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RENESAS TECHNICAL UPDATE

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Product Category	MPU/MCU		Document No.	TN-SY*-A0082B/E	Rev.	2.00
Title	Restrictions when using AGT Event counter mode		Information Category	Technical Notification		
Applicable Product	S124, S128, S1JA, S3A1, S3A3, S3A6, S3A7, S5D3, S5D5, S5D9, S7G2 Group	Lot No. All	Reference Document	Refer table at the end of this document		

Restrictions when using AGT Event counter mode are added as follows.

1) S124, S128
2) S1JA
3) S3A1, S3A7
4) S3A3
5) S3A6
6) S5D3
7) S5D5, S5D9, S7G2

1) S124, S128

Table 20.9 Usable setting in Software Standby mode (AGT0) *for S124*
Table 22.9 Usable settings in Software Standby mode (AGT0) *for S128*

Operating mode	TCK[2:0] bits of AGTMR1 Register	Operating clock	Resurgence factor of CPU
Timer mode	100b or 110b	AGTLCLK or AGTSCLK	–
Pulse output mode	100b or 110b	AGTLCLK or AGTSCLK	–
Event counter mode *1	– (invalid)	AGTIOn	–
Pulse width measurement mode	100b or 110b	AGTLCLK or AGTSCLK	–
Pulse period measurement mode	100b or 110b	AGTLCLK or AGTSCLK	–

Note 1. When AGTIOSEL.TIES = 0 and the external event input signal is disabled during Software Standby mode, stop the count operation before entering Software Standby mode. After returning from Software Standby mode, restart the count operation if necessary.

Table 20.10 Usable setting in Software Standby mode (AGT1) *for S124*
Table 22.10 Usable settings in Software Standby mode (AGT1) *for S128*

Operating mode	TCK[2:0] Bits of AGTMR1 Register	Operating clock	Resurgence factor of CPU
Timer mode	100b or 110b or 101b *1	AGTLCLK or AGTSCLK or AGT0 underflow	• Underflow • Compare match A/B
Pulse output mode	100b or 110b or 101b *1	AGTLCLK or AGTSCLK or AGT0 underflow	• Underflow • Compare match A/B
Event counter mode *2	– (invalid)	AGTIOn	• Underflow • Compare match A/B
Pulse width measurement mode	100b or 110b or 101b *1	AGTLCLK or AGTSCLK or AGT0 underflow	• Underflow • Active edge
Pulse period measurement mode	100b or 110b or 101b *1	AGTLCLK or AGTSCLK or AGT0 underflow	• Underflow • Active edge

Note: Release of Software Standby mode is only AGT1.
Note 1. Only when AGT0 operates in Table 20.9.
Note 2. When AGTIOSEL.TIES = 0 and the external event input signal is disabled during Software Standby mode, stop the count operation before entering Software Standby mode. After returning from Software Standby mode, restart the count operation if necessary.

2) S1JA

Table 22.9 Usable settings in Software Standby mode (AGT0)

Operating mode	AGTMR1.TCK[2:0]	Operating clock	Resurgence factor of CPU
Timer mode	100b or 110b	AGTLCLK or AGTSCLK	–
Pulse output mode	100b or 110b	AGTLCLK or AGTSCLK	–
Event counter mode *1	– (invalid)	AGTIO0	–
Pulse width measurement mode	100b or 110b	AGTLCLK or AGTSCLK	–
Pulse period measurement mode	100b or 110b	AGTLCLK or AGTSCLK	–

Note 1. When AGTIOSEL.TIES = 0 and the external event input signal is disabled during Software Standby mode, stop the count operation before entering Software Standby mode. After returning from Software Standby mode, restart the count operation if necessary.

Table 22.10 Usable settings in Software Standby mode (AGT1)

Operating mode	AGTMR1.TCK[2:0]	Operating clock	Resurgence factor of CPU
Timer mode	100b or 110b or 101b *1	AGTLCLK or AGTSCLK or AGT0 underflow	• Underflow • Compare match A/B
Pulse output mode	100b or 110b or 101b *1	AGTLCLK or AGTSCLK or AGT0 underflow	• Underflow • Compare match A/B
Event counter mode *2	— (invalid)	AGTIO1	• Underflow • Compare match A/B
Pulse width measurement mode	100b or 110b or 101b *1	AGTLCLK or AGTSCLK or AGT0 underflow	• Underflow • Active edge
Pulse period measurement mode	100b or 110b or 101b *1	AGTLCLK or AGTSCLK or AGT0 underflow	• Underflow • Active edge

Note: Release of Software Standby mode is only AGT1.
Note 1. Only when AGT0 operates in Table 22.9.
Note 2. When AGTIOSEL.TIES = 0 and the external event input signal is disabled during Software Standby mode, stop the count operation before entering Software Standby mode. After returning from Software Standby mode, restart the count operation if necessary.

3) S3A1, S3A7

Table 24.9 Usable settings in Software Standby mode (AGT0) *for S3A1*
Table 24.9 Usable setting in Software Standby mode (AGT0) *for S3A7*

Operating mode	TCK[2:0] bits of AGTMR1 register	Operating clock	Resurgence factor of CPU
Timer mode	100b or 110b	AGTLCLK or AGTSCLK	–
Pulse output mode	100b or 110b	AGTLCLK or AGTSCLK	–
Event counter mode *1	– (invalid)	AGTIOn	–
Pulse width measurement mode	100b or 110b	AGTLCLK or AGTSCLK	–
Pulse period measurement mode	100b or 110b	AGTLCLK or AGTSCLK	–

Note 1. When AGTIOSEL.TIES = 0 and the external event input signal is disabled during Software Standby mode, stop the count operation before entering Software Standby mode. After returning from Software Standby mode, restart the count operation if necessary.

Table 24.10 Usable settings in Software Standby mode (AGT1) *for S3A1*
Table 24.10 Usable setting in Software Standby mode (AGT1) *for S3A7*

Operating mode	TCK[2:0] bits of AGTMR1 register	Operating clock	Resurgence factor of CPU
Timer mode	100b or 110b or 101b *1	AGTLCLK or AGTSCLK or AGT0 underflow	• Underflow • Compare match A/B
Pulse output mode	100b or 110b or 101b *1	AGTLCLK or AGTSCLK or AGT0 underflow	• Underflow • Compare match A/B
Event counter mode *2	– (Invalid)	AGTIOn	• Underflow • Compare match A/B
Pulse width measurement mode	100b or 110b or 101b *1	AGTLCLK or AGTSCLK or AGT0 underflow	• Underflow • Active edge
Pulse period measurement mode	100b or 110b or 101b *1	AGTLCLK or AGTSCLK or AGT0 underflow	• Underflow • Active edge

Note: Release of Software Standby mode is only for AGT1.
Note 1. Only when AGT0 operates in Table 24.9.
Note 2. When AGTIOSEL.TIES = 0 and the external event input signal is disabled during Software Standby mode, stop the count operation before entering Software Standby mode. After returning from Software Standby mode, restart the count operation if necessary.

4) S3A3

Table 24.9 Usable setting in Software Standby mode (AGT0)

Operating mode	AGTMR1.TCK[2:0]	Operating clock	Resurgence factor of CPU
Timer mode	100b or 110b	AGTLCLK or AGTSCLK	–
Pulse output mode	100b or 110b	AGTLCLK or AGTSCLK	–
Event counter mode *1	– (invalid)	AGTIOn	–
Pulse width measurement mode	100b or 110b	AGTLCLK or AGTSCLK	–
Pulse period measurement mode	100b or 110b	AGTLCLK or AGTSCLK	–

Note 1. When AGTIOSEL.TIES = 0 and the external event input signal is disabled during Software Standby mode, stop the count operation before entering Software Standby mode. After returning from Software Standby mode, restart the count operation if necessary.

Table 24.10 Usable setting in Software Standby mode (AGT1)

Operating mode	AGTMR1.TCK[2:0]	Operating clock	Resurgence factor of CPU
Timer mode	100b or 110b or 101b *1	AGTLCLK or AGTSCLK or AGT0 underflow	• Underflow • Compare match A/B
Pulse output mode	100b or 110b or 101b *1	AGTLCLK or AGTSCLK or AGT0 underflow	• Underflow • Compare match A/B
Event counter mode *2	– (invalid)	AGTIOn	• Underflow • Compare match A/B
Pulse width measurement mode	100b or 110b or 101b *1	AGTLCLK or AGTSCLK or AGT0 underflow	• Underflow • Active edge
Pulse period measurement mode	100b or 110b or 101b *1	AGTLCLK or AGTSCLK or AGT0 underflow	• Underflow • Active edge

Note: Release of Software Standby mode is only AGT1.
Note 1. Only when AGT0 operates in Table 24.9.
Note 2. When AGTIOSEL.TIES = 0 and the external event input signal is disabled during Software Standby mode, stop the count operation before entering Software Standby mode. After returning from Software Standby mode, restart the count operation if necessary.

5) S3A6

Table 23.9 Usable setting in Software Standby mode (AGT0)

Operating mode	AGTMR1.TCK[2:0]	Operating clock	Resurgence factor of CPU
Timer mode	100b or 110b	AGTLCLK or AGTSCLK	–
Pulse output mode	100b or 110b	AGTLCLK or AGTSCLK	–
Event counter mode *1	– (invalid)	AGTIO0	–
Pulse width measurement mode	100b or 110b	AGTLCLK or AGTSCLK	–
Pulse period measurement mode	100b or 110b	AGTLCLK or AGTSCLK	–

Note 1. When AGTIOSEL.TIES = 0 and the external event input signal is disabled during Software Standby mode, stop the count operation before entering Software Standby mode. After returning from Software Standby mode, restart the count operation if necessary.

Table 23.10 Usable setting in Software Standby mode (AGT1)

Operating mode	AGTMR1.TCK[2:0]	Operating clock	Resurgence factor of CPU
Timer mode	100b or 110b or 101b *1	AGTLCLK or AGTSCLK or AGT0 underflow	• Underflow • Compare match A/B
Pulse output mode	100b or 110b or 101b *1	AGTLCLK or AGTSCLK or AGT0 underflow	• Underflow • Compare match A/B
Event counter mode *2	– (invalid)	AGTIO1	• Underflow • Compare match A/B
Pulse width measurement mode	100b or 110b or 101b *1	AGTLCLK or AGTSCLK or AGT0 underflow	• Underflow • Active edge
Pulse period measurement mode	100b or 110b or 101b *1	AGTLCLK or AGTSCLK or AGT0 underflow	• Underflow • Active edge

Note: Release of Software Standby mode is only for AGT1.
Note 1. Only when AGT0 operates in Table 23.9.
Note 2. When AGTIOSEL.TIES = 0 and the external event input signal is disabled during Software Standby mode, stop the count operation before entering Software Standby mode. After returning from Software Standby mode, restart the count operation if necessary.

6) S5D3

Table 25.9 Usable settings in Software Standby and Deep Software Standby modes (AGT0)

Operating mode	TCK[2:0] bits of AGTMR1 register	Operating clock	Resurgence factor of CPU
Timer mode	100b or 110b	AGTLCLK or AGTSCLK	—
Pulse output mode	100b or 110b	AGTLCLK or AGTSCLK	—
Event counter mode *1, *2	- (Invalid)	AGTIOn	—
Pulse width measurement mode	100b or 110b	AGTLCLK or AGTSCLK	—
Pulse period measurement mode	100b or 110b	AGTLCLK or AGTSCLK	—

Note 1. When AGTIOSEL.TIES = 0 and the external event input signal is disabled during Software Standby mode, stop the count operation before entering Software Standby mode. After returning from Software Standby mode, restart the count operation if necessary.
Note 2. When AGTIOSEL.SEL = 00b is set and AGTIO cannot be used as AGTIO input pin in Deep Software Standby mode, stop the count operation before entering Deep Software Standby mode. After returning from Deep Software Standby mode, restart the count operation if necessary.

Table 25.10 Usable settings in Software Standby and Deep Software Standby modes (AGT1)

Operating mode	AGTMR1.TCK[2:0]	Operating clock	Resurgence factor of CPU
Timer mode	100b or 110b or 101b *1	AGTLCLK or AGTSCLK or AGT0 underflow	• Underflow • Compare match A/B
Pulse output mode	100b or 110b or 101b *1	AGTLCLK or AGTSCLK or AGT0 underflow	• Underflow • Compare match A/B
Event counter mode *2, *3	— (invalid)	AGTIOn	• Underflow • Compare match A/B
Pulse width measurement mode	100b or 110b or 101b *1	AGTLCLK or AGTSCLK or AGT0 underflow	• Underflow • Active edge
Pulse period measurement mode	100b or 110b or 101b *1	AGTLCLK or AGTSCLK or AGT0 underflow	• Underflow • Active edge

Note: Release of Software Standby mode or Deep Software Standby mode is only AGT1.
Note 1. Only when AGT0 operates in Table 25.9.
Note 2. When AGTIOSEL.TIES = 0 and the external event input signal is disabled during Software Standby mode, stop the count operation before entering Software Standby mode. After returning from Software Standby mode, restart the count operation if necessary.
Note 3. When AGTIOSEL.SEL = 00b is set and AGTIO cannot be used as AGTIO input pin in Deep Software Standby mode, stop the count operation before entering Deep Software Standby mode. After returning from Deep Software Standby mode, restart the count operation if necessary.

7) S5D5, S5D9, S7G2

Table 25.9 Usable settings for AGT0 in Software Standby and Deep Software Standby modes

Operating mode	TCK[2:0] bits of AGTMR1 register	Operating clock	Resurgence factor of CPU
Timer mode	100b or 110b	AGTLCLK or AGTSCLK	—
Pulse output mode	100b or 110b	AGTLCLK or AGTSCLK	—
Event counter mode *1, *2	- (Invalid)	AGTIOn	—
Pulse width measurement mode	100b or 110b	AGTLCLK or AGTSCLK	—
Pulse period measurement mode	100b or 110b	AGTLCLK or AGTSCLK	—

Note 1. When AGTIOSEL.TIES = 0 and the external event input signal is disabled during Software Standby mode, stop the count operation before entering Software Standby mode. After returning from Software Standby mode, restart the count operation if necessary.
Note 2. When AGTIOSEL.SEL = 00b is set and AGTIO cannot be used as AGTIO input pin in Deep Software Standby mode, stop the count operation before entering Deep Software Standby mode. After returning from Deep Software Standby mode, restart the count operation if necessary.

Table 25.10 Usable settings AGT1 in Software Standby and Deep Software Standby modes

Operating mode	TCK[2:0] bits of AGTMR1 register	Operating clock	Resurgence factor of CPU
Timer mode	100b or 110b or 101b *1	AGTLCLK or AGTSCLK or AGT0 underflow	• Underflow • Compare match A/B
Pulse output mode	100b or 110b or 101b *1	AGTLCLK or AGTSCLK or AGT0 underflow	• Underflow • Compare match A/B
Event counter mode *2, *3	- (Invalid)	AGTIOn	• Underflow • Compare match A/B
Pulse width measurement mode	100b or 110b or 101b *1	AGTLCLK or AGTSCLK or AGT0 underflow	• Underflow • Active edge
Pulse period measurement mode	100b or 110b or 101b *1	AGTLCLK or AGTSCLK or AGT0 underflow	• Underflow • Active edge

Note: Release of Software Standby mode or Deep Software Standby mode is only AGT1.
Note 1. Only when AGT0 operates in Table 25.9.
Note 2. When AGTIOSEL.TIES = 0 and the external event input signal is disabled during Software Standby mode, stop the count operation before entering Software Standby mode. After returning from Software Standby mode, restart the count operation if necessary.
Note 3. When AGTIOSEL.SEL = 00b is set and AGTIO cannot be used as AGTIO input pin in Deep Software Standby mode, stop the count operation before entering Deep Software Standby mode. After returning from Deep Software Standby mode, restart the count operation if necessary.

Reference Document Table

Product	Document name
S124 MCU Group	S124 Microcontroller Group User's Manual Rev.1.40
S128 MCU Group	S128 Microcontroller Group User's Manual Rev.1.20
S1JA MCU Group	S1JA Microcontroller Group User's Manual Rev.1.60
S3A1 MCU Group	S3A1 Microcontroller Group User's Manual Rev.1.30
S3A3 MCU Group	S3A3 Microcontroller Group User's Manual Rev.1.20
S3A6 MCU Group	S3A6 Microcontroller Group User's Manual Rev.1.30
S3A7 MCU Group	S3A7 Microcontroller Group User's Manual Rev.1.40
S5D3 MCU Group	S5D3 Microcontroller Group User's Manual Rev.1.20
S5D5 MCU Group	S5D5 Microcontroller Group User's Manual Rev.1.40
S5D9 MCU Group	S5D9 Microcontroller Group User's Manual Rev.1.40
S7G2 MCU Group	S7G2 Microcontroller Group User's Manual Rev.1.40