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.

Renesas Electronics website: http://www.renesas.com

April 1st, 2010
Renesas Electronics Corporation

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RENESAS TECHNICAL UPDATE

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RenesasTechnology Corp.

Product Category	MPU&MCU		Document No.	TN-H8*-A316A/E	Rev.	1.00
Title	About the change of the crystal resonator for the recommended sub clock		Information Category	Technical Notification		
Applicable Product	H8/38076R Group, H8/38086R Group H8/38104 Group, H8/38124 Group H8/38327 Group, H8/38347 Group H8/38602R Group	Lot No. All	Reference Document	The hardware manual of each product group becomes an object. Please refer to clause 2 the following for details		

The specification of the crystal resonator for the sub clock that the H8/38076R group, the H8/38086R group, the H8/38104 group, the H8/38124 group, the H8/38327 group, the H8/38347 group, and the H8/38602R group recommend is changed. Please refer to the following for details.

1. Reason for the change

Because the sub oscillation circuit of the target product designed the gain of the oscillation circuit so that current consumption may decrease, it turned out not to be able to take the match depending on a part of crystal resonator and use conditions. Therefore, please want to change to the resonator without the problem by the match evaluation and acknowledge it.

2. Before it changes

2.1 H8/38076R Group Hardware Manual (REJ09B0093-0300)

5.3.1 Connecting 32.768kHz/38.4kHz Crystal Resonator

Figure 5.5 Typical Connection to 32.768kHz/38.4kHz Crystal Resonator

Frequency	Manufacturer	Products Name	C1C2 Recommendation Value
38.4kHz	Seiko Instruments Inc.	VTC-200	10pF
32.768kHz	Nihon Denpa Kogyo., Ltd	MX73P	15pF

2.2 H8/38086R Group Hardware Manual (REJ09B0182-0200)

5.3.1 Connecting 32.768kHz/38.4kHz Crystal Resonator

Figure 5.5 Typical Connection to 32.768kHz/38.4kHz Crystal Resonator

Frequency	Manufacturer	Products Name	C1C2 Recommendation Value
38.4kHz	Seiko Instruments Inc.	VTC-200	10pF
32.768kHz	Nihon Denpa Kogyo., Ltd	MX73P	15pF

2.3 H8/38104 Group Hardware Manual (REJ09B0024-0600)

4.4.1 Connecting 32.768kHz/38.4kHz Crystal Resonator

Figure 4.9 Typical Connection to 32.768kHz/38.4kHz Crystal Resonator

Frequency	Manufacturer	Products Name
38.4kHz	Seiko Instruments Inc.	VTC-200
32.768kHz	Nihon Denpa Kogyo., Ltd	MX73P

C1=C2=6 to 12.5pF(typ)

2.4 H8/38124 Group Hardware Manual (REJ09B0042-0700)
4.3 Connecting 32.768kHz/38.4kHz Crystal Resonator
Figure 4.8 Typical Connection to 32.768kHz/38.4kHz Crystal Resonator(Sub clock)

Frequency	Manufacturer	Products Name
38.4kHz	Seiko Instruments Inc.	VTC-200
32.768kHz	Nihon Denpa Kogyo., Ltd	MX73P

C1=C2=15pF(typ)

2.5 H8/38327 Group Hardware Manual (REJ09B0144-0500)
4.3 Connecting 32.768kHz/38.4kHz Crystal Resonator
Figure 4.6 Typical Connection to 32.768kHz/38.4kHz Crystal Resonator(Sub clock)

Oscillation Frequency	Manufacturer	Products Name
38.4kHz	Seiko Instruments Inc.	VTC-200
32.768kHz	Nihon Denpa Kogyo., Ltd	MX73P

C1=C2=15pF(typ)

2.6 H8/38347 Group Hardware Manual (REJ09B0145-0500)
4.3 Connecting 32.768kHz/38.4kHz Crystal Resonator
Figure 4.6 Typical Connection to 32.768kHz/38.4kHz Crystal Resonator(Sub clock)

Oscillation Frequency	Manufacturer	Products Name
38.4kHz	Seiko Instruments Inc.	VTC-200
32.768kHz	Nihon Denpa Kogyo., Ltd	MX73P

C1=C2=15pF(typ)

2.7 H8/38602R Group Hardware Manual (REJ09B0152-0200)
4.3.1 Connecting 32.768kHz/38.4kHz Crystal Resonator
Figure 4.5 Typical Connection to 32.768-kHz/38.4-kHz Crystal Resonator

Frequency	Manufacturer	Products Name
38.4kHz	Seiko Instruments Inc.	VTC-200
32.768kHz	Seiko Instruments Inc.	VT-200

C1=C2=10pF(typ) (Reference value taking stray capacitances of a board into consideration)

3. After it changes(All Products Same)

Frequency	Manufacturer	Products Name	Motion Resistance
38.4kHz	EPSON TOYOCOM.	C-4-TYPE	30kΩ max
32.768kHz	EPSON TOYOCOM.	C-001R	35kΩ max

4. Others

(1) Please execute an enough match evaluation with the resonator maker, and use it by the optimum conditions when the resonator other than the above-mentioned are used.
And please execute match evaluation on the mounting substrate because the oscillation characteristic is influenced by the substrate specification when the above-mentioned resonator or equivalent resonator are used .

(2) Please execute the match evaluation respectively by reset state ($\overline{\text{RES}}$="Low") and the reset release state ($\overline{\text{RES}}$="Low" to "High")