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RENESAS TECHNICAL UPDATE

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Product Category	MPU/MCU		Document No.	TN-V85-A026A/E	Rev.	1.00
Title	Precaution of A/D conversion accuracy		Information Category	Technical Notification		
Applicable Product	V850E2/Mx4 series	Lot No. All lots	Reference Document	User Manual of each product		

The above target product series add the below limitation items.

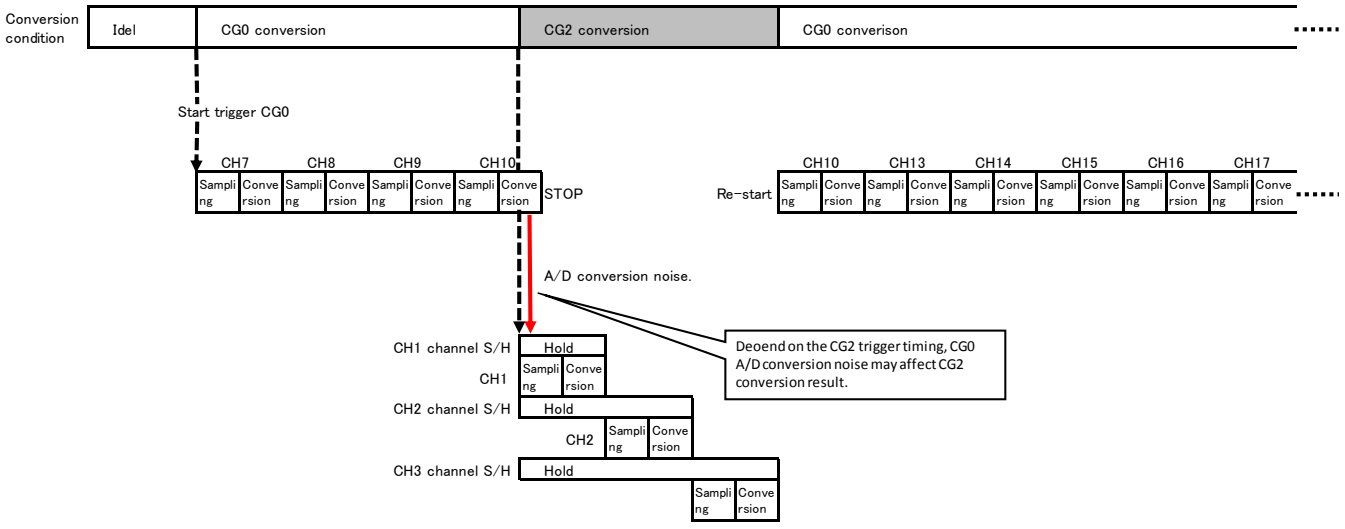
1. Restriction

There is a possibility that A/D conversion accuracy of high priority CG become worse when following both condition is used.

1) During the A/D conversion of low priority CG (e.g. CG0), conversion trigger of the high priority CG (e.g. CG2) occur.
2) The channel S/H function of high priority CG (e.g. CG2) is enabled.

Note: The above case is one of an example of CG combination. The CG priority is CG2 > CG1 > CG0.

CG0(Low priority) = CH7, CH8, CH9, CH10, CH13, CH14, CH15, CH16 (Continua conversion mode.)
CG2(High priority) = CH1, CH2, CH3 (Channel S/H function is enabled.)



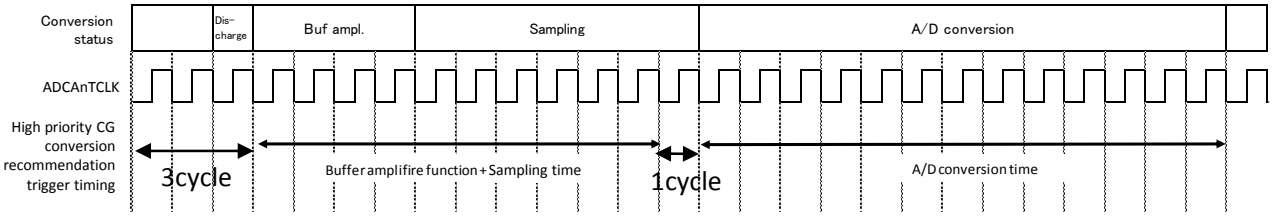
Note: The fluctuation of conversion error depends on the external circuit and devices mounted on the customer board.

2. Countermeasure

1) Low priority CG (e.g. CG0) A/D conversion have to be finished 3 ADCAnTCLK before the conversion trigger of high priority CG (e.g. CG2), if the CG2 contains the channels which channel S/H is available.

2) If there is a case that high priority CG (e.g. CG2) conversion trigger occur during the conversion of low priority CG (e.g.CG0), disable the high priority CG channel S/H function.

3) If the both condition mentioned in previous page need to be used, adjust high priority CG (e.g.CG2) conversion trigger timing not to occur 3 cycle period before “buffer amplifier function + sampling time” and 1cycle period before “A/D conversion time”



Example condition: Discharge function: ON, Buffer amplifier function: ON, ADCAnCTL1.ADCAnCTYP=0

Note: Even if trigger timing is adjusted above recommendation time, conversion error specified in Data Sheet can’t be removed.

When taking above 3 countermeasures is difficult, taking following process is recommended.

- Doing A/D conversion several times and using average of several A/D conversion results.
- Doing continuous A/D conversion several times, remove abnormal conversion result and use only the other results.
- When abnormal A/D conversion result is detected, not to proceed abnormal operation immediately, doing one more A/D conversion before proceeding abnormal operation.

Note: The effect of above countermeasure and recommendation process is depend on the external circuit and devices mounted on the customer board. Sufficient evaluation of the system is recommended.