RENESAS TECHNICAL UPDATE

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Product Category	MPU/MCU		Document No.	TN-RX*-A136A/E	Rev.	1.00
Title	Changes to the specification in Electrical Characteristics of the RX113 Group		Information Category	Technical Notification		
Applicable Product	RX113 Group	Lot No.	Reference Document	RX113 Group User's Manual: Hardware Rev.1.02 (R01UH0448EJ0102)		
		All				

This document describes changes to the specification in Electrical Characteristics of RX113 Group.

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Permissible junction temperature in Tables 42.9 and 42.10 are changed to permissible total consumption power as follows.

<u>Before change</u>

Table 42.9   DC Characteristics (7)

Conditions: Products with operating temperature (Ta) -40 to +105°C
VCC = AVCC0 = USB_VCC = 1.8 to 3.6 V, VSS = AVSS0 = USB_VSS = 0 V

item	Symbol	typ	max	Unit	Test Conditions
Permissible junction temperature	Tj	-	120	°C	High-speed operating mode
		-	105		Middle-speed operating mode
		-	120		Low-speed operating mode

Note: ·Make sure that $Tj < Ta + 0.1 \times$ total power consumption (mW) , where total power consumption = $(VCC - V_{OH}) \times \Sigma I_{OH} + V_{OL} \times \Sigma I_{OL} + Iccmax \times VCC$.

Table 42.10   DC Characteristics (8)

Conditions: Products with operating temperature (Ta) -40 to +85°C
VCC = AVCC0 = USB_VCC = 1.8 to 3.6 V, VSS = AVSS0 = USB_VSS = 0 V

item	Symbol	typ	max	Unit	Test Conditions
Permissible junction temperature	Tj	-	120	°C	High-speed operating mode
		-	105		Middle-speed operating mode
		-	120		Low-speed operating mode

Note: ·Make sure that $Tj < Ta + 0.1 \times$ total power consumption (mW) , where total power consumption = $(VCC - V_{OH}) \times \Sigma I_{OH} + V_{OL} \times \Sigma I_{OL} + Iccmax \times VCC$.

<u>After change</u>

Table 42.9   DC Characteristics (7)

Conditions: VCC = AVCC0 = USB_VCC = 1.8 to 3.6 V, VSS = AVSS0 = USB_VSS = 0 V

item	Symbol	typ	max	Unit	Test Conditions
Permissible total consumption power [1]	Pd	-	300	mW	D version (Ta = -40 to 85°C)
		-	105	mW	G version (Ta = -40 to 105°C)[2]

Note 1. Total power dissipated by the entire chip (including output currents)

Note 2. Please contact Renesas Electronics sales office for derating under Ta = +85°C to 105°C. Derating is the systematic reduction of load for the sake of improved reliability

Table 42.10   DC Characteristics (8)

(deleted)

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Table 42.16 is separated to the tables for D version and G version as follows

<u>Before change</u>

Table 42.16 Permissible Output Currents

Conditions: VCC = AVCC0 _VCC_USB0 = 1.8 to 3.6 V, VSS = AVSS0 = 0 V, Ta = -40 to +105°C

item		Symbol	Max.	Unit
Permissible output low current (average value per pin)	Ports 40 to 44,46 , ports J6,J7, ports 90 to 92	I_{OL}	0.4	
	Ports other than above		8.0	
Permissible output low current (maximum value per pin)	Ports 40 to 44,46 , port J6,J7, ports 90 to 92		0.4	
	Ports other than above		8.0	
Permissible output low current	Total of ports 40 to 44, 46 , port J6, J7, ports 90 to 92	ΣI_{OL}	2.4	
	Total of ports 02,04,07, ports 20 to 27, ports 30, 31 Ports J0,J2,J3		30	
	Total of ports 10 to 17, port 32, ports 50 to 56, ports C0 to C7,ports B0 to B7		30	
	Total of ports E0 to E7, A0 to A7, port F6,F7 Ports D0 to D4		30	
	Total of all output pins		60	mA
Permissible output high current (average value per pin)	Ports 40 to 44,46 , port J6,J7, ports 90 to 92	I_{OH}	-0.1	
	Ports other than above		-4.0	
Permissible output high current (maximum value per pin)	Ports 40 to 44,46 , port J6,J7, ports 90 to 92		-0.1	
	Ports other than above		-4.0	
Permissible output high current	Total of ports 40 to 44, 46 , port J6, J7, ports 90 to 92	ΣI_{OH}	-0.6	
	Total of ports 02,04,07, ports 20 to 27, ports 30, 31 Ports J0,J2,J3		-10	
	Total of ports 10 to 17, port 32, ports 50 to 56, ports C0 to C7,ports B0 to B7		-15	
	Total of ports E0 to E7, A0 to A7, port F6,F7 Ports D0 to D4		-15	
	Total of all output pins		-40	

Note: ·Do not exceed the permissible total supply current.

<u>After change</u>

Table 42.16   Permissible Output Currents (1)

Conditions: VCC = AVCC0 = USB_VCC = 1.8 to 3.6 V, VSS = AVSS0 = USB_VSS = 0 V, Ta = -40 to +85°C (D version)

item		Symbol	Max.	Unit
Permissible output low current (average value per pin)	Ports 40 to 44,46 , ports J6,J7, ports 90 to 92	I_{OL}	0.4	mA
	Ports other than above		8.0	
Permissible output low current (maximum value per pin)	Ports 40 to 44,46 , port J6,J7, ports 90 to 92		0.4	
	Ports other than above		8.0	
Permissible output low current	Total of ports 40 to 44, 46 , port J6, J7, ports 90 to 92	ΣI_{OL}	2.4	
	Total of ports 02,04,07, ports 20 to 27, ports 30, 31 Ports J0,J2,J3		30	
	Total of ports 10 to 17, port 32, ports 50 to 56, ports C0 to C7,ports B0 to B7		30	
	Total of ports E0 to E7, A0 to A7, port F6,F7 Ports D0 to D4		30	
	Total of all output pins		60	
Permissible output high current (average value per pin)	Ports 40 to 44,46 , port J6,J7, ports 90 to 92	I_{OH}	-0.1	
	Ports other than above		-4.0	
Permissible output high current (maximum value per pin)	Ports 40 to 44,46 , port J6,J7, ports 90 to 92		-0.1	
	Ports other than above		-4.0	
Permissible output high current	Total of ports 40 to 44, 46 , port J6, J7, ports 90 to 92	ΣI_{OH}	-0.6	
	Total of ports 02,04,07, ports 20 to 27, ports 30, 31 Ports J0,J2,J3		-10	
	Total of ports 10 to 17, port 32, ports 50 to 56, ports C0 to C7,ports B0 to B7		-15	
	Total of ports E0 to E7, A0 to A7, port F6,F7 Ports D0 to D4		-15	
	Total of all output pins		-40	

Note: ·Do not exceed the permissible total consumption power.

Table 42.16   Permissible Output Currents (2)

Conditions: VCC = AVCC0 = USB_VCC = 1.8 to 3.6 V, VSS = AVSS0 = USB_VSS = 0 V, Ta = -40 to +105°C (G version)

item		Symbol	Max.	Unit
Permissible output low current (average value per pin)	Ports 40 to 44,46 , ports J6,J7, ports 90 to 92	I_{OL}	0.4	mA
	Ports other than above		8.0	
Permissible output low current (maximum value per pin)	Ports 40 to 44,46 , port J6,J7, ports 90 to 92		0.4	
	Ports other than above		8.0	
Permissible output low current	Total of ports 40 to 44, 46 , port J6, J7, ports 90 to 92	ΣI_{OL}	1.6	
	Total of ports 02,04,07, ports 20 to 27, ports 30, 31 Ports J0,J2,J3		20	
	Total of ports 10 to 17, port 32, ports 50 to 56, ports C0 to C7,ports B0 to B7		20	
	Total of ports E0 to E7, A0 to A7, port F6,F7 Ports D0 to D4		20	
	Total of all output pins		40	
Permissible output high current (average value per pin)	Ports 40 to 44,46 , port J6,J7, ports 90 to 92	I_{OH}	-0.1	
	Ports other than above		-4.0	
Permissible output high current (maximum value per pin)	Ports 40 to 44,46 , port J6,J7, ports 90 to 92		-0.1	
	Ports other than above		-4.0	
Permissible output high current	Total of ports 40 to 44, 46 , port J6, J7, ports 90 to 92	ΣI_{OH}	-0.6	
	Total of ports 02,04,07, ports 20 to 27, ports 30, 31 Ports J0,J2,J3		-10	
	Total of ports 10 to 17, port 32, ports 50 to 56, ports C0 to C7,ports B0 to B7		-15	
	Total of ports E0 to E7, A0 to A7, port F6,F7 Ports D0 to D4		-15	
	Total of all output pins		-40	

Note: ·Do not exceed the permissible total consumption power.

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Condition in Table 42.62 is changed as follows.

<u>Before change</u>

Table 42.62 ROM (Flash Memory for Code Storage) Characteristics (3)

Temperature range for the programming/erasure operation: Ta = -40 to 105°C

<u>After change</u>

Table 42.62 ROM (Flash Memory for Code Storage) Characteristics (3)

Temperature range for the programming/erasure operation: Ta = -40 to 85°C

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Condition in Table 42.65 is changed as follows.

<u>Before change</u>

Table 42.65 E2 DataFlash Characteristics (3): middle-speed operating mode

Temperature range for the programming/erasure operation: Ta = -40 to 105°C

<u>After change</u>

Table 42.65 E2 DataFlash Characteristics (3): middle-speed operating mode

Temperature range for the programming/erasure operation: Ta = -40 to 85°C