

RENESAS TECHNICAL UPDATE

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Product Category	MPU/MCU		Document No.	TN-RX*-A0290A/E	Rev.	1.00
Title	Changes to the Specification of the External Capacitor Connected to the TSCAP Pin of the Capacitive Touch Sensing Unit (CTSUS)		Information Category	Technical Notification		
Applicable Product	RX113 Group, RX130 Group, RX140 Group, RX230 Group, RX231 Group, RX23W Group, RX260 Group, RX261 Group, RX671 Group	Lot No.	Reference Document	User's Manual: Hardware for applicable products listed under Reference Documents on the last page		
		All				

This document describes the relocation of the specification for the external capacitor connected to the TSCAP pin from the CTSU characteristics to the recommended operating conditions in each User's Manual: Hardware for the applicable products listed above, and the changes to the way to state the specification. The page and table numbers are examples taken from those in the manual for the RX113 Group. See the table on the last page for the corresponding page and table numbers for each of the other groups.

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The specification for the external capacitor connected to the TSCAP pin in Table 43.56, CTSU Characteristics, is to be moved to the recommended operating conditions and the note indicated below is to be added.

Before change

Table 43.56 CTSU Characteristics

Conditions: $1.8\text{ V} \leq V_{CC} = V_{CC_USB} \leq 3.6\text{ V}$, $1.8\text{ V} \leq AV_{CC0} \leq 3.6\text{ V}$, $V_{SS} = AV_{SS0} = V_{SS_USB} = 0\text{ V}$, $T_a = -40\text{ to }+105^\circ\text{C}$

Item	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
External capacitance connected to TSCAP pin	C_{tscap}	9	10	11	nF	
TS pin capacitive load	C_{base}	—	—	50	pF	

After change

Table 43.3 Recommended Operating Conditions (2)

Item	Symbol	Value
Capacitance of the external capacitor connected to the TSCAP pin	$CTSCAP$	$0.01\ \mu\text{F} \pm 10\%^{*1}$

Note 1. Use a multilayer ceramic capacitor with a nominal capacitance of $0.01\ \mu\text{F}$ and a capacitance tolerance of $\pm 10\%$ or less. Also, regarding temperature characteristics, select a capacitor with a capacitance change no greater than $\pm 15\%$, such as X7R (EIA), within the intended the operating environment.

Table 43.56 CTSU Characteristics

Conditions: $1.8\text{ V} \leq V_{CC} = V_{CC_USB} \leq 3.6\text{ V}$, $1.8\text{ V} \leq AV_{CC0} \leq 3.6\text{ V}$, $V_{SS} = AV_{SS0} = V_{SS_USB} = 0\text{ V}$, $T_a = -40\text{ to }+105^\circ\text{C}$

Item	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
TS pin capacitive load	C_{base}	—	—	50	pF	

• Reference Documents

Group	Manual Title (Document Number)	Page	Section	Table
RX113 Group	RX113 Group User's Manual: Hardware: Rev.1.20 (R01UH0448EJ0120)	1466 of 1491	43.10	Table 43.56
RX130 Group	RX130 Group User's Manual: Hardware: Rev.3.00 (R01UH0560EJ0300)	1358 of 1384	40.8	Table 40.48
RX140 Group	RX140 Group User's Manual: Hardware: Rev.1.20 (R01UH0905EJ0120)	1522 of 1551	42.10	Table 42.69
RX230 Group, RX231 Group	RX230 Group, RX231 Group User's Manual: Hardware Rev.1.20 (R01UH0496EJ0120)	1932 of 1966	50.9	Table 50.57
RX23W Group	RX23W Group User's Manual: Hardware: Rev.1.20 (R01UH0823EJ0120)	1832 of 1861	51.9	Table 51.58
RX260 Group, RX261 Group	RX260 Group, RX261 Group User's Manual: Hardware Rev.1.00 (R01UH1045EJ0100)	2170 of 2194	47.11	Table 47.76
RX671 Group	RX671 Group User's Manual: Hardware: Rev.1.20 (R01UH0899EJ0120)	3021 of 3056	56.8	Table 56.57