Group, RX72T Group, RX72M Group, RX72N Group	Lot No. All	Reference Document	User's Manual: Hardware for applicable products (see the table at the bottom)		

This document is a note on rewriting the SCKCR3.CKSEL[2:0] bits in the applicable products.

1. Note

When rewriting the SCKCR3.CKSEL[2:0] bits, an external pin interrupt, NMI pin interrupt, RTC periodic interrupt, or RTC periodic event output which is generated during switching of the clock source may not be accepted.

2. Cause

The clock output is temporarily stopped to prevent the generation of a clock pulse of short duration (glitch) when the clock source is switched. The interrupt controller and event link controller cannot capture an asynchronous signal with a short pulse width that was input during this period.

3. Condition for Occurrence

3.1 External Pin Interrupts (IRQi Pins) (i = 0 to 15) and NMI Pin Interrupt

If either of the following conditions is satisfied, an external pin interrupt or NMI pin interrupt may not be detected.

(1) When the SCKCR3.CKSEL[2:0] bits are rewritten while the SCKCR.PCKB[3:0] bits are 0000b (× 1/1) and the width of the pulse input to the IRQi pin or NMI pin is narrower than 4 cycles of the PCLKB after the switch.

(2) When the SCKCR3.CKSEL[2:0] bits are rewritten while the SCKCR.PCKB[3:0] bits are 0001b (× 1/2) and the width of the pulse input to the IRQi pin or NMI pin is narrower than 2.5 cycles of the PCLKB after the switch.

3.2 RTC Periodic Interrupt and RTC Periodic Event Output

If any of the following conditions is satisfied, the interrupt controller may not detect an RTC periodic interrupt and the event link controller may not detect an RTC periodic event output.

(1) When the SCKCR3.CKSEL[2:0] bits are changed to 001b (HOCO) while the count source of the RTC is set as the main clock (RCR4.RCKSEL = 1) in a product for which the frequency of the high-speed on-chip oscillator is not greater than 20 MHz.

(2) When the SCKCR3.CKSEL[2:0] bits are changed to 010b (main clock) while the count source of the RTC is set as the main clock (RCR4.RCKSEL = 1).

(3) When the SCKCR3.CKSEL[2:0] bits are changed to 011b (sub-clock) while the count source of the RTC is set as the sub-clock (RCR4.RCKSEL = 0).

Table 1 lists the applicable products to which each of the conditions described above is applicable.

Table 1. Applicable Products

Product Group	Periodic Interrupt			Periodic Event Output*1		
	(1) *2	(2) *2	(3)	(1) *2	(2) *2	(3)
RX110 Group	—		✓	—		
RX111 Group	—		✓	—		
RX113 Group	—		✓	—		
RX130 Group	—		✓	—		
RX210 Group	—		✓	—		✓
RX21A Group	—		✓	—		✓
RX220 Group	—		✓	—		
RX230 Group, RX231 Group	—		✓	—		✓
RX23W Group	—		✓	—		✓
RX630 Group	—	✓	✓	—		
RX63N Group, RX631 Group	—	✓	✓	—		
RX64M Group	✓	✓	✓	✓	✓	✓
RX65N Group, RX651 Group	✓	✓	✓	✓	✓	✓
RX66N Group	✓	✓	✓	✓	✓	✓
RX71M Group	✓	✓	✓	✓	✓	✓
RX72M Group	✓	✓	✓	✓	✓	✓
RX72N Group	✓	✓	✓	✓	✓	✓

✓: Applicable, —: Not applicable

Note 1. Only applicable to products that have a periodic event output.

Note 2. Only applicable to products with an RCR4 register.

4. Countermeasures

4.1 External Pin Interrupts and NMI Pin Interrupt

Make the pulse width of the input signal wide enough to exceed the time condition described in section 3.1.

4.2 RTC Periodic Interrupt and RTC Periodic Event Output

Switch the clock source while a periodic interrupt or periodic event output is not to be generated. In concrete terms, switch the clock source after a periodic interrupt is generated and before the next periodic interrupt is generated.

5. Reference Documents

Series	Group	Manual Title (Document Number)
RX100 Series	RX110 Group	RX110 Group User's Manual: Hardware Rev.1.20 (R01UH0421EJ0120)
	RX111 Group	RX111 Group User's Manual: Hardware Rev.1.30 (R01UH0365EJ0130)
	RX113 Group	RX113 Group User's Manual: Hardware Rev.1.10 (R01UH0448EJ0110)
	RX130 Group	RX130 Group User's Manual: Hardware Rev.3.00 (R01UH0560EJ0300)
	RX13T Group	RX13T Group User's Manual: Hardware Rev.1.00 (R01UH0822EJ0100)
RX200 Series	RX210 Group	RX210 Group User's Manual: Hardware Rev.1.50 (R01UH0037EJ0150)
	RX21A Group	RX21A Group User's Manual: Hardware Rev.1.10 (R01UH0251EJ0110)
	RX220 Group	RX220 Group User's Manual: Hardware Rev.1.10 (R01UH0292EJ0110)
	RX231 Group, RX230 Group	RX230 Group, RX231 Group User's Manual: Hardware Rev.1.20 (R01UH0496EJ0120)
	RX23T Group	RX23T Group User's Manual: Hardware Rev.1.10 (R01UH0520EJ0110)
	RX23E-A Group	RX23E-A Group User's Manual: Hardware Rev.1.00 (R01UH0801EJ0100)
	RX23W Group	RX23W Group User's Manual: Hardware Rev.1.00 (R01UN0823EJ0100)
	RX24T Group	RX24T Group User's Manual: Hardware Rev.2.00 (R01UH0576EJ0200)
	RX24U Group	RX24U Group User's Manual: Hardware Rev.1.00 (R01UH0658EJ0100)
RX600 Series	RX630 Group	RX630 Group User's Manual: Hardware Rev.1.60 (R01UH0040EJ0160)
	RX63N Group, RX631 Group	RX63N Group, RX631 Group User's Manual: Hardware Rev.1.80 (R01UH0041EJ0180)
	RX63T Group	RX63T Group User's Manual: Hardware Rev.2.20 (R01UH0238EJ0220)
	RX634 Group	RX634 Group User's Manual: Hardware Rev.1.00 (R01UH0495EJ0100)
	RX64M Group	RX64M Group User's Manual: Hardware Rev.1.10 (R01UH0377EJ0110)
	RX65N Group, RX651 Group	RX65N Group, RX651 Group User's Manual: Hardware Rev.2.30 (R01UH0590EJ0230)
	RX66T Group	RX66T Group User's Manual: Hardware Rev.1.10 (R01UH0749EJ0110)
	RX66N Group	RX66N Group User's Manual: Hardware Rev.1.00 (R01UH0825EJ0100)
RX700 Series	RX71M Group	RX71M Group User's Manual: Hardware Rev.1.10 (R01UH0493EJ0110)
	RX72T Group	RX72T Group User's Manual: Hardware Rev.1.00 (R01UH0803EJ0100)
	RX72M Group	RX72M Group User's Manual: Hardware Rev.1.00 (R01UH0804EJ0100)
	RX72N Group	RX72N Group User's Manual: Hardware Rev.1.00 (R01UH0824EJ0100)