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 UPD

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Product Category	MPU&MCU		Document No.	TN-H8*-A294A/E	Rev.	1.0
Title	Addition to DC Characteristics V_{CC} start voltage ($V_{CCstart}$) V_{CC} rising slope (SV_{CC})		Information Category	Technical Notification		
Applicable Product	HD64F2378 HD64F2378R	Lot No. All lots	Reference Document	H8S/2378, H8S/2378R Group Hardware Manual (REJ09B0109-0400O Rev.4.00)		

Thank you for your consistent patronage of Renesas semiconductor products.

We would like to inform you of the addition to the DC characteristics in the H8S/2378 Group and H8S/2378R Group Hardware Manual.

1. Addition of the V_{CC} start voltage ($V_{CCstart}$) and the V_{CC} rising slope (SV_{CC}) in figure 26.16, DC Characteristics (pages 1008 and 1009 of 1088)

[Before change]

Conditions: V_{CC} = 3.0 V to 3.6 V, AV_{CC} = 3.0 V to 3.6 V, V_{ref} = 3.0 V to AV_{CC},
V_{SS} = AV_{SS} = 0 V*[1], T_a = –20°C to +75°C (regular specifications),
T_a = –40°C to +85°C (wide-range specifications)

Item		Symbol	Min	Typ	Max	Unit	Test Conditions
Input leakage current	RES	$\|I_{in}\|$	—	—	10.0	µA	V_{in} = 0.5 to V_{CC} – 0.5 V
	STBY, NMI, MD2 to MD0		—	—	1.0	µA	
	Port 4, Port 9		—	—	1.0	µA	V_{in} = 0.5 to AV_{CC} – 0.5 V
RAM standby voltage		V_{RAM}	2.5	—	—	V	

Notes: 1. When the A/D and D/A converters are not used, the AV_{CC}, V_{ref}, and AV_{SS} pins should not be open. Connect the AV_{CC} and V_{ref} pins to V_{CC}, and the AV_{SS} pin to V_{SS}.

2. Current consumption values are for V_{IH}min = V_{CC} – 0.2 V and V_{IL}max = 0.2 V with all output pins unloaded and all input pull-up MOSs in the off state.

3. The values are for $V_{RAM} \leq VCC < 3.0$ V, V_{IH}min = VCC × 0.9, and V_{IL}max = 0.3 V.

4. I_{CC} depends on V_{CC} and f as follows:
I_{CC}max = 15 (mA) + 0.37 (mA /(MHz × V)) ×V_{CC} × f (normal operation)
I_{CC}max = 15 (mA) + 0.20 (mA /(MHz × V)) ×V_{CC} × f (sleep mode)

[After change]

Conditions: V_{CC} = 3.0 V to 3.6 V, AV_{CC} = 3.0 V to 3.6 V, V_{ref} = 3.0 V to AV_{CC},
V_{SS} = AV_{SS} = 0 V*[1], T_a = –20°C to +75°C (regular specifications),
T_a = –40°C to +85°C (wide-range specifications)

Item		Symbol	Min	Typ	Max	Unit	Test Conditions
Input leakage current	RES	$\|I_{in}\|$	—	—	10.0	µA	V_{in} = 0.5 to V_{CC} – 0.5 V
	STBY, NMI, MD2 to MD0		—	—	1.0	µA	
	Port 4, Port 9		—	—	1.0	µA	V_{in} = 0.5 to AV_{CC} – 0.5 V
RAM standby voltage		V_{RAM}	2.5	—	—	V	
V_{CC} start voltage*[5]		$V_{CCstart}$	—	—	0.8	V	
V_{CC} rising slope*[5]		SV_{CC}	—	—	20	Ms/V	

Notes: 1. When the A/D and D/A converters are not used, the AV_{CC}, V_{ref}, and AV_{SS} pins should not be open. Connect the AV_{CC} and V_{ref} pins to V_{CC}, and the AV_{SS} pin to V_{SS}.

2. Current consumption values are for V_{IH}min = V_{CC} – 0.2 V and V_{IL}max = 0.2 V with all output pins unloaded and all input pull-up MOSs in the off state.

3. The values are for $V_{RAM} \leq$ VCC < 3.0 V, V_{IH}min = VCC × 0.9, and V_{IL}max = 0.3 V.

4. I_{CC} depends on V_{CC} and f as follows:
I_{CC}max = 15 (mA) + 0.37 (mA /(MHz × V)) ×V_{CC} × f (normal operation)
I_{CC}max = 15 (mA) + 0.20 (mA /(MHz × V)) ×V_{CC} × f (sleep mode)

5. VCCstart and SV_{CC} are applied under the condition that RES is low at the power supply.