Renesas Electronics America Inc - R5F5631ACDFB#V0 Datasheet

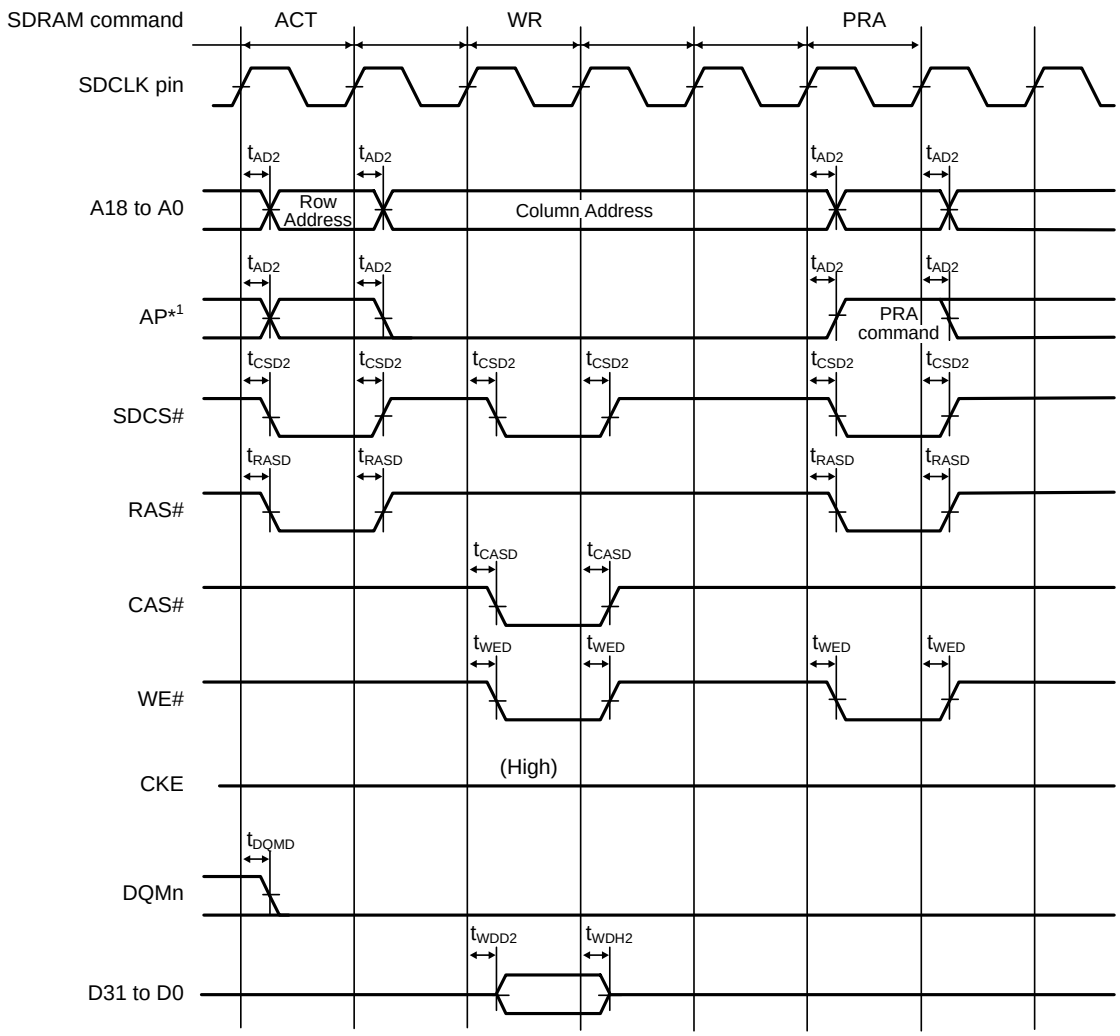
Welcome to E-XFL.COM

What is "Embedded - Microcontrollers"?

"Embedded - Microcontrollers" refer to small, integrated circuits designed to perform specific tasks within larger systems. These microcontrollers are essentially compact computers on a single chip, containing a processor core, memory, and programmable input/output peripherals. They are called "embedded" because they are embedded within electronic devices to control various functions, rather than serving as standalone computers. Microcontrollers are crucial in modern electronics, providing the intelligence and control needed for a wide range of applications.

Applications of "Embedded - Microcontrollers"

Details	
Product Status	Discontinued at Digi-Key
Core Processor	RX
Core Size	32-Bit Single-Core
Speed	100MHz
Connectivity	CANbus, EBI/EMI, I²C, LINbus, SCI, SPI, USB
Peripherals	DMA, LVD, POR, PWM, WDT
Number of I/O	111
Program Memory Size	768KB (768K x 8)
Program Memory Type	FLASH
EEPROM Size	32K x 8
RAM Size	128K x 8
Voltage - Supply (Vcc/Vdd)	2.7V ~ 3.6V
Data Converters	A/D 8x10b, 21x12b; D/A 2x10b
Oscillator Type	Internal
Operating Temperature	-40°C ~ 85°C (TA)
Mounting Type	Surface Mount
Package / Case	144-LQFP
Supplier Device Package	144-LFQFP (20x20)
Purchase URL	https://www.e-xfl.com/product-detail/renesas-electronics-america/r5f5631acdfb-v0



Note 1: Address pins for output of the precharge-setting command (Precharge-sel) for SDRAM.

Figure 5.25 SDRAM Space Single Write Bus Timing

Table 5.26 Timing of On-Chi p Peripheral Modules (8)

Conditions: VCC = AVCC0 = VREFH = VCC_USB = 2.7 to 3.6V, VREFH0 = 2.7V to AVCC0,
VSS = AVSS0 = VREFL/VREFL0 = VSS_USB = 0V, PIXCLK = 27MHz, $T_a = T_{opr}$

Item		Symbol	min	typ	max	Unit	Test Conditions
PDC	VSYNC/HSYNC input setup time	$t_{SYNCSETUP}$	10	—	—	ns	Figure 5.58
	VSYNC/HSYNC input hold time	$t_{SYNCHOLD}$	5	—	—	ns	
	PIXD input setup time	$t_{DATASETUP}$	10	—	—	ns	
	PIXD input hold time	$t_{DATAHOLD}$	5	—	—	ns	
	PIXCLK input cycle time	t_{PIXcyc}	37	—	1000	ns	Figure 5.59
	PIXCLK input pulse width high level	t_{PIXH}	10	—	—	ns	
	PIXCLK input pulse width low level	t_{PIXL}	10	—	—	ns	
	PCKO pin output cycle time	t_{PCKcyc}	40	—	1000	ns	Figure 5.60
	PCKO pin output high level pulse width	t_{PCKH}	13	—	—	ns	
	PCKO pin output low level pulse width	t_{PCKL}	13	—	—	ns	
	PCKO pin output rising time	t_{PCKr}	—	—	5	ns	
	PCKO pin output falling time	t_{PCKf}	—	—	5	ns	

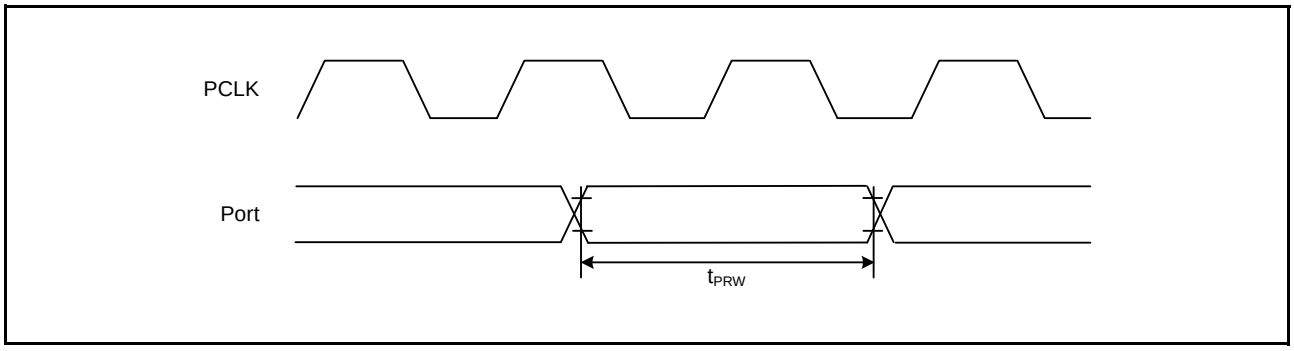


Figure 5.34 I/O Port Input Timing

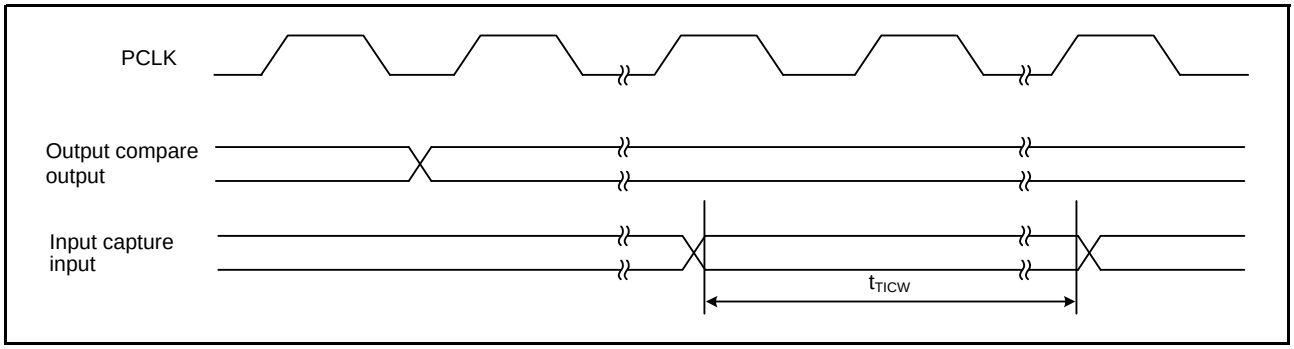


Figure 5.35 MTU Input/Output Timing

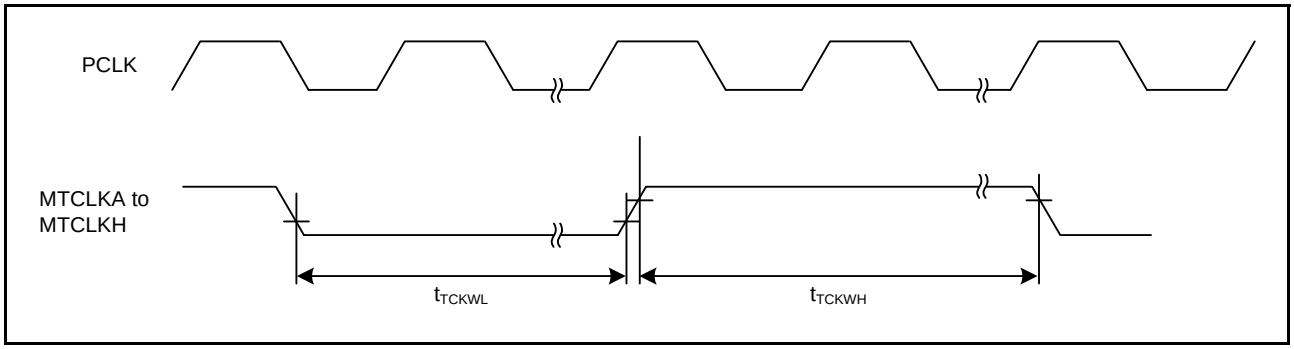


Figure 5.36 MTU Clock Input Timing

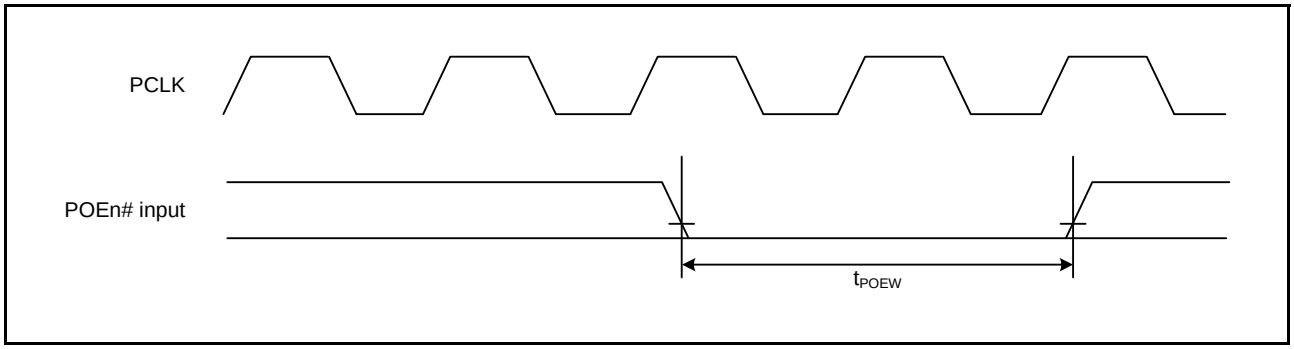


Figure 5.37 POE# Input Timing

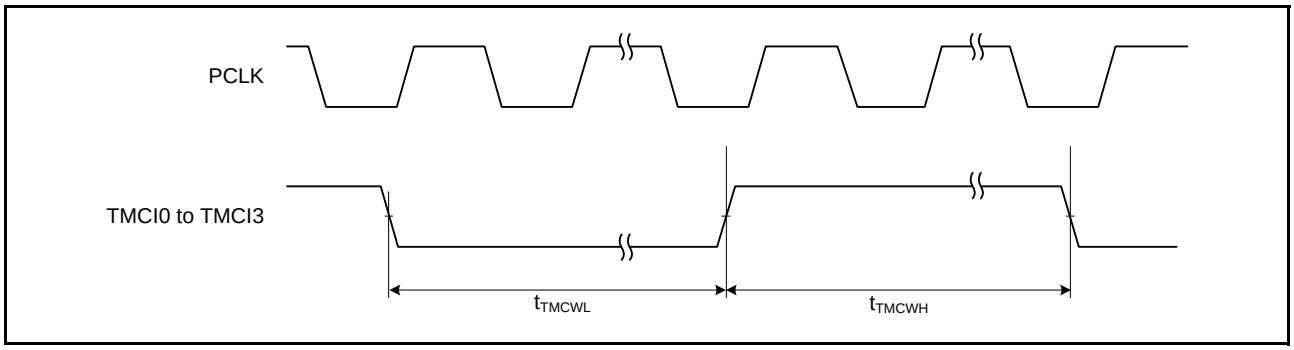


Figure 5.38 8-Bit Timer Clock Input Timing

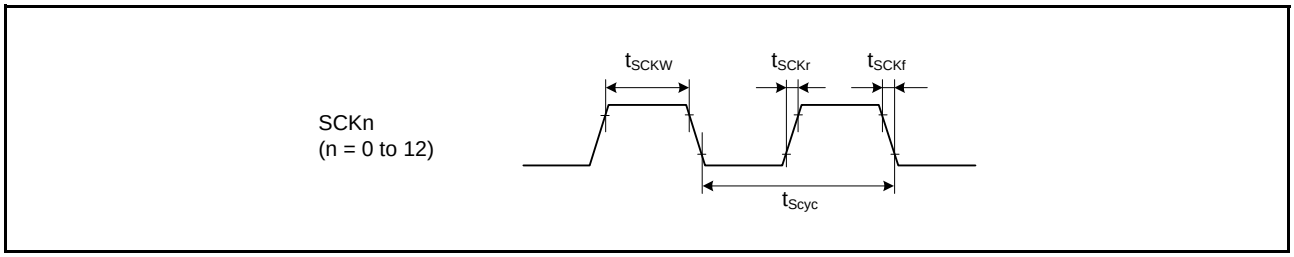


Figure 5.39 SCK Clock Input Timing

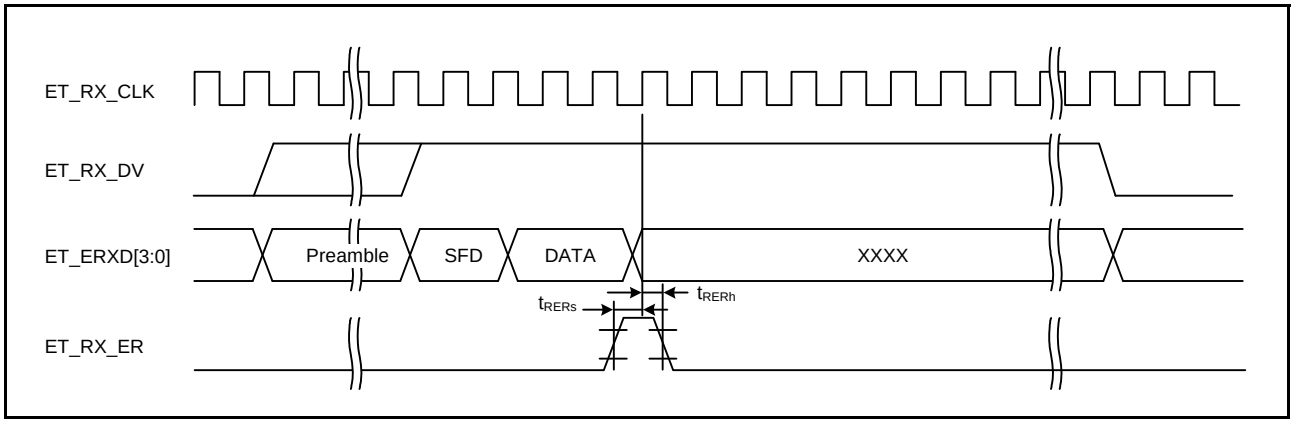


Figure 5.56 MII Reception Timing (Error Occurrence)

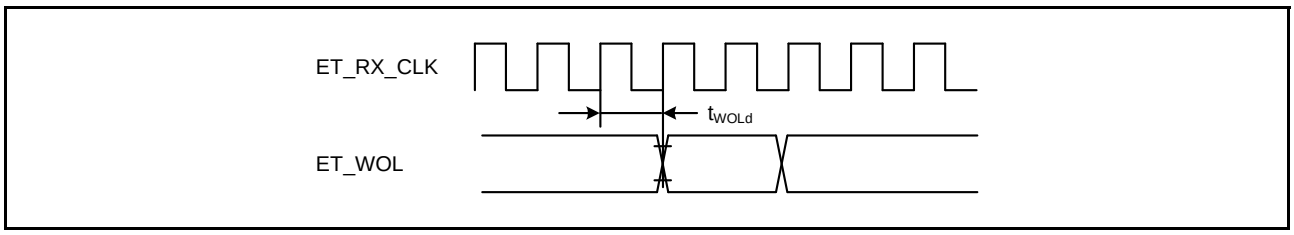


Figure 5.57 WOL Output Timing (MII)

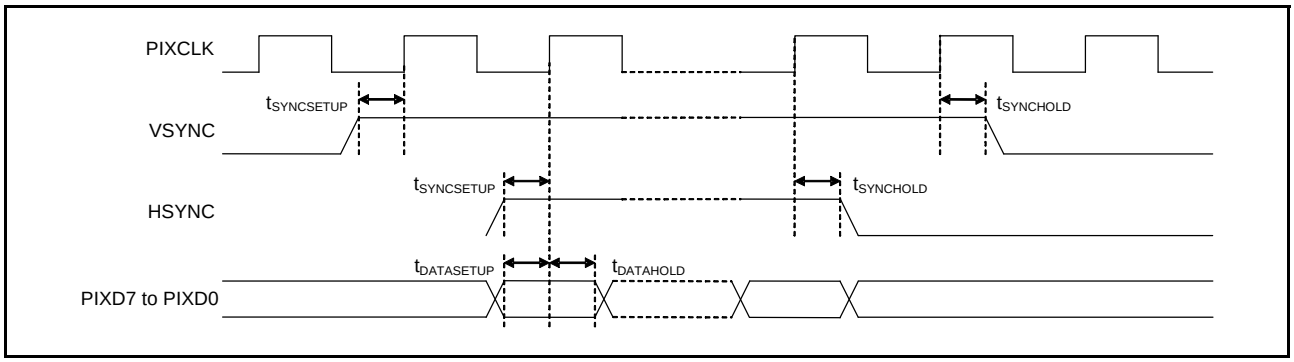


Figure 5.58 PDC Timing

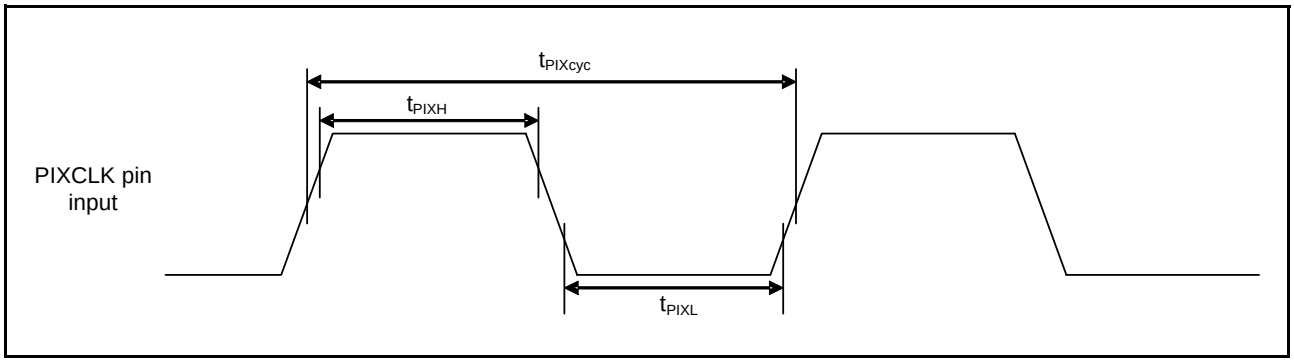
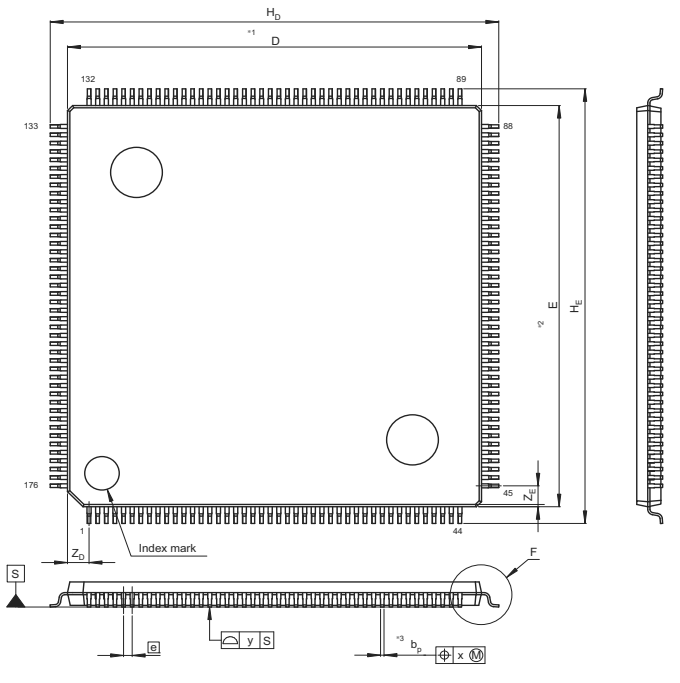
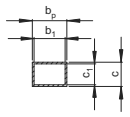


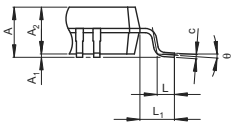
Figure 5.59 PDC Input Clock Characteristic

JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
P-LFQFP176-24x24-0.50	PLQP0176KB-A	176P6Q-A/FP-176E/FP-176EV	1.8g





Terminal cross section



Detail F

NOTE)
1. DIMENSIONS "*1" AND "*2" DO NOT INCLUDE MOLD FLASH.
2. DIMENSION "*3" DOES NOT INCLUDE TRIM OFFSET.

Reference Symbol	Dimension in Millimeters		
	Min	Nom	Max
D	23.9	24.0	24.1
E	23.9	24.0	24.1
A_2	—	1.4	—
H_D	25.8	26.0	26.2
H_E	25.8	26.0	26.2
A	—	—	1.7
A_1	0.05	0.1	0.15
b_p	0.15	0.20	0.25
b_1	—	0.18	—
c	0.09	0.145	0.20
c_1	—	0.125	—
θ	0°	—	8°
e	—	0.5	—
x	—	—	0.08
y	—	—	0.10
Z_D	—	1.25	—
Z_E	—	1.25	—
L	0.35	0.5	0.65
L_1	—	1.0	—

Figure C 176-pin LQFP (PLQP0176KB-A)

Classifications

- Items with Technical Update document number: Changes according to the corresponding issued Technical Update
- Items without Technical Update document number: Minor changes that do not require Technical Update to be issued

Rev.	Date	Description		Classification
		Page	Summary	
1.80	May 13. 2014	Features		
		1	Operating temp. range chaged, Unique ID added	
		1. Overview		
		2 to 7	Table 1.1 Outline of Specifications: Operating temperature changed, Unique ID and Note 2, added	
		8	Table 1.2 Comparison of Functions for Different Packages: Unique ID, added	
		9 to 16	Table 1.3 List of Products, changed and Note 2, added	TN-RX*-A092A/J
		17	Figure 1.1 How to Read the Product Part Number: Operating temperature range, changed	
		19, 23	Table 1.4 Pin Functions: VBATT and USB power pins, changed	
		3. Address Space		
		76	Figure 3.1 Memory Map in Each Operating Mode, changed	TN-RX*-A081A/E
		77	Figure 3.2 Correspondence between External Address Spaces and CS Areas (In On-Chip ROM Disabled Extended Mode), changed	TN-RX*-A081A/E
		5. Electrical Characteristics		
		130	Table 5.1 Absolute Maximum Ratings: Operating temperature, changed	
		131	Table 5.2 DC Characteristics (1): Note 1, chaged	
		133 to 134	Table 5.4 DC Characteristics (3) (for D and G Versions (-40 ≤ Ta ≤ +85°C)): Title	
		135 to 136	Table 5.5 DC Characteristics (4) (for G Version (-85 < Ta ≤ +105°C)), added	
		1921	Table 5.12 Clock Timing (Except for Sub-Clock Related): LOCO changed to LOCO and IWDTCLKB	TN-RX*-A097A/J
		144	Figure 5.6 LOCO, IWDTCLK Clock Oscillation Start Timing, added	TN-RX*-A097A/J
		189	Figure 5.68 Battery Backup Function Characteristics changed	

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