To our customers,

Old Company Name in Catalogs and Other Documents

On April 1st, 2010, NEC Electronics Corporation merged with Renesas Technology Corporation, and Renesas Electronics Corporation took over all the business of both companies. Therefore, although the old company name remains in this document, it is a valid Renesas Electronics document. We appreciate your understanding.

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April 1st, 2010
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (http://www.renesas.com)

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Date: Apr. 22, 2009

RENESAS TECHNICAL UPDATE

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Renesas Technology Corp.

Product Category	MPU/MCU		Document No.	TN-H8*-A414A/E	Rev.	1.00
Title	The addition of H8/38606 Group		Information Category	Technical Notification		
Applicable Product	H8/38602R Group	Lot No. All	Reference Document	H8/38602R Group Hardware Manual (REJ09B0152-0300 Rev.3.00)		

H8/38606 Group is added to H8/38602R Group.

The difference of the product specification of H8/38602R Group and H8/38606 Group is shown as follows. About the specifications except the following item, the product specification of H8/38606 Group and H8/38606 Group is equal.

Section 1 Overview

1.1 Features

- On-chip memory (H8/38602R Group Hardware Manual Rev.3.00 Page 1 of 516)

H8/38602R Group specification

Product Classification		Model	ROM	RAM
Flash memory version	H8/38602RF	HD64F38602R	16 Kbytes	1 Kbyte
Masked ROM version	H8/38602R	HD64338602R	16 Kbytes	1 Kbyte
	H8/38600R	HD64338600R	8 Kbytes	512 bytes

H8/38606 Group specification

Product Classification		Model	ROM	RAM
Flash memory version	H8/38606F	HD64F38606	48 Kbytes	2 Kbytes

- Compact package (H8/38602R Group Hardware Manual Rev.3.00 Page 2 of 516)

H8/38602R Group specification

Package	Code	Body Size	Pin Pitch	Remarks
P-VQFN-32	TNP-32	5×6mm	0.5mm	
P-LQFP-32	32P6U-A	7×7mm	0.8mm	

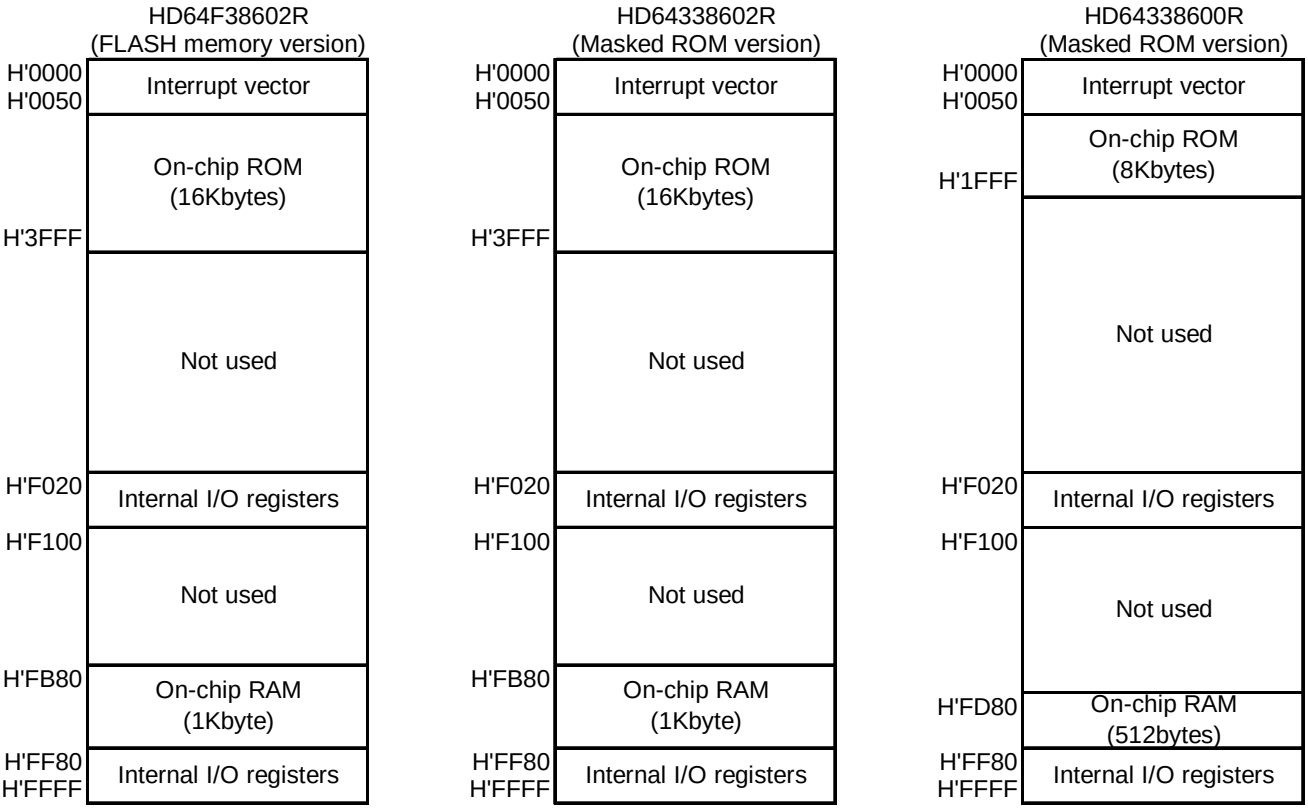
H8/38606 Group specification

Package	Code	Body Size	Pin Pitch	Remarks
P-VQFN-32	TNP-32	5×6mm	0.5mm	

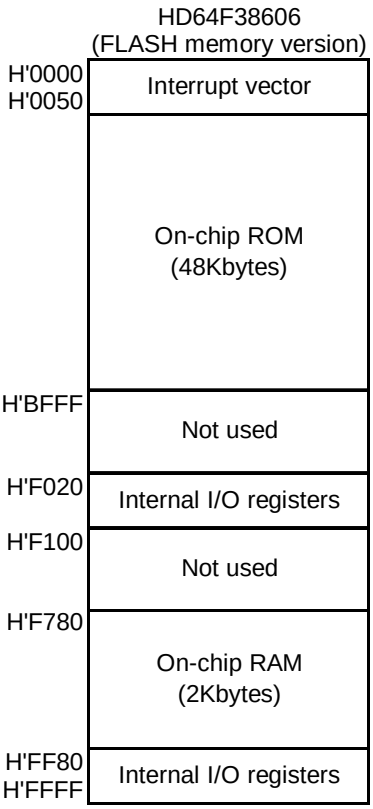
Section 2 CPU

2.1 Address Space and Memory Map (H8/38602R Group Hardware Manual Rev.3.00 Page 8 of 516)

H8/38602R Group specification



H8/38606 Group specification



Section 6 ROM

- Programming/erasing methods (H8/38602R Group Hardware Manual Rev.3.00 Page 99 of 516)

H8/38602R Group specification

The flash memory is programmed 128 bytes at a time. Erasure is performed in single-block units. The flash memory is configured as follows: 1 Kbyte × 4 blocks and 12 Kbytes × 1 block. To erase the entire flash memory, each block must be erased in turn.

H8/38606 Group specification

The flash memory is programmed 128 bytes at a time. Erasure is performed in single-block units. The flash memory is configured as follows: 1 Kbyte × 4 blocks, 28 Kbytes × 1 block and 16 Kbytes × 1 block. To erase the entire flash memory, each block must be erased in turn.

6.1 Block Configuration (H8/38602R Group Hardware Manual Rev.3.00 Page 100 of 516)

H8/38602R Group specification

Figure 6.1(1) shows the block configuration of flash memory. The thick lines indicate erasing a block, the narrow lines indicate programming units, and the values are addresses. The 16-Kbyte flash memory is divided into 1 Kbyte × 4 blocks and 12 Kbytes × 1 block. Erasure is performed in these units. Programming is performed in 128-byte units starting from an address with lower eight bits H'00 or H'80.

Erasing unit 1 Kbyte	H'0000	H'0001	H'0002	←Programming unit: 128 bytes→	H'007F
	H'0080	H'0081	H'0082		H'00FF
	H'0380	H'0381	H'0382		H'03FF
Erasing unit 1 Kbyte	H'0400	H'0401	H'0402	←Programming unit: 128 bytes→	H'047F
	H'0480	H'0481	H'0482		H'04FF
	H'0780	H'0781	H'0782		H'07FF
Erasing unit 1 Kbyte	H'0800	H'0801	H'0802	←Programming unit: 128 bytes→	H'087F
	H'0880	H'0881	H'0882		H'08FF
	H'0B80	H'0B81	H'0B02		H'0BFF
Erasing unit 1 Kbyte	H'0C00	H'0C01	H'0C02	←Programming unit: 128 bytes→	H'0C7F
	H'0C80	H'0C81	H'0C82		H'0CFF
	H'0F80	H'0F81	H'0F82		H'0FFF
Erasing unit 12 Kbyte	H'1000	H'1001	H'1002	←Programming unit: 128 bytes→	H'107F
	H'1080	H'1081	H'1082		H'10FF
	H'3F80	H'3F81	H'3F82		H'3FFF

Figure 6.1(1) Flash Memory Block Configuration (H8/38602R Group)

H8/38606 Group specification

Figure 6.1(2) shows the block configuration of flash memory. The thick lines indicate erasing a block, the narrow lines indicate programming units, and the values are addresses. The 48-Kbyte flash memory is divided into 1 Kbyte × 4 blocks, 28 Kbytes × 1 block and 16 Kbytes × 1 block. Erasure is performed in these units. Programming is performed in 128-byte units starting from an address with lower eight bits H'00 or H'80.

	H'0000	H'0001	H'0002	←Programming unit: 128 bytes→	H'007F
Erasing unit	H'0080	H'0081	H'0082		H'00FF
1 Kbyte					
	H'0380	H'0381	H'0382		H'03FF
	H'0400	H'0401	H'0402	←Programming unit: 128 bytes→	H'047F
Erasing unit	H'0480	H'0481	H'0482		H'04FF
1 Kbyte					
	H'0780	H'0781	H'0782		H'07FF
	H'0800	H'0801	H'0802	←Programming unit: 128 bytes→	H'087F
Erasing unit	H'0880	H'0881	H'0882		H'08FF
1 Kbyte					
	H'0B80	H'0B81	H'0B02		H'0BFF
	H'0C00	H'0C01	H'0C02	←Programming unit: 128 bytes→	H'0C7F
Erasing unit	H'0C80	H'0C81	H'0C82		H'0CFF
1 Kbyte					
	H'0F80	H'0F81	H'0F82		H'0FFF
	H'1000	H'1001	H'1002	←Programming unit: 128 bytes→	H'107F
Erasing unit	H'1080	H'1081	H'1082		H'10FF
28 Kbyte					
	H'7F80	H'7F81	H'7F82		H'7FFF
	H'8000	H'8001	H'8002	←Programming unit: 128 bytes→	H'807F
Erasing unit	H'8080	H'8081	H'8082		H'80FF
16 Kbyte					
	H'BF80	H'BF81	H'BF82		H'BFFF

Figure 6.1(2) Flash Memory Block Configuration (H8/38606 Group)

6.2 Register Description

6.2.3 Erase Block Register 1 (EBR1) (H8/38602R Group Hardware Manual Rev.3.00 Page 103 of 516)

H8/38602R Group specification

Bit	Bit Name	Initial Value	R/W	Description
7 to 5	-	All 0	-	Reserved Although these bits are readable/writable, only 0 should be written to.
4	EB4	0	R/W	When this bit is set to 1, a 12-Kbyte area of H'1000 to H'3FFF will be eraced.
3	EB3	0	R/W	When this bit is set to 1, a 1-Kbyte area of H'0C00 to H'0FFF will be eraced.
2	EB2	0	R/W	When this bit is set to 1, a 1-Kbyte area of H'0800 to H'0BFF will be eraced.
1	EB1	0	R/W	When this bit is set to 1, a 1-Kbyte area of H'0400 to H'07FF will be eraced.
0	EB0	0	R/W	When this bit is set to 1, a 1-Kbyte area of H'0000 to H'03FF will be eraced.

H8/38606 Group specification

Bit	Bit Name	Initial Value	R/W	Description
7, 6	-	All 0	-	Reserved Although these bits are readable/writable, only 0 should be written to.
5	EB5	0	R/W	When this bit is set to 1, a 16-Kbyte area of H'8000 to H'BFFF will be eraced.
4	EB4	0	R/W	When this bit is set to 1, a 28-Kbyte area of H'1000 to H'7FFF will be eraced.
3	EB3	0	R/W	When this bit is set to 1, a 1-Kbyte area of H'0C00 to H'0FFF will be eraced.
2	EB2	0	R/W	When this bit is set to 1, a 1-Kbyte area of H'0800 to H'0BFF will be eraced.
1	EB1	0	R/W	When this bit is set to 1, a 1-Kbyte area of H'0400 to H'07FF will be eraced.
0	EB0	0	R/W	When this bit is set to 1, a 1-Kbyte area of H'0000 to H'03FF will be eraced.

Section 7 RAM (H8/38602R Group Hardware Manual Rev.3.00 Page 117 of 516)

H8/38602R Group specification

Product Classification		RAM Size	RAM Address
Flash memory version	H8/38602RF	1 Kbyte	H'FB80 to H'FF7F
Masked ROM version	H8/38602R	1 Kbyte	H'FB80 to H'FF7F
	H8/38600R	512 bytes	H'FD80 to H'FF7F

H8/38606 Group specification

Product Classification		RAM Size	RAM Address
Flash memory version	H8/38606F	2 Kbyte	H'F780 to H'FF7F

Section 21 Electrical Characteristics

21.2.2 DC Characteristics

Active mode supply current (H8/38602R Group Hardware Manual Rev.3.00 Page 395 of 516)

H8/38602R Group specification

Item	Symbol	Applicable Pins	Test Condition	Values			Unit	Notes
				Min.	Typ.	Max.		
Active mode supply current	I_{OPE1}	Vcc	Active (high-speed) mode, Vcc=3V、fosc=4.2MHz	-	2.6	4.0	mA	*1 *2 4-MHz version

H8/38606 Group specification

Item	Symbol	Applicable Pins	Test Condition	Values			Unit	Notes
				Min.	Typ.	Max.		
Active mode supply current	I_{OPE1}	Vcc	Active (high-speed) mode, Vcc=3V、fosc=4.2MHz	-	2.8	4.0	mA	*1 *2 4-MHz version

Appendix

C. Product Part No. Lineup (H8/38602R Group Hardware Manual Rev.3.00 Page 491 of 516)

H8/38602R Group specification

Product Classification				Product Part No.	Model Marking	Package (Package Code)
H8/38602R Group	H8/38602R	Flash memory version	(10MHz)	HD64F38602RFT10	38602R10	32-pin QFN (TNP-32)
			(4MHz)	HD64F38602RFT4	38602R4	
			(10MHZ)	HD64F38602RFH10	F38602RFH10	32-pin LQFP (32P6U-A)
			(4MHz)	HD64F38602RFH4	F38602RFH4	
		Masked ROM version		HD64338602RFT	38602R(***)	32-pin QFN (TNP-32)
				HD64338602RFH	38602R(***)	32-pin LQFP (32P6U-A)
	H8/38600R	Masked ROM version		HD64338600RFT	38600R(***)	32-pin QFN (TNP-32)
				HD64338600RFH	38600R(***)	32-pin LQFP (32P6U-A)

H8/38606 Group specification

Product Classification				Product Part No.	Model Marking	Package (Package Code)
H8/38606 Group	H8/38606	Flash memory version	(10MHz)	HD64F38606FT10	F3860610	32-pin QFN (TNP-32)
			(4MHz)	HD64F38606FT4	F386064	