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RENESAS TECHNICAL UPDATE

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Product Category	MPU/MCU		Document No.	TN-RA*-A0021A/E	Rev.	1.00
Title	RA6M4 Group, Note on the number of ADC channels.		Information Category	Technical Notification		
Applicable Product	RA6M4 Group	Lot No. All	Reference Document	RA6M4 Group User's Manual Hardware Rev.1.10		

The descriptions about the number of ADC channels were changed.

1. Overview

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Before

Table 1.9 Analog (1 of 2)

	Functional description
12-bit A/D Converter (ADC12)	A 12-bit successive approximation A/D converter is provided. Up to 22 analog input channels are selectable. Temperature sensor output and internal reference voltage are selectable for conversion. See section 40, 12-Bit A/D Converter (ADC12).

After

Table 1.9 Analog (1 of 2)

	Functional description
12-bit A/D Converter (ADC12)	Two units of successive approximation 12-bit A/D Converter (ADC12) are provided. Analog input channels are selectable up to 12 in unit 0 and up to 10 in unit 1. Each 3 analog inputs of unit 0 and 1 are assigned to same port (AN000/AN100, AN001/AN101, AN002/AN102), up to 19 ports are available as analog input. The temperature sensor output and an internal reference voltage are selectable for conversion of each unit 0 and 1. See section 40, 12-Bit A/D Converter (ADC12).

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Table 1.14 Function Comparison (1 of 2)

Parts number		R7FA6M4AF3CFB R7FA6M4AE3CFB R7FA6M4AD3CFB	R7FA6M4AF3CFP R7FA6M4AE3CFP R7FA6M4AD3CFP	R7FA6M4AF3CFM R7FA6M4AE3CFM R7FA6M4AD3CFM
Analog	ADC12	Unit 0: 12 Unit 1: 10	Unit 0: 11 Unit 1: 9	Unit 0: 7 Unit 1: 4

After

Table 1.14 Function Comparison (1 of 2)

Parts number		R7FA6M4AF3CFB R7FA6M4AE3CFB R7FA6M4AD3CFB	R7FA6M4AF3CFP R7FA6M4AE3CFP R7FA6M4AD3CFP	R7FA6M4AF3CFM R7FA6M4AE3CFM R7FA6M4AD3CFM
Analog	ADC12	Unit 0: 12 Unit 1: 10 Shared channel pin: 3*2	Unit 0: 11 Unit 1: 9 Shared channel pin: 3*2	Unit 0: 7 Unit 1: 4 Shared channel pin: 3*2

Note2. Some input channels of the ADC units are sharing same port pin.

2. 12-Bit A/D Converter (ADC12)

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Before

40. 12-Bit A/D Converter (ADC12)

40.1 Overview

The MCU includes 12-bit successive approximation A/D converter (ADC12) units. In unit 0, up to 12 analog input channels are selectable. In unit 1, up to 10 analog input channels, temperature sensor output, internal reference voltage, can be selected for conversion in respective units.

After

40. 12-Bit A/D Converter (ADC12)

40.1 Overview

The MCU includes 12-bit successive approximation A/D converters (ADC12) units. Analog input channels are selectable up to 12 in unit 0 and up to 10 in unit 1. Each 3 analog inputs of unit 0 and 1 are assigned to same port (AN000/AN100, AN001/AN101, AN002/AN102), up to 19 ports are available as analog input. The temperature sensor output and an internal reference voltage are selectable for conversion of each unit 0 and 1.

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Before

Table 40.1 ADC12 specifications (1 of 3)

Parameter	Specifications
Number of units	two units
Input channels	Up to 22 channels (AN000 to AN009, AN012, AN013, AN100 to AN102, AN116 to AN122) Extended

After

Table 40.1 ADC12 specifications (1 of 3)

Parameter	Specifications
Number of units	two units
Input channels	Up to 19 channels (AN000 to AN009, AN012, AN013, AN100 to AN102, AN116 to AN122)*4 Extended

Note 4. AN000 & AN100, AN001 & AN101, and AN002 & AN102 are assigned to same port pin.

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Before

Table 40.2 ADC12 functions (1 of 2)

Parameter	function
Analog input channel	AN000 to AN009, AN012, AN013(unit 0), AN100 to AN102, AN116 to AN122(unit 1) Internal reference voltage Temperature sensor output

After

Table 40.2 ADC12 functions (1 of 2)

Parameter	function
Analog input channel *3	AN000 to AN009, AN012, AN013(unit 0), AN100 to AN102, AN116 to AN122(unit 1) Internal reference voltage Temperature sensor output

Note 3. AN000 & AN100, AN001 & AN101, and AN002 & AN102 are assigned to same port pin.

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Table 40.3 ADC12 I/O pins (unit 0)

Pin name	I/O	Function
AVCC0	Input	Analog block power supply pin (Connect to VCC when ADC12/DAC12 is not used.)
AVSS0	Input	Analog block power supply ground pin (Connect to VSS when ADC12/DAC12 is not used.)
VREFH0	Input	Reference high-potential power supply pin
VREFL0	Input	Reference low-potential power supply ground pin
AN000 to AN009, AN012, AN013	Input	Analog input pins 00 to 09, 12, 13
ADTRG0	Input	External trigger input pin for starting A/D conversion

Table 40.4 ADC12 I/O pins (unit 1)

Pin name	I/O	Function
AVCC0	Input	Analog block power supply pin
AVSS0	Input	Analog block power supply ground pin
VREFH	Input	Reference power supply pin
VREFL	Input	Reference power supply ground pin
AN100 to AN102, AN116 to AN122	Input	Analog input pins 00 to 02, 16 to 22
ADTRG1	Input	External trigger input pin for starting A/D conversion

After

Table 40.3 ADC12 I/O pins (unit 0)

Pin name	I/O	Function
AVCC0	Input	Analog block power supply pin (Connect to VCC when ADC12/DAC12 is not used.)
AVSS0	Input	Analog block power supply ground pin (Connect to VSS when ADC12/DAC12 is not used.)
VREFH0	Input	Reference high-potential power supply pin
VREFL0	Input	Reference low-potential power supply ground pin
AN000 to AN009, AN012, AN013 *1	Input	Analog input pins 00 to 09, 12, 13
ADTRG0	Input	External trigger input pin for starting A/D conversion

Note 1. AN000 & AN100, AN001 & AN101, and AN002 & AN102 are assigned to same port pin.

Table 40.4 ADC12 I/O pins (unit 1)

Pin name	I/O	Function
AVCC0	Input	Analog block power supply pin
AVSS0	Input	Analog block power supply ground pin
VREFH	Input	Reference power supply pin
VREFL	Input	Reference power supply ground pin
AN100 to AN102, AN116 to AN122 *1	Input	Analog input pins 00 to 02, 16 to 22
ADTRG1	Input	External trigger input pin for starting A/D conversion

Note 1. AN000 & AN100, AN001 & AN101, and AN002 & AN102 are assigned to same port pin.