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RENESAS TECHNICAL UPDATE

TOYOSU FORESIA, 3-2-24, Toyosu, Koto-ku, Tokyo 135-0061, Japan
Renesas Electronics Corporation

Product Category	MPU/MCU		Document No.	TN-RA*-A0019A/E	Rev.	1.00
Title	RA6M2 Group, Note on the number of ADC channels.		Information Category	Technical Notification		
Applicable Product	RA6M2 Group	Lot No. All	Reference Document	RA6M2 Group User's Manual Hardware Rev.1.10		

The descriptions about the number of ADC channels were changed.

1. Overview

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Table 1.9 Analog

Feature	Functional description
12-bit A/D Converter (ADC12)	Up to two successive approximation 12-bit A/D Converters (ADC12) are provided. In unit 0, up to 13 analog input channels are selectable. In unit 1, up to nine analog input channels, the temperature sensor output, and an internal reference voltage are selectable for conversion. The A/D conversion accuracy is selectable from 12-bit, 10-bit, and 8-bit conversion, making it possible to optimize the tradeoff between speed and resolution in generating a digital value. See section 45, 12-Bit A/D Converter (ADC12).

After

Table 1.9 Analog

Feature	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 13 in unit 0 and up to 9 in unit 1. Each 2 analog inputs of unit 0 and 1 are assigned to same port (AN005/AN105, AN006/AN106), up to 20 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. The A/D conversion accuracy is selectable from 12-bit, 10-bit, and 8-bit conversion, making it possible to optimize the tradeoff between speed and resolution in generating a digital value. See section 45, 12-Bit A/D Converter (ADC12).

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Table 1.15 Functional comparison

Function		Part numbers		
		R7FA6M2AF2CLK/ R7FA6M2AD2CLK	R7FA6M2AF3CFB/ R7FA6M2AD3CFB	R7FA6M2AF3CFP/ R7FA6M2AD3CFP
Analog	ADC12	20		17

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Table 1.15 Functional comparison

Function		Part numbers		
		R7FA6M2AF2CLK/ R7FA6M2AD2CLK	R7FA6M2AF3CFB/ R7FA6M2AD3CFB	R7FA6M2AF3CFP/ R7FA6M2AD3CFP
Analog	ADC12	Unit0: 13 Unit1: 9 Shared channel pin: 2*		Unit0: 11 Unit1: 8 Shared channel pin: 2*
	3ch-S/H	Unit0: 1(3ch) Unit1: 1(3ch)		

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

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Table 1.16 Pin functions (5 of 5)

Function	Signal	I/O	Description
ADC12	AN000 to AN007, AN016 to AN020	Input	Input pins for the analog signals to be processed by the ADC12
	AN100 to AN102, AN105 to AN107, AN116 to AN118	Input	

After

Table 1.16 Pin functions (5 of 5)

Function	Signal	I/O	Description
ADC12	AN000 to AN007, AN016 to AN020	Input	Input pins for the analog signals to be processed by the ADC12 AN005 & AN105 and AN006 & AN106 are assigned to same port pin
	AN100 to AN102, AN105 to AN107, AN116 to AN118	Input	

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

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45. 12-Bit A/D Converter (ADC12)

45.1 Overview

The MCU provides two 12-bit successive approximation A/D converter (ADC12) units. In unit 0, up to 13 analog input channels, temperature sensor output, and internal reference voltage are selectable for conversion. In unit 1, up to 9 analog input channels, the temperature sensor output, and internal reference voltage are selectable for conversion. The A/D conversion accuracy is selectable from 12-, 10-, and 8-bit conversion, making it possible to optimize the trade-off between speed and resolution in generating a digital value.

ADC12 features include:

・13 channels (unit 0), 9 channels (unit 1)

After

35. 12-Bit A/D Converter (ADC12)

35.1 Overview

The MCU provides two 12-bit successive approximation A/D converter (ADC12) units. Analog input channels are selectable up to 13 in unit 0 and up to 9 in unit 1. Each 2 analog inputs of unit 0 and 1 are assigned to same port (AN005/AN105, AN006/AN106), up to 20 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.

The A/D conversion accuracy is selectable from 12-, 10-, and 8-bit conversion, making it possible to optimize the trade-off between speed and resolution in generating a digital value.

ADC12 features include:

・13 channels (unit 0), 9 channels (unit 1), Total usable 20 channels

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Before

Table 45.1 ADC12 specifications (1 of 2)

Parameter	Specifications
Number of units	Two units, 0 and 1
Input channels	• Unit 0: Up to 13 channels • Unit 1: Up to 9 channels

After

Table 45.1 ADC12 specifications (1 of 2)

Parameter	Specifications
Number of units	Two units, 0 and 1
Input channels	• Unit 0: Up to 13 channels • Unit 1: Up to 9 channels (2 channels share same port pin)

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Table 45.2 ADC12 functions

Parameter	Unit 0 (ADC120)	Unit 1 (ADC121)
Analog input channel	AN000 to AN007, AN016 to AN020 Internal reference voltage Temperature sensor output	AN100 to AN102, AN105 to AN107, AN116 to AN118 Internal reference voltage Temperature sensor output

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Table 45.2 ADC12 functions

Parameter	Unit 0 (ADC120)	Unit 1 (ADC121)
Analog input channel *3	AN000 to AN007, AN016 to AN020 Internal reference voltage Temperature sensor output	AN100 to AN102, AN105 to AN107, AN116 to AN118 Internal reference voltage Temperature sensor output

Note 3. AN005 & AN105 and AN006 & AN106 are assigned to same port pin.

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Before

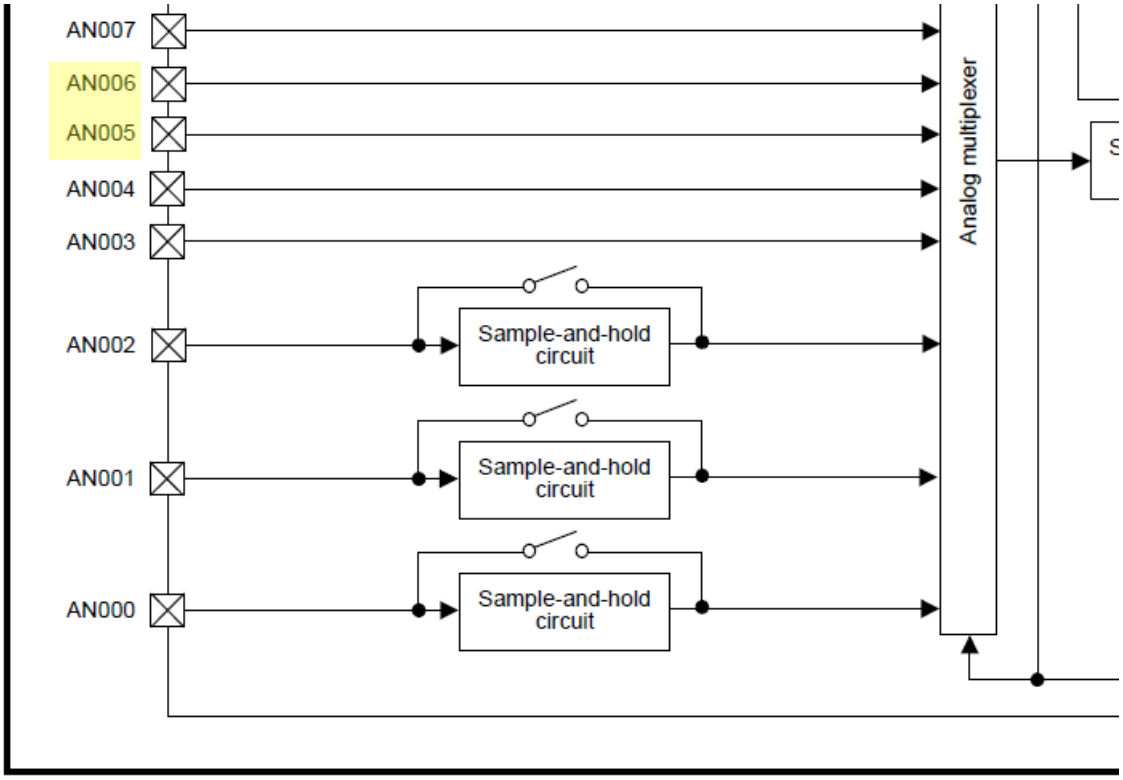

Figure 45.1 ADC12 unit 0 block diagram

After

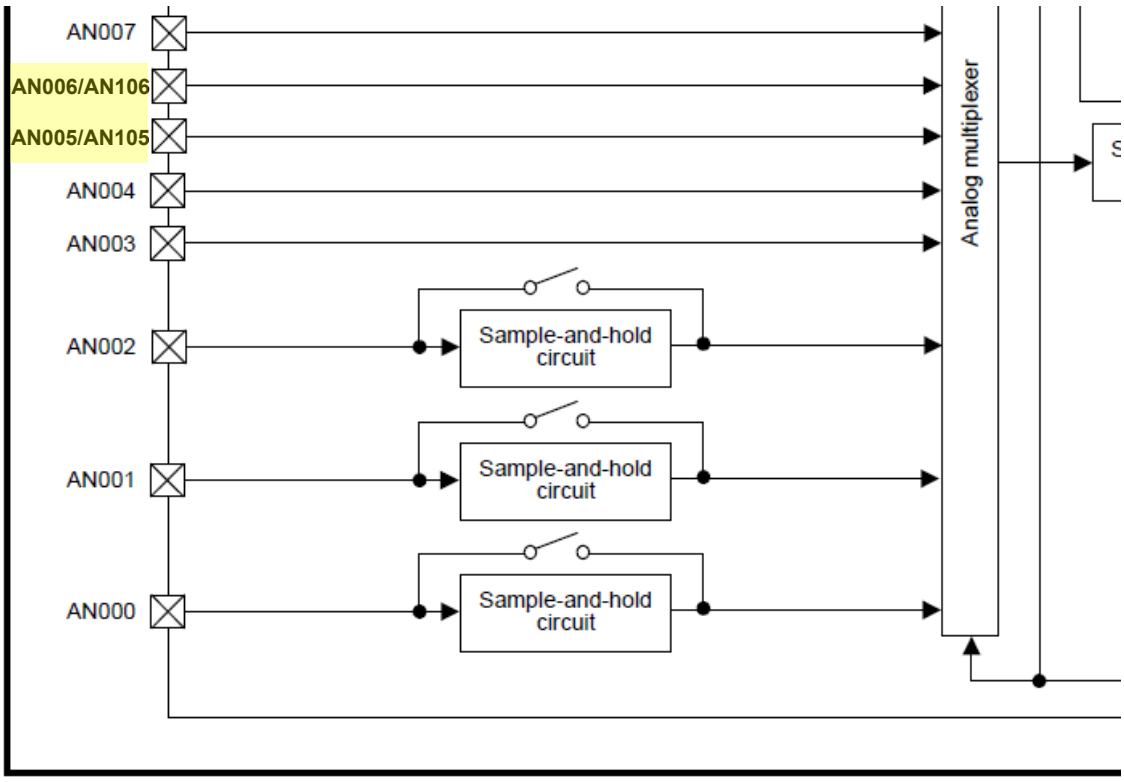

Figure 45.1 ADC12 unit 0 block diagram

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Before

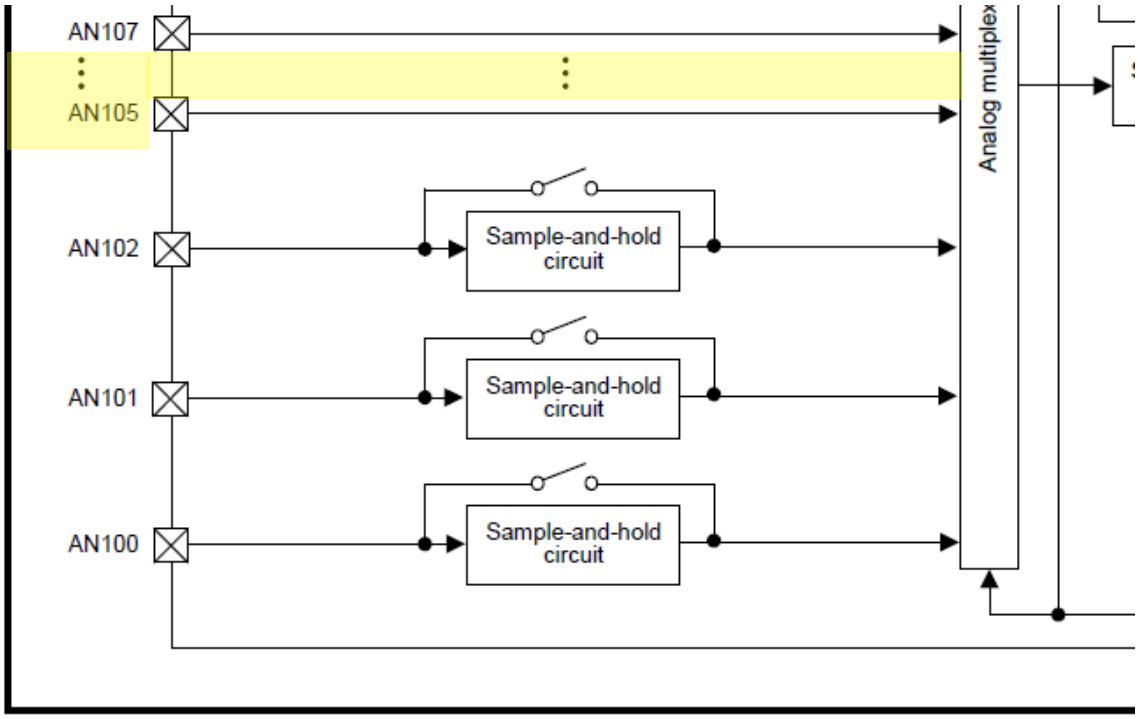

Figure 45.2 ADC12 unit 1 block diagram

After

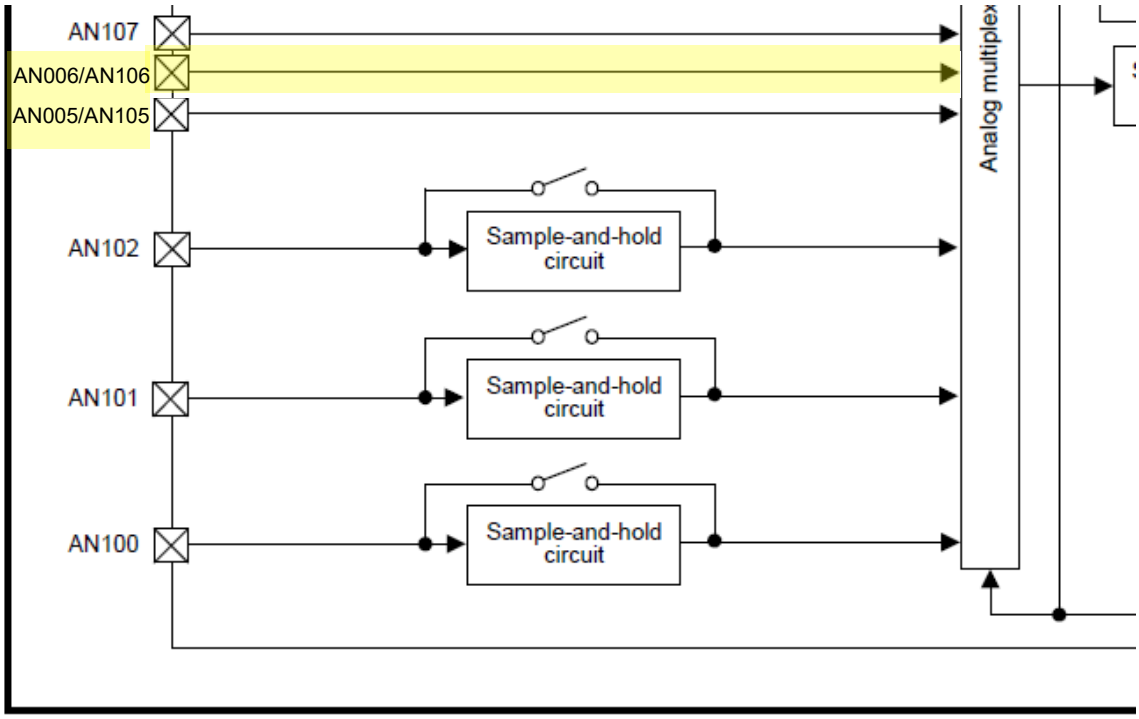

Figure 45.2 ADC12 unit 1 block diagram

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Before

Table 45.3 ADC12 I/O pins

Unit	Pin name	I/O	Function
Unit 0	AVCC0	Input	Analog block power supply pin
	AVSS0	Input	Analog block power supply ground pin
	VREFH0	Input	Reference power supply pin
	VREFL0	Input	Reference power supply ground pin
	AN000 to AN007, AN016 to AN020	Input	Analog input pins 0 to 7 and 16 to 20
	ADTRG0	Input	External trigger input pin for starting A/D conversion, active-low
Unit 1	AVCC0	Input	Analog block power supply pin
	AVSS0	Input	Analog block power supply ground pin
	VREFH	Input	Reference power supply pin for ADC12 unit 1 and DAC
	VRELF	Input	Reference power supply ground pin for ADC12 unit 1 and DAC
	AN100 to AN102, AN105 to AN107, AN116 to AN118	Input	Analog input pins 0 to 2, 5 to 7, and 16 to 18
	ADTRG1	Input	External trigger input pin for starting A/D conversion, active-low

After

Table 45.3 ADC12 I/O pins

Unit	Pin name	I/O	Function
Unit 0	AVCC0	Input	Analog block power supply pin
	AVSS0	Input	Analog block power supply ground pin
	VREFH0	Input	Reference power supply pin
	VREFL0	Input	Reference power supply ground pin
	AN000 to AN007, *1 AN016 to AN020	Input	Analog input pins 0 to 7 and 16 to 20
	ADTRG0	Input	External trigger input pin for starting A/D conversion, active-low
Unit 1	AVCC0	Input	Analog block power supply pin
	AVSS0	Input	Analog block power supply ground pin
	VREFH	Input	Reference power supply pin for ADC12 unit 1 and DAC
	VRELF	Input	Reference power supply ground pin for ADC12 unit 1 and DAC
	AN100 to AN102, AN105 to AN107, *1 AN116 to AN118	Input	Analog input pins 0 to 2, 5 to 7, and 16 to 18
	ADTRG1	Input	External trigger input pin for starting A/D conversion, active-low

Note 1. AN005 & AN105 and AN006 & AN106 are assigned to same port pin.