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RENESAS TECHNICAL NEWS

No.M16C-105-0309

M30201 group and M302N1/M302N2 group

Precautions for using “One Shot Timer Mode” of timer A and timer X

Classification

Corrections and supplementary explanation of document

√ Notes

Knowhow

Others

Concerned Products

M30201 group

M302N1/M302N2 group

1. Notes

If setting '0' to the timer register in case timer A or timer X is used in the one shot timer mode, there are the following cautions about timer operation.

If the timer register is set to '0', the counter does not work and timer interrupt request is not generated either. Furthermore, if “pulse output” is selected, the output level from the timer output pin does not change.

The object pages of datasheets and user's manual (*) is shown the following pages.

* The page number of following is matched the latest issues.

Document Name	Printed No./PDF REV.	Date of Issue
M30201 group datasheet	REV.E	2001.4
M30201 group user's manual	REV.C	2001.6
M302N1/M302N2 group datasheet	REV.B.0	2002.1

In addition, the contents of this technical news will be reflected to these datasheets and user's manual at the next update time.

Document Name	Page	Object
M30201 group datasheet	Page49	Figure 1.39. Timer A-related registers (2)
M30201 group user's manual	Page50	Figure 1.39. Timer A-related registers (2)
M30201 group user's manual	Page177	Figure 2.2.3. Timer A-related registers (2)
M302N1/M302N2 group datasheet	Page 59	Figure 1.14.5. Timer A-related registers (2)

Timer A0 register (Note 1, 2)

(b15) b7	(b8) b0 b7	b0	symbol TA0	address 0387 ₁₆ , 0386 ₁₆	when reset Indeterminate
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Function	values that can be set	R	W
<ul style="list-style-type: none"> • Timer Mode Counts an internal count source 	0000 ₁₆ to FFFF ₁₆	○	○
<ul style="list-style-type: none"> • Event counter mode Counts pulses from an external source or timer overflow 	0000 ₁₆ to FFFF ₁₆	○	○
<ul style="list-style-type: none"> • One-shot timer mode Counts a one shot width 	0000 ₁₆ to FFFF ₁₆ (Note 3)	×	○
<ul style="list-style-type: none"> • Pulse width modulation mode (16-bit PWM) Functions as a 16-bit pulse width modulator 	0000 ₁₆ to FFFF ₁₆	×	○
<ul style="list-style-type: none"> • Pulse width modulation mode (8-bit PWM) Timer low-order address functions as an 8-bit prescaler and high-order address functions as an 8-bit pulse width modulator 	00 ₁₆ to FF ₁₆ (High-order addresses) 00 ₁₆ to FF ₁₆ (Low-order addresses)	×	○

Note 1: Writing to this register, use the MOV instruction.

Note 2: Read and write data in 16-bit units.

Note 3: If the TA0 register is set to '0000₁₆', the counter does not work and timer A0 interrupt request is not generated either. Furthermore, if "pulse output (TA0OUT pin is a pulse output pin)" is selected, the output level from the TA0OUT pin does not change.

Document Name	Page	Object
M30201 group datasheet	Page 65	Figure 1.58. Timer X-related registers (2)
M30201 group user's manual	Page 66	Figure 1.58. Timer X-related registers (2)
M30201 group user's manual	Page 222	Figure 2.4.2. Timer X-related registers (1)
M302N1/M302N2 group datasheet	Page 75	Figure 1.16.3. Timer X-related registers (2)

Timer Xi register (Note 1, 2)

(b15) b7	(b8) b0 b7	b0	symbol TX0 TX1 TX2	address 0389 ₁₆ , 0388 ₁₆ 038B ₁₆ , 038A ₁₆ 038D ₁₆ , 038C ₁₆	when reset Indeterminate Indeterminate Indeterminate
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Function	values that can be set	R	W
<ul style="list-style-type: none"> • Timer Mode Counts an internal count source 	0000 ₁₆ to FFFF ₁₆	○	○
<ul style="list-style-type: none"> • Event counter mode Counts pulses from an external source or timer overflow 	0000 ₁₆ to FFFF ₁₆	○	○
<ul style="list-style-type: none"> • One-shot timer mode Counts a one shot width 	0000 ₁₆ to FFFF ₁₆ (Note 3)	×	○
<ul style="list-style-type: none"> • Pulse period / pulse width measurement mode Measures a pulse period or width 	—	○	×
<ul style="list-style-type: none"> • Pulse width modulation mode (16-bit PWM) Functions as a 16-bit pulse width modulator 	0000 ₁₆ to FFFF ₁₆	×	○
<ul style="list-style-type: none"> • Pulse width modulation mode (8-bit PWM) Timer low-order address functions as an 8-bit prescaler and high-order address functions as an 8-bit pulse width modulator 	00 ₁₆ to FF ₁₆ (High-order addresses) 00 ₁₆ to FF ₁₆ (Low-order addresses)	×	○

Note 1: Read and write data in 16-bit units.

Note 2: Writing to this register, use the MOV instruction.

Note 3: If the TXi register is set to '0000₁₆', the counter does not work and timer Xi interrupt request is not generated either. Furthermore, if "pulse output (TXiINOUT pin is a pulse output pin)" is selected, the output level from the TXiINOUT pin does not change.

Document Name	Page	Object
M30201 group user's manual	Page 195	Figure 2.2.21. Set-up procedure of one-shot mode
	Page 197	Figure 2.2.23. Set-up procedure of one-shot mode, external trigger selected



Setting one-shot timer's time

(b15) (b8) b0
b7 b0 b7

Timer A0 register [Address 0387₁₆, 0386₁₆] TA0

(Previous change) Can be set to 0001₁₆ to FFFF₁₆

(After change) Can be set to 0000₁₆ to FFFF₁₆ (Note 1)

Note 1. If theTA0 register is set to '0000₁₆', the counter does not work and timer A0 interrupt request is not generated either. Furthermore, the output level from the TA0OUT pin does not change.



Document Name	Page	Object
M30201 group user's manual	Page 235	Figure 2.4.15. Set-up procedure of one-shot mode



Setting one-shot timer's time

(b15) (b8) b0
b7 b0 b7

Timer X0 register [Address 0389₁₆, 0388₁₆] TX0
 Timer X1 register [Address 038B₁₆, 038A₁₆] TX1
 Timer X2 register [Address 038D₁₆, 038C₁₆] TX2

Can be set to 0000₁₆ to FFFF₁₆ (Note 1)

Note 1. If theTXi register is set to '0000₁₆', the counter does not work and timer Xi interrupt request is not generated either. Furthermore, the output level from the TXiINOUT pin does not change.

