

RENESAS TECHNICAL UPDATE

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Product Category	MPU/MCU		Document No.	TN-R8C-A015A/E	Rev.	1.00
Title	Corrections for A/D Conversion Time		Information Category	Technical Notification		
Applicable Product	See below	Lot No.	Reference Document			

Please be advised that the A/D conversion time in the hardware manuals has been revised for the following applicable products.

1. Applicable Products

R8C/32C Group, R8C/32D Group, R8C/33C Group, R8C/33D Group, R8C/33T Group, R8C/34C Group,
R8C/35C Group, R8C/35D Group, R8C/36C Group, R8C/38C Group, R8C/3GC Group, R8C/3GD Group, R8C/3JC Group,
R8C/L35C Group, R8C/L36C Group, R8C/L38C Group, R8C/L3AC Group

2. Applicable Documents

- R8C/32C Group Hardware Manual Rev.1.00 (REJ09B0573-0100)
- R8C/32D Group Hardware Manual Rev.1.00 (REJ09B0528-0100)
- R8C/32D Group Datasheet Rev.1.00 (REJ03B0288-0100)
- R8C/33C Group Hardware Manual Rev.1.00 (REJ09B0570-0100)
- R8C/33D Group User's Manual: Hardware Rev.1.00 (REJ09B0539-0100)
- R8C/33D Group Datasheet Rev.1.00 (REJ03B0287-0100)
- R8C/33T Group Hardware Manual Rev.1.00 (REJ09B0544-0100)
- R8C/33T Group Datasheet Rev.1.00 (REJ03B0311-0100)
- R8C/34C Group Hardware Manual Rev.1.00 (REJ09B0586-0100)
- R8C/35C Group Hardware Manual Rev. 1.00 (REJ09B0567-0100)
- R8C/35D Group User's Manual: Hardware Rev.1.00 (REJ09B0542-0100)
- R8C/35D Group Datasheet Rev.1.00 (REJ03B0286-0100)
- R8C/36C Group User's Manual: Hardware Rev.1.00 (REJ09B0574-0100)
- R8C/36C Group Datasheet Rev.1.00 (REJ03B0296-0100)
- R8C/38C Group User's Manual: Hardware Rev.1.00 (REJ09B0584-0100)
- R8C/38C Group Datasheet Rev.1.00 (REJ03B0295-0100)
- R8C/3GC Group User's Manual: Hardware Rev.0.10 (REJ09B0603-0010)
- R8C/3GC Group Datasheet Rev.0.10 (REJ03B0301-0010)
- R8C/3GD Group Hardware Manual Rev.1.00 (REJ09B0518-0100)
- R8C/3GD Group Datasheet Rev.1.00 (REJ03B0289-0100)
- R8C/3JC Group User's Manual: Hardware Rev.1.00 (REJ09B0602-0100)
- R8C/3JC Group Datasheet Rev.1.00 (REJ03B0302-0100)
- R8C/L35C Group, R8C/L36C Group, R8C/L38C Group, R8C/L3AC Group User's Manual: Hardware Rev.1.00 (REJ09B0585-0100)
- R8C/L35C Group, R8C/L36C Group, R8C/L38C Group, R8C/L3AC Group Datasheet Rev.1.00 (REJ03B0293-0100)

Corrections

(1) A/D converter chapter

Table A/D converter performance

Conversion rate per pin (1) ($\phi_{AD} = f_{AD}$)	Minimum 43 ϕ_{AD} cycles
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Note:

- The conversion rate per pin is minimum ~~43~~ ϕ_{AD} cycles for 8-bit and 10-bit resolution.

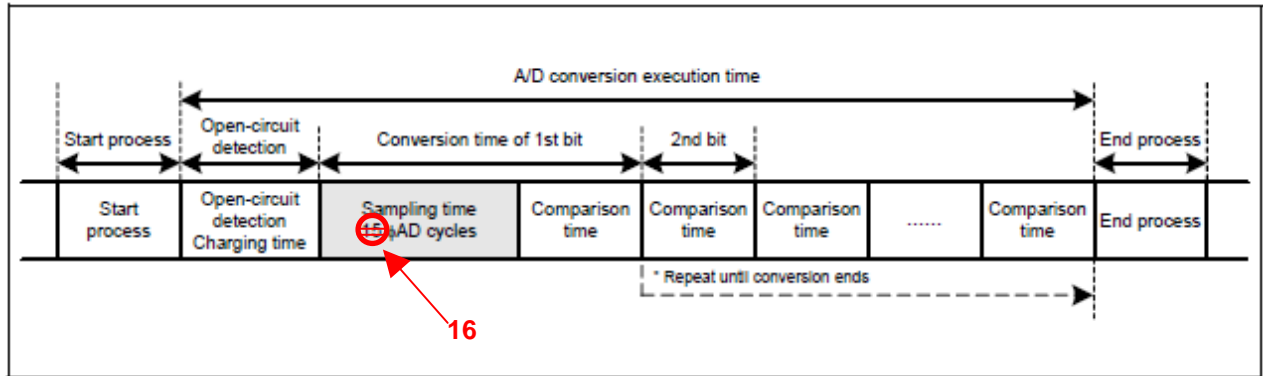


Figure Timing Diagram of A/D Conversion

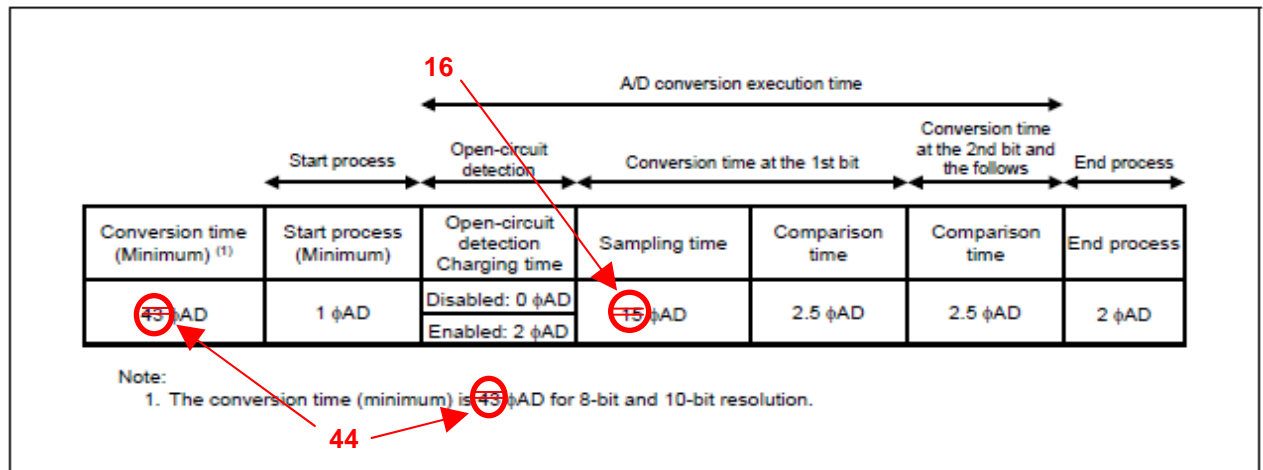


Figure A/D Conversion Cycles ($\phi_{AD} = f_{AD}$)

40 ϕ_{AD} cycles + 1 to 3 f_{AD} cycles

42 ϕ_{AD} cycles + 1 to 3 f_{AD} cycles

Table Number of Cycles for A/D Conversion Items

A/D Conversion Item		Number of Cycles
Start process time	$\phi_{AD} = f_{AD}$	1 or 2 f_{AD} cycles
	$\phi_{AD} = f_{AD}$ divided by 2	2 or 3 f_{AD} cycles
	$\phi_{AD} = f_{AD}$ divided by 4	3 or 4 f_{AD} cycles
	$\phi_{AD} = f_{AD}$ divided by 8	5 or 6 f_{AD} cycles
A/D conversion execution time	Open-circuit detection disabled	40 ϕ_{AD} cycles
	Open-circuit detection enabled	42 ϕ_{AD} cycles
Between-execution process time		1 ϕ_{AD} cycle
End process time		2 or 3 f_{AD} cycles

(2) Electrical characteristics chapter

Table A/D Converter Characteristics

t _{CONV}	Conversion time	10-bit mode	V _{ref} = AV _{CC} = 5.0 V, $\phi_{AD} = 20$ MHz	2.15	—	—	μ s
		8-bit mode	V _{ref} = AV _{CC} = 5.0 V, $\phi_{AD} = 20$ MHz	2.15	—	—	μ s

2.2