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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 "<u>Embedded - Microcontrollers</u>"

Details	
Product Status	Not For New Designs
Core Processor	R8C
Core Size	16-Bit
Speed	8MHz
Connectivity	LINbus, SIO, UART/USART
Peripherals	POR, PWM, Voltage Detect, WDT
Number of I/O	15
Program Memory Size	8KB (8K x 8)
Program Memory Type	FLASH
EEPROM Size	-
RAM Size	384 x 8
Voltage - Supply (Vcc/Vdd)	2.2V ~ 5.5V
Data Converters	-
Oscillator Type	Internal
Operating Temperature	-20°C ~ 85°C (TA)
Mounting Type	Surface Mount
Package / Case	20-LSSOP (0.173", 4.40mm Width)
Supplier Device Package	20-LSSOP
Purchase URL	https://www.e-xfl.com/product-detail/renesas-electronics-america/r5f212h2snsp-u0

Email: info@E-XFL.COM

Address: Room A, 16/F, Full Win Commercial Centre, 573 Nathan Road, Mongkok, Hong Kong

Table 1.2 Specifications for R8C/2J Group

Remain					
unit Number of fundamental instructions: 89 Minimum instruction execution time: 125 ns (System clock = 8 MHz, VCC = 2.7 to 5.5 V) 250 ns (System clock = 4 MHz, VCC = 2.2 to 5.5 V) 250 ns (S					
Minimum instruction execution time: 125 ns (System clock = 8 MHz, VCC = 2.7 to 5.5 V) 250 ns (System clock = 4 MHz, VCC = 2.2 to 5.5 V) Multiplier: 16 bits × 16 bits → 32 bits Multiplier: 16 bits × 16 bits → 32 bits Operation mode: Single-chip mode (address space: 1 Mbyte)					
125 ns (System clock = 8 MHz, VCC = 2.7 to 5.5 V) 250 ns (System clock = 4 MHz, VCC = 2.7 to 5.5 V) 4 Multiplier: 16 bits > 15 bits > 32 bits 6 Multiply-accumulate instruction: 16 bits × 16 bits + 32 bits → 32 bits 6 Multiply-accumulate instruction: 16 bits × 16 bits + 32 bits → 32 bits 7 Operation mode: Single-chip mode (address space: 1 Mbyte) 8 Memory					
250 ns (System clock = 4 MHz, VCC = 2.2 to 5.5 V) • Multiplier: 16 bits x 16 bits x 32 bits • Multiply-accumulate instruction: 16 bits x 16 bits x 20 bits • Multiply-accumulate instruction: 16 bits x 16 bits x 32 bits • Operation mode: Single-chip mode (address space: 1 Mbyte) Memory					
Multiplier: 16 bits × 16 bits → 32 bits					
Multiply-accumulate instruction: 16 bits x 16 bits → 32 bits → 0peration mode: Single-chip mode (address space: 1 Mbyte) Memory ROM, RAM Refer to Table 1.4 Product List for R8C/2J Group.					
Power Supply Voltage detection	S				
Refer to Table 1.4 Product List for R8C/2J Group.	-				
Power Supply Voltage Power-on reset					
Voltage Detection					
Detection Comparator * 2 circuits (shared with voltage monitor 1 and voltage monitor 2) * External reference voltage input is available I/O Ports Clock Clock generation circuits Clock generation circuits * 1 circuits: On-chip oscillator (high-speed, low-speed) (high-speed on-chip oscillator has a frequency adjustment for this power consumption modes: Standard operating mode (high-speed on-chip oscillator, low-speed oscillator), wait mode, stop mode Interrupts * External: 3 sources, Internal: 14 sources, Software: 4 sources * Priority levels: 7 levels Watchdog Timer Timer RA * B bits × 1 (with 8-bit prescaler) Timer mode (period timer), pulse output mode (output level inverted operiod), event counter mode, pulse width measurement mode, pulse measurement mode Timer RB * B bits × 1 (with 8-bit prescaler) Timer mode (period timer), programmable waveform generation mode output), programmable one-shot generation mode, programmable washot generation mode Timer RE Not implemented Timer RE Not implemented Timer RF 16 bits × 1 (with capture/compare register pin and compare register pin Input capture mode, output compare mode Serial UARTO Clock synchronous serial I/O/UART × 1 Interface LIN Module Hardware LIN: 1 (timer RA, UARTO) * Programming and erasure voltage: VCC = 2.7 to 5.5 V * Programming and erasure voltage: VCC = 2.7 to 5.5 V * Programming and erasure endurance: 100 times * Program security: ROM code protect, ID code check					
External reference voltage input is available					
External reference voltage input is available					
Clock Clock generation circuits Clock generation circuits Clock Clock generation circuits Clock generation goscillator (high-speed on-chip oscillator has a frequency adjustment for prequency divider circuit: Dividing selectable 1, 2, 4, 8, and 16 Low power consumption modes: Standard operating mode (high-speed on-chip oscillator, low-speed oscillator), wait mode, stop mode External: 3 sources, Internal: 14 sources, Software: 4 sources Priority levels: 7 levels Priority levels: 7 levels					
Clock circuits Clock generation circuits Frequency divider circuit: Dividing selectable 1, 2, 4, 8, and 16 Frequency divider circuit: Dividing selectable 1, 2, 4, 8, and 16 Low power consumption modes: Standard operating mode (high-speed on-chip oscillator, low-speed oscillator), wait mode, stop mode External: 3 sources, Internal: 14 sources, Software: 4 sources Priority levels: 7 levels Timer RA Timer RA Timer RA Sits × 1 (with 8-bit prescaler), reset start selectable Timer mode (period timer), pulse output mode (output level inverted operiod), event counter mode, pulse width measurement mode, pulse measurement mode Timer RB Sits × 1 (with 8-bit prescaler) Timer mode (period timer), programmable waveform generation mode output), programmable one-shot generation mode, programmable waveform generation mode output), programmable one-shot generation mode, programmable waveform generation mode Timer RE Not implemented Timer RF Io bits × 1 (with capture/compare register pin and compare register pin Input capture mode, output compare mode Clock synchronous serial I/O/UART × 1 Interface LIN Module Hardware LIN: 1 (timer RA, UARTO) Programming and erasure voltage: VCC = 2.7 to 5.5 V Programming and erasure endurance: 100 times Program security: ROM code protect, ID code check					
Circuits					
Frequency divider circuit: Dividing selectable 1, 2, 4, 8, and 16 Low power consumption modes: Standard operating mode (high-speed on-chip oscillator, low-speed oscillator), wait mode, stop mode Interrupts	nt function)				
Low power consumption modes: Standard operating mode (high-speed on-chip oscillator, low-speed oscillator), wait mode, stop mode Interrupts	,				
Interrupts External: 3 sources, Internal: 14 sources, Software: 4 sources Priority levels: 7 levels Watchdog Timer Timer RA Timer RA B bits x 1 (with prescaler), reset start selectable Timer mode (period timer), pulse output mode (output level inverted of period), event counter mode, pulse width measurement mode, pulse measurement mode Timer RB B bits x 1 (with 8-bit prescaler) Timer mode (period timer), programmable waveform generation mode output), programmable one-shot generation mode, programmable washot generation mode Timer RE Not implemented Timer RF I 6 bits x 1 (with apture/compare register pin and compare register pin Input capture mode, output compare mode Clock synchronous serial I/O/UART x 1 Interface LIN Module Hardware LIN: 1 (timer RA, UARTO) Programming and erasure voltage: VCC = 2.7 to 5.5 V Programming and erasure endurance: 100 times Program security: ROM code protect, ID code check					
External: 3 sources, Internal: 14 sources, Software: 4 sources	ed on-chip				
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Timer RA S bits x 1 (with 8-bit prescaler) Timer mode (period timer), pulse output mode (output level inverted of period), event counter mode, pulse width measurement mode, pulse measurement mode Timer RB					
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Timer mode (period timer), programmable waveform generation mode output), programmable one-shot generation mode, programmable washot generation mode Timer RE Not implemented Timer RF 16 bits × 1 (with capture/compare register pin and compare register pin Input capture mode, output compare mode Serial Interface LIN Module Hardware LIN: 1 (timer RA, UARTO) Flash Memory Programming and erasure voltage: VCC = 2.7 to 5.5 V Programming and erasure endurance: 100 times Program security: ROM code protect, ID code check					
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Timer RF 16 bits × 1 (with capture/compare register pin and compare register pin Input capture mode, output compare mode Serial Interface LIN Module Flash Memory Programming and erasure voltage: VCC = 2.7 to 5.5 V Programming and erasure endurance: 100 times Program security: ROM code protect, ID code check					
Input capture mode, output compare mode Serial UARTO Clock synchronous serial I/O/UART x 1 Interface IIN Module Hardware LIN: 1 (timer RA, UARTO) Flash Memory Programming and erasure voltage: VCC = 2.7 to 5.5 V Programming and erasure endurance: 100 times Program security: ROM code protect, ID code check					
Serial UARTO Clock synchronous serial I/O/UART x 1 Interface LIN Module Hardware LIN: 1 (timer RA, UARTO) Flash Memory • Programming and erasure voltage: VCC = 2.7 to 5.5 V • Programming and erasure endurance: 100 times • Program security: ROM code protect, ID code check	pin)				
Interface LIN Module Hardware LIN: 1 (timer RA, UART0) Flash Memory • Programming and erasure voltage: VCC = 2.7 to 5.5 V • Programming and erasure endurance: 100 times • Program security: ROM code protect, ID code check					
LIN Module Hardware LIN: 1 (timer RA, UART0) Programming and erasure voltage: VCC = 2.7 to 5.5 V Programming and erasure endurance: 100 times Program security: ROM code protect, ID code check					
 Programming and erasure voltage: VCC = 2.7 to 5.5 V Programming and erasure endurance: 100 times Program security: ROM code protect, ID code check 					
 Programming and erasure endurance: 100 times Program security: ROM code protect, ID code check 					
Program security: ROM code protect, ID code check					
	Debug functions: On-chip debug, on-board flash rewrite function				
	System clock = 8 MHz (VCC = 2.7 to 5.5 V)				
Voltage System clock = 4 MHz (VCC = 2.2 to 5.5 V)					
Current consumption 5 mA (VCC = 5 V, system clock = 8 MHz)					
23 μ A (VCC = 3 V, wait mode (low-speed on-chip oscillator on))					
$0.7 \mu A \text{ (VCC} = 3 \text{ V, stop mode, BGR trimming circuit disabled)}$					
Operating Ambient Temperature -20 to 85°C (N version)					
-40 to 85°C (D version) ⁽¹⁾					
Package 20-pin LSSOP					
Package code: PLSP0020JB-A (previous code: 20P2F-A)					

NOTE:

1. Specify the D version if D version functions are to be used.



1.2 Product List

Table 1.3 lists Product List for R8C/2H Group, Figure 1.1 shows a Part Number, Memory Size, and Package of R8C/2H Group. Table 1.4 lists Product List for R8C/2J Group, Figure 1.2 shows a Part Number, Memory Size, and Package of R8C/2J Group.

Table 1.3 Product List for R8C/2H Group

Current of Mar. 2008

Part No.	ROM Capacity	RAM Capacity	Package Type	Remarks
R5F212H1SNSP	4 Kbytes	256 bytes	PLSP0020JB-A	N version
R5F212H2SNSP	8 Kbytes	384 bytes	PLSP0020JB-A	
R5F212H1SDSP	4 Kbytes	256 bytes	PLSP0020JB-A	D version
R5F212H2SDSP	8 Kbytes	384 bytes	PLSP0020JB-A	

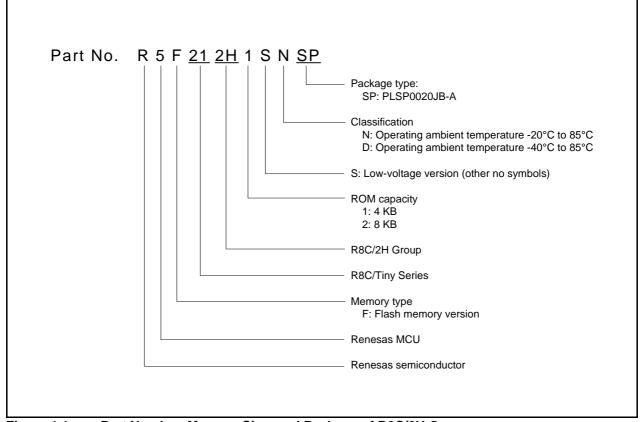


Figure 1.1 Part Number, Memory Size, and Package of R8C/2H Group

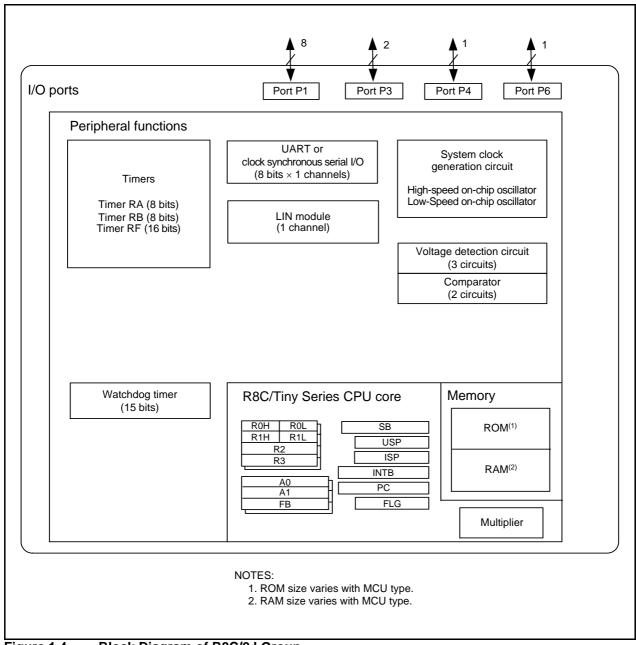


Figure 1.4 Block Diagram of R8C/2J Group

Table 1.6 Pin Name Information by Pin Number of R8C/2J Group

Pin	Control Pin	Port		I/O Pin Functions for of	Peripheral Modules	
Number	Control Pill	Poit	Interrupt	Timer	Serial Interface	Comparator
1	NC ⁽²⁾					
2		P3_7		TRAO/TRFO11		
3	RESET					
4	NC ⁽²⁾					
5	VSS					
6	NC ⁽²⁾					
7	VCC					
8	MODE					
9		P4_5	ĪNT0			
10		P1_7	ĪNT1	TRAIO		
11		P1_6			CLK0	VCOUT2
12		P1_5	(INT1) ⁽¹⁾	(TRAIO) ⁽¹⁾	RXD0	
13		P1_4			TXD0	
14		P1_3	KI3	TRBO		VCOUT1
15		P1_2	KI2	TRFO02		CVREF
16		P6_5				
17		P1_1	KI1	TRFO01		VCMP2
18		P1_0	KI0	TRFO00		VCMP1
19		P3_3		TRFO10/TRFI		
20	NC ⁽²⁾					

- 1. Can be assigned to the pin in parentheses by a program.
- 2. NC(Non-Connection)

2.8.7 Interrupt Enable Flag (I)

The I flag enables maskable interrupts.

Interrupt are disabled when the I flag is set to 0, and are enabled when the I flag is set to 1. The I flag is set to 0 when an interrupt request is acknowledged.

2.8.8 Stack Pointer Select Flag (U)

ISP is selected when the U flag is set to 0; USP is selected when the U flag is set to 1.

The U flag is set to 0 when a hardware interrupt request is acknowledged or the INT instruction of software interrupt numbers 0 to 31 is executed.

2.8.9 Processor Interrupt Priority Level (IPL)

IPL is 3 bits wide and assigns processor interrupt priority levels from level 0 to level 7. If a requested interrupt has higher priority than IPL, the interrupt is enabled.

2.8.10 Reserved Bit

If necessary, set to 0. When read, the content is undefined.



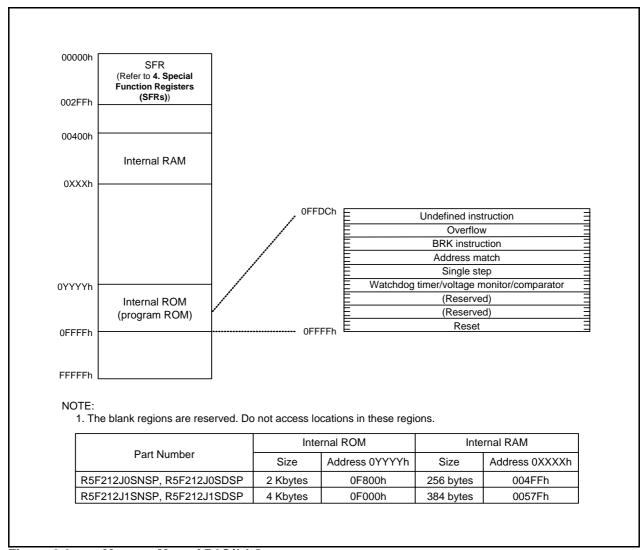


Figure 3.2 Memory Map of R8C/2J Group

SFR Information (2)⁽¹⁾ Table 4.2

0039th (0031h) Voltage Detection Register (17) V CA1 00001000b 0032h (0033h) Voltage Detection Register (22) V CA2 000h ³⁹ (00100000b) 0033h (0033h) Voltage Monitor 1 Circuit Control Register (17) VVVIC 000010000b) 0038h (0038h) Voltage Monitor 1 Circuit Control Register (17) VVVIC 000001010b 0038h (0038h) Voltage Monitor 2 Circuit Control Register (17) VVVIC 0000010b 0038h (0038h) Voltage Monitor 2 Circuit Control Register (17) VVVIC 0000010b 0038h (0038h) Voltage Monitor 2 Circuit Esternal Input Control Register (17) VVAIC 000010b 0038h (0038h) Voltage Detection Circuit Esternal Input Control Register (17) VCAB (17) 000000000000000000000000000000000000	Address	Register	Symbol	After reset
OSSAP	0030h			
O032h	0031h	Voltage Detection Register 1 ⁽²⁾	VCA1	00001000b
0033th 0034th 0034th 0036th 0	0032h		VCA2	00h(3)
0033sh 0035sh 0036sh 0036sh 0037sh 0037sh 0038sh 004ssh 005ssh		Voltage Detection register 200		* *
0034h 0035h Voltage Monitor 1 Circuit Control Register ⁽²⁾ VPTC 00001010b 0037h Voltage Monitor 2 Circuit Control Register ⁽²⁾ VPXC 0000010b 0038h Voltage Monitor 0 Circuit Control Register (2) VPWC 10000410b ⁽³⁾ 0038h Voltage Monitor 1 Circuit External Input Control Register VCAB 00h 0035h Comparator Mode Register VCAB 00h 0030h Voltage Monitor Circuit Edge Select Register VCAC 00h 0035h Soc Comparator Mode Register VCAC 00h 0035h Soc Control Register VCAC 00h 0035h Soc Control Register BGRTRM 00h 0040h Comparator 1 Interrupt Control Register VCMP1IC XXXXX000b 0041h Comparator 2 Interrupt Control Register VCMP2IC XXXXX000b 0041h Comparator 1 Interrupt Control Register VCMP2IC XXXXX000b 0042h Comparator 2 Interrupt Control Register VCMP2IC XXXXX000b 0044h Could All Timer RE Interrupt Control Register SZRIC XXX	0033h			001000000000
0035h Voltage Monitor 1 Circuit Control Register® VWTC 00001010b 0037h Voltage Monitor 2 Circuit Control Register® VWZC 00000010b 0037h Voltage Monitor 0 Circuit Control Register VWCC 00000010b 0038h Voltage Monitor 0 Circuit External Input Control Register VCAB 00h 0038h Voltage Detection Circuit External Input Control Register VCAB 00h 0038h Voltage Detection Circuit External Input Control Register ALCMR 00h 0038h Voltage Monitor Circuit Edge Select Register ALCMR 00h 0038h Voltage Monitor Circuit Edge Select Register BGRCR 00h 0038h BGR Control Register BGRCR 00h 0039h BGR Control Register VCMPIC XXXXX000b 0041h Comparator 1 Interrupt Control Register VCMPIC XXXXX000b 0042h Comparator 2 Interrupt Control Register VCMPIC XXXXX000b 0043h Comparator 2 Interrupt Control Register VCMPIC XXXXX000b 0044h Oo4 VCMPIC XXXXXX000b				
0038h				
00037h			1,04/4.0	000040401
0038h				
100X011b 4 0033h				
0039h 0038h Voltage Detection Circuit External Input Control Register VCAB 00h 0036h Comparator Mode Register ALCMR 00h 0036h Voltage Detection Circuit Edge Select Register VCAC 00h 0036h Voltage Control Register VCAC 00h 0037h BGR Control Register VCAC 00h 0037h BGR Trimming Register BGRTRM When Shipping 0041n Comparator I Interrupt Control Register VCMPIIC XXXXXX000b 0042n Comparator 2 Interrupt Control Register VCMPIIC XXXXXX000b 0048n Comparator 2 Interrupt Control Register VCMPIIC XXXXXX000b 0048n Comparator 2 Interrupt Control Register VCMPIIC XXXXXX000b 0048n Comparator 2 Interrupt Control Register TREIC XXXXXX000b 0048n LuART2 Receive Interrupt Control Register SZRIC XXXXXX000b 0048n LuART2 Receive Interrupt Control Register KUPIC XXXXXX000b 0048n LuART3 Transmit Interrupt Control Register CMPIIC XXXXXX00	0038h	Voltage Monitor 0 Circuit Control Register ⁽²⁾	VW0C	1000X010b ⁽³⁾
0038h Voltage Detection Circuit External Input Control Register VCAB 00h 0035h Comparator Mode Register ALCMR 00h 0035h Oshgan Mantor Circuit Edge Select Register VCAC 00h 0035h DGR Criticuit Edge Select Register VCAC 00h 0035h BGR Criticuit Edge Select Register BGRCR 00h 0037h BGR Trimming Register BGRTRM When Shipping 0041h Comparator 1 Interrupt Control Register VCMP1IC XXXXX000b 0042h Comparator 2 Interrupt Control Register VCMP2IC XXXXX000b 0043h Comparator 2 Interrupt Control Register VCMP2IC XXXXX000b 0044h O044h VCMP2IC XXXXXX000b 0044h O044h VCMP2IC XXXXXX000b 0044h O044h VCMP2IC XXXXXX000b 0044h VCMP2IC XXXXXX000b XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX				1100X011b ⁽⁴⁾
0.038h	0039h			
0032h Comparator Mode Register VAC	003Ah			
0030h Comparator Mode Register ALCMR 00h 0030h 0040h 004	003Bh	Voltage Detection Circuit External Input Control Register	VCAB	00h
003Dh Voltage Monitor Circuit Edge Select Register VCAC 00h 003Eh 03G Control Register BGR Control Register BGRTRM When Shipping 0040h Comparator I Interrupt Control Register VCMPIIC XXXXX000b 0042h Comparator I Interrupt Control Register VCMPIIC XXXXX000b 0043h O043h VCMPIIC XXXXX000b 0044h O045h VCMPIIC XXXXX000b 0045h O046h VCMPIIC XXXXX000b 0047h VCMPIIC XXXXX000b VCMPIIC 0048h VCMPIIC XXXXX000b VCMPIIC 0048h VCMPIIC XXXXX000b VCMPIIC 0049h VCMPIIC XXXXX000b VCMPIIC 0049h VCMPIIC XXXXX000b XXXXX000b 00404h VCMPIIC XXXXX000b XXXXX000b 0044h VCMPIIC XXXXX000b XXXXX000b 0044h VCMPIIC XXXXX000b XXXXX000b 0045h VCMPIIC XXXXX000b XXXXX000b	003Ch		ALCMR	00h
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003Fh BGR Trimming Register When Shipping 004th Comparator 1 Interrupt Control Register VCMP1IC XXXXX000b 0042h Comparator 2 Interrupt Control Register VCMP2IC XXXXX000b 0043h Comparator 2 Interrupt Control Register VCMP2IC XXXXX000b 0045h Comparator 2 Interrupt Control Register VCMP2IC XXXXX000b 0046h Comparator 2 Interrupt Control Register TREIC XXXXX000b 0048h Comparator 2 Interrupt Control Register SZFIC XXXXX000b 0044h Timer RE Interrupt Control Register SZRIC XXXXX000b 004Dh Key Input Interrupt Control Register KUPIC XXXXX000b 004Dh Key Input Interrupt Control Register KUPIC XXXXXX000b 004Fh Compare 1 Interrupt Control Register CMP1IC XXXXXX000b 005Dh Compare 1 Interrupt Control Register SORIC XXXXX000b 005Dh UARTO Receive Interrupt Control Register SORIC XXXXX000b 005Sh UARTO Receive Interrupt Control Register TRBIC XXXXX000b <td></td> <td></td> <td></td> <td></td>				
0940h Comparator 1 Interrupt Control Register VCMP1IC XXXXX000b 0942h Comparator 2 Interrupt Control Register VCMP2IC XXXXX000b 0943h 0944h		BGR Trimming Register		
0041h Comparator 1 Interrupt Control Register VCMP1IC XXXXX000b 0042h Comparator 2 Interrupt Control Register VCMP2IC XXXXX000b 0043h 0044h VCMP2IC XXXXX000b 0046h 0046h VCMP2IC XXXXX000b 0047h 0048h VCMP1C XXXXX000b 004Ah Timer RE Interrupt Control Register ⁽⁶⁾ SZTIC XXXXX000b 004Bh UART2 Transmit Interrupt Control Register SZTIC XXXXX000b 004Ch UART2 Receive Interrupt Control Register SZRIC XXXXX000b 004Eh VCMPIC XXXXX000b VARTO Transmit Interrupt Control Register SZRIC XXXXX000b 004Eh UARTO Transmit Interrupt Control Register SORIC XXXXX000b XXXXX000b 005th UARTO Receive Interrupt Control Register SORIC XXXXX000b XXXXX000b 005sh Timer RA Interrupt Control Register TRAIC XXXXX000b XXXXX000b 005sh Timer RE Interrupt Control Register TRBIC XXXXX000b XXXXXX000b 005sh				i i i i i i i i i i i i i i i i i i i
Odd-2h		Comparator 1 Interrupt Control Register	VCMP1IC	XXXXX000b
0043h 0044h 0044h 0045h 0046h 0047h 0048h 0048h 0048h 0048h 0048h 0048h 0048h 0048h 0044h Timer RE Interrupt Control Register ⁽⁶⁾ \$27LC 004Bh UART2 Transmit Interrupt Control Register (6) \$28RC 004Ch UART2 Receive Interrupt Control Register \$28RC 004Eh 604Fh \$28RC 004Fh 604Fh \$28RC 004Fh \$28RC \$28XXXX000b 0051h \$28RC \$28XXXX000b 0051h \$28RC \$28XXXX000b 0052h \$28RC \$28XXXX000b 0053h \$28RC \$28XXXXX000b 0053h \$28RC \$28XXXXX000b 0054h \$28RC \$28XXXXXXXXXXXXXXXXXXXXXXXXXXX				
0044h 0045h 0046h 0047h 0048h 0047h 0049h 0049h 0049h 0049h 0048h Timer RE Interrupt Control Register(6) 0048h UARTZ Transmit Interrupt Control Register(7) 0040h UARTZ Receive Interrupt Control Register 0040h Key Input Interrupt Control Register 0041h Key Input Interrupt Control Register 0042h UARTZ Receive Interrupt Control Register 0050h Compare 1 Interrupt Control Register 0051h UARTO Receive Interrupt Control Register 0052h UARTO Receive Interrupt Control Register 0053h 0054h 0055h Image: Control Register 0056h Image: Control Register 0057h Image: Control Register 0058h Image: Control Register 0059h Initierrupt Control Register 0059h Initierrupt Control Register 0050h Initierrupt Control Register 0050h Initierrupt Control Register 0050h Compare Onterrupt Control Register </td <td></td> <td>Samparator Emilionapt Control Hogistor</td> <td>V SIVII ZIO</td> <td>73000000</td>		Samparator Emilionapt Control Hogistor	V SIVII ZIO	73000000
0045h 0047h 0048h 0047h 0048h 0049h 0059h 0059				+
0046h 0049h 0059h 0049h 0059h 0049h 0059h 0049h 0059h 0059				
0047h 0049h 0049h 0049h 0049h 0049h 0044h Timer RE Interrupt Control Register ⁽⁶⁾ S2TIC XXXXX000b 0048h UART2 Transmit Interrupt Control Register ⁽⁶⁾ S2TIC XXXXX000b 0048h UART2 Receive Interrupt Control Register KUPIC XXXXX000b 0048h Variable Receive Interrupt Control Register KUPIC XXXXX000b Variable Register KUPIC XXXXX000b Variable Register Variable Register CMP1IC XXXXX000b Variable Register CMP1IC XXXXX000b Variable Register S0TIC XXXXX000b Variable Register S0TIC XXXXX000b Variable Register S0TIC XXXXX000b Variable Register S0TIC XXXXX000b Variable Register V				+
0.048h				
0.049h				
004Ah Timer RE Interrupt Control Register(6) TREIC XXXXX000b 004Bh UART2 Transmit Interrupt Control Register(6) S2TIC XXXXX000b 004Ch UART2 Receive Interrupt Control Register SZRIC XXXXX000b 004Dh Key Input Interrupt Control Register KUPIC XXXXX000b 004Eh 004Fh KUPIC XXXXX000b 005Dh Compare 1 Interrupt Control Register CMP1IC XXXXX000b 005Dh UART0 Transmit Interrupt Control Register SOTIC XXXXX000b 0052h UART0 Transmit Interrupt Control Register SORIC XXXXX000b 0053h UART0 Transmit Interrupt Control Register SORIC XXXXX000b 0053h UART0 Transmit Interrupt Control Register TRAIC XXXXX000b 0054h UART0 Transmit Interrupt Control Register TRAIC XXXXX000b 0055h Timer RA Interrupt Control Register TRAIC XXXXX000b 0057h Timer RB Interrupt Control Register INT1IC XXXXX000b 005Ah Timer RF Interrupt Control Register CMP0IC XXXXX000b				
004Bh UART2 Transmit Interrupt Control Register (6) S2TIC XXXXX000b 004Ch UART2 Receive Interrupt Control Register (7) S2RIC XXXXX000b 004Ch UART2 Receive Interrupt Control Register KUPIC XXXXX000b 004Eh WIPIC XXXXX000b 004Fh Compare 1 Interrupt Control Register CMP1IC XXXXX000b 0051h UART0 Transmit Interrupt Control Register SOTIC XXXXX000b 0052h UART0 Receive Interrupt Control Register SORIC XXXXX000b 0053h UART0 Receive Interrupt Control Register TRAIC XXXXX000b 0055h Timer RA Interrupt Control Register TRAIC XXXXX000b 0055h Timer RB Interrupt Control Register TRBIC XXXXX000b 0059h INT1 Interrupt Control Register TRFIC XXXXX000b 0058h Timer RF Interrupt Control Register TRFIC XXXXX000b 0055h INT0 Interrupt Control Register CMP0IC XXXXX000b 0055h INT0 Interrupt Control Register INT0IC XXXXX000b 0055h		T. DELL. (6)	TDEIG	VVVVVOOR
004Ch UART2 Receive Interrupt Control Register (CMPIC NXXXX000b) 004Bh Key Input Interrupt Control Register (CMPIC NXXXX000b) 004Eh (CMPIC NXXXX000b) 005Dh Compare 1 Interrupt Control Register (CMPIC NXXXX000b) 005Th UART0 Transmit Interrupt Control Register (CMPIC NXXXX000b) 0052h UART0 Receive Interrupt Control Register (CMPIC NXXXX000b) 0053h SORIC NXXXX000b 0055h (CMPIC NXXXX000b) 0055h (CMPIC NXXXX000b) 0057h (CMPIC NXXXX000b) 0058h (CMPIC NXXXX000b) 0059h (CMPIC NXXXX000b) 0059h (CMPIC NXXXX000b) 0050h (CMPIC NXXXX000b) 0050h (CMPIC NXXXX000b) 0050h (CMPIC NXXXX000b) 0055h (CMPIC NXXXXX000b) 0055h (CMPIC NXXXXXIIIIIIIIIIIIIIIIIII				
004bh Key Input Interrupt Control Register KUPIC XXXXX000b 004eh 004fh Compare 1 Interrupt Control Register CMP1IC XXXXX000b 005th UARTO Transmit Interrupt Control Register S0TIC XXXXX000b 0052h UARTO Receive Interrupt Control Register S0RIC XXXXX000b 0053h S0RIC XXXXX000b XXXXX000b 0055h Timer Receive Interrupt Control Register TRAIC XXXXX000b 0055h Timer RA Interrupt Control Register TRAIC XXXXX000b 0057h Timer RB Interrupt Control Register TRBIC XXXXX000b 0058h Timer RB Interrupt Control Register TRFIC XXXXX000b 005Ah Timer RF Interrupt Control Register TRFIC XXXXX000b 005Ch Compare 0 Interrupt Control Register CMP0IC XXXXX000b 005Eh INT0 Interrupt Control Register INT0IC XXXXX000b 005Eh O05Ph CAPIC XXXXX000b 006Ch O06Bh O06Bh O06Bh 006Bh O06Bh				
004Eh 004Fh 0050h Compare 1 Interrupt Control Register CMP1IC XXXXX000b 0051h UART0 Transmit Interrupt Control Register SOTIC XXXXX000b 0052h UART0 Receive Interrupt Control Register SORIC XXXXX000b 0053h 0054h WART0 Receive Interrupt Control Register TRAIC XXXXX000b 0055h Timer RA Interrupt Control Register TRAIC XXXXX000b 0057h SOSSH Timer RB Interrupt Control Register INT1IC XX00X000b 0058h Timer RF Interrupt Control Register TRFIC XXXXX000b 0058h Timer RF Interrupt Control Register TRFIC XXXXX000b 005Ch Compare 0 Interrupt Control Register CMP0IC XXXXX000b 005Eh INT0IC XXXXX000b XXXXX000b 005Eh Capture Interrupt Control Register CAPIC XXXXX000b 0061h 0060h 0060h 0060h 0063h 0060h 0060h 0060h 0066h 0060h 0060h 0060h				
004Fh Compare 1 Interrupt Control Register CMP1IC XXXXX000b 0050h Compare 1 Interrupt Control Register SOTIC XXXXX000b 0052h UART0 Receive Interrupt Control Register SORIC XXXXX000b 0053h 0054h Image: Control Register SORIC XXXXX000b 0055h Image: Control Register TRAIC XXXXX000b 0057h Image: Control Register TRBIC XXXXX000b 0059h Interrupt Control Register Intil C XXXXX000b 0059h Interrupt Control Register Interrupt Control Register TRFIC XXXXX000b 0055h Interrupt Control Register CMP0IC XXXXX000b 0055h Introl Interrupt Control Register Introl XXXXX000b 0055h Introl XXXXXX000b XXXXXX000b 0055h Introl XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	004Dh	Key Input Interrupt Control Register	KUPIC	XXXXX000b
0050h Compare 1 Interrupt Control Register CMP1IC XXXXX000b 0051h UART0 Transmit Interrupt Control Register SOTIC XXXXX000b 0052h UART0 Receive Interrupt Control Register SORIC XXXXX000b 0053h 0054h SORIC XXXXX000b 0055h Image: Control Register TRAIC XXXXX000b 0057h 0058h Transition of the control Register TRBIC XXXXX000b 0059h INT1 Interrupt Control Register INT1IC XX00X000b 0058h Timer RF Interrupt Control Register TRFIC XXXXX000b 005Ch Compare 0 Interrupt Control Register CMP0IC XXXXX000b 005Dh INT0 Interrupt Control Register INT0IC XXXXX000b 005Fh Capture Interrupt Control Register CAPIC XXXXX000b 006h 006h 006h 006h 006h 006h 006h 006h 006h 006h 006h 006h 006h 006h 006h 006h 006h	004Eh			
OS51h	004Fh			
0052h	0050h	Compare 1 Interrupt Control Register	CMP1IC	XXXXX000b
0052h	0051h	UART0 Transmit Interrupt Control Register	SOTIC	XXXXX000b
0055h Timer RA Interrupt Control Register TRAIC XXXXX000b 0057h Timer RB Interrupt Control Register TRBIC XXXXX000b 0058h Iimer RB Interrupt Control Register INT1 Interrupt Control Register INT1IC XX00X000b 005Ah Imer RF Interrupt Control Register TRFIC XXXXX000b XXXXX000b 005Ch Compare 0 Interrupt Control Register CMP0IC XXXXX000b XXXXX000b 005Eh INTO Interrupt Control Register INTOIC XX00X000b XXXXX000b 006Eh Capture Interrupt Control Register CAPIC XXXXX000b XXXXX000b 0061h 0062h 0063h 0063h 0063h 0063h 0066h 0067h 0068h 0068h 0068h 0068h 006Bh 006Ch 006Ch 006Ch 006Ch 006Ch 006Eh 006Eh 006Eh 006Eh 006Eh 006Eh	0052h		SORIC	XXXXX000b
0055h Timer RA Interrupt Control Register TRAIC XXXXX000b 0057h Timer RB Interrupt Control Register TRBIC XXXXX000b 0058h Timer RB Interrupt Control Register INT1IC XX00X000b 0058h Timer RF Interrupt Control Register TRFIC XXXXX000b 005Bh Timer RF Interrupt Control Register CMP0IC XXXXX000b 005Dh INT0 Interrupt Control Register INT0IC XX00X000b 005Bh O05Bh Capture Interrupt Control Register CAPIC XXXXX000b 0061h 0061h 0062h 0063h 0064h 0064h 0064h 0064h 0066h 0066h 0066h 0066h 0068h 0069h 0066h 0066h 006Bh 006Ch 006Ch 006Ch 006Bh 006Ch 006Ch 006Ch 006Eh 006Eh 006Eh 006Eh	0053h	·		
0056h Timer RA Interrupt Control Register TRAIC XXXXX000b 0057h	0054h			
0056h Timer RA Interrupt Control Register TRAIC XXXXX000b 0057h	0055h			
0057h 0058h Timer RB Interrupt Control Register TRBIC XXXXXX000b 0059h INT1 Interrupt Control Register INT1IC XX00X000b 005Ah		Timer RA Interrupt Control Register	TRAIC	XXXXX000b
0058h Timer RB Interrupt Control Register TRBIC XXXXX000b 0059h INT1 Interrupt Control Register INT1IC XX00X000b 005Ah 005Bh Timer RF Interrupt Control Register TRFIC XXXXX000b 005Ch Compare 0 Interrupt Control Register CMP0IC XXXXX000b 005Dh INT0 Interrupt Control Register INT0IC XX00X000b 005Fh Capture Interrupt Control Register CAPIC XXXXX000b 0060h 0 0 0 0061h 0 0 0 0063h 0 0 0 0064h 0 0 0 0068h 0 0 0 0068h 0 0 0 006Ch 0 0 0 006Dh 0 0 0		3		
0059h INT1 Interrupt Control Register INT1IC XX00X000b 005Ah		Timer RB Interrupt Control Register	TRBIC	XXXXX000b
005Ah 005Bh Timer RF Interrupt Control Register TRFIC XXXXX000b 005Ch Compare 0 Interrupt Control Register CMP0IC XXXXX000b 005Dh INT0 Interrupt Control Register INT0IC XX00X000b 005Eh Ender Interrupt Control Register CAPIC XXXXX000b 0060h Ender Interrupt Control Register CAPIC XXXXX000b 0061h Ender Interrupt Control Register Ender Interrupt Control Register Ender Interrupt Control Register 0061h Ender Interrupt Control Register CAPIC XXXXX000b 0062h Ender Interrupt Control Register Ender Interrupt Control Register Ender Interrupt Control Register 0062h Ender Interrupt Control Register Ender Interrupt Control Register Ender Interrupt Control Register 0063h Ender Interrupt Control Register Ender Interrupt Control Register Ender Interrupt		INT1 Interrupt Control Register		
005Bh Timer RF Interrupt Control Register TRFIC XXXXX000b 005Ch Compare 0 Interrupt Control Register CMP0IC XXXXX000b 005Dh INT0 Interrupt Control Register INT0IC XX00X000b 005Eh Compare Interrupt Control Register CAPIC XXXXX000b 006Dh 0061h 0062h 0062h 0063h 0064h 0065h 0066h 0066h 0067h 0068h 0068h 0069h 0068h 0068h 0068h 006Ch 006Ch 006Ch 006Ch 006Eh 006Eh 006Eh 006Eh				
005Ch Compare 0 Interrupt Control Register CMPOIC XXXXX000b 005Dh INTO Interrupt Control Register INTOIC XX00X000b 005Fh Capture Interrupt Control Register CAPIC XXXXX000b 0060h 0061h 0062h 0062h 0063h 0064h 0065h 0066h 0067h 0068h 0069h 0069h 006Ah 006Bh 006Ch 006Ch 006Ch 006Ch 006Eh 006Eh 006Ch		Timer RF Interrupt Control Register	TRFIC	XXXXX000b
005Dh INT0 Interrupt Control Register INT0IC XX00X000b 005Fh Capture Interrupt Control Register CAPIC XXXXX000b 0060h 0061h 0062h 0063h 0063h 0063h 0065h 0066h 0067h 0068h 0069h 0069h 006Ah 006Ah 006Bh 006Ch 006Ch 006Dh 006Eh 006Dh 006Dh				
005Eh Capture Interrupt Control Register CAPIC XXXXX000b 0060h 0061h 0062h 0062h 0063h 0064h 0064h 0065h 0066h 0067h 0068h 0069h 0068h 006Ah 006Ah 006Bh 006Ch 006Ch 006Dh 006Dh 006Dh		INTO Interrupt Control Register		
005Fh Capture Interrupt Control Register CAPIC XXXXX000b 0061h 0061h 0062h 0063h 0064h 0064h 0065h 0066h 0067h 0068h 0069h 0068h 006Ah 006Bh 006Bh 006Ch 006Dh 006Dh 006Eh 006Eh 006Dh		5 apt control regions	1111010	75.057.0505
0060h 0061h 0062h 0063h 0064h 0064h 0065h 0066h 0067h 0068h 0069h 0069h 0068h 0060h 006Ch 006Ch 006Dh 006Eh		Capture Interrupt Control Register	CAPIC	XXXXX000b
0061h 0062h 0063h 0064h 0064h 0065h 0066h 0067h 0068h 0069h 0069h 006Ah 006Bh 006Ch 006Ch 006Dh 006Eh 006Eh		Saptaro interrupt Control Register	5/11/10	7,7,7,7,0000
0062h 0063h 0064h 0065h 0065h 0066h 0067h 0068h 0069h 0069h 006Ah 006Bh 006Ch 006Dh 006Eh 006Eh				
0063h 0064h 0065h 0066h 0067h 0068h 0069h 006Ah 0068h 006Ch 006Ch 006Dh 006Eh 006Eh				
0064h 0065h 0066h 0067h 0068h 0069h 006Ah 006Ah 006Bh 006Ch 006Dh 006Eh				
0065h 0066h 0067h 0068h 0069h 006Ah 006Bh 006Ch 006Dh 006Eh				
0066h 0067h 0068h 0069h 006Ah 006Ah 006Bh 006Ch 006Dh 006Eh				
0067h 0068h 0069h 006Ah 006Ah 006Bh 006Ch 006Dh 006Eh 006Eh				
0068h 0069h 006Ah 006Bh 006Ch 006Dh 006Eh 006Eh				
0069h 006Ah 006Bh 006Ch 006Dh 006Eh				
006Ah 006Bh 006Ch 006Dh 006Eh 006Eh				
006Bh 006Ch 006Dh 006Eh				
006Ch 006Dh 006Eh				
006Dh 006Eh				
006Eh				
006Fh	006Fh			

X: Undefined

- The blank regions are reserved. Do not access locations in these regions.
- Software reset, watchdog timer reset, voltage monitor 1 reset, or voltage monitor 2 reset do not affect this register. The LVD0ON bit in the OFS register is set to 1 and hardware reset. Power-on reset, voltage monitor 0 reset, or the LVD0ON bit in the OFS register is set to 0 and hardware reset. Software reset, watchdog timer reset, voltage monitor 1 reset, or voltage monitor 2 reset do not affect b2 and b3. This register is not implemented in the R8C/2J Group.

SFR Information (3)⁽¹⁾ Table 4.3

0079h 0079	Address	Register	Symbol	After reset
0071h 0073h 0073h 0073h 0073h 0073h 0073h 0073h 0073h 0075h 0075h 0075h 0077h 0077		· · · · · · · · · · · · · · · · · · ·		
0072h 0074h 0074h 0075h 0076h 0076h 0076h 0077h 0077				
9079h 9079h 9077h 9077h 9077h 9077h 9077h 9077h 9079h				
0074h				
0076h				
0076h 0078h 00078h 00078h 0008h 00				
007th 008th 008t				
0079h				
0078h 008h 00				
007Ah 007Ch 007Ch 007Ch 007Eh 007Eh 007Fh 008Dh 008th 008th 008th 008th 008th 008th 008th 009th 009th 000th 004th <td></td> <td></td> <td></td> <td></td>				
008th				
007Ch	007Ah			
007Eh 007Fh 007Fh 007Fh 0080h 0081h 0082h 0082h 0082h 0088h 0082h 0088h 0082h 0088h 0082h 0088h 0083h 0088h 0084h 0086h 0085h 0086h 0086h 0086h 0087h 0080h 0088h 0096h 0089h 0096h 0089h 0097h 0099h 0099h 0093h 0099h 0099h 0099h 0099h 0099h 0099h 0099h 0099h 0099h 0099h 0099h 0091h 0090h 0092h 0091h 0093h 0092h 0093h 0093h 0093h 0093h 0093h 0093h 0093h 0093h 0093h 0093h 0096h <td>007Bh</td> <td></td> <td></td> <td></td>	007Bh			
007Eh 0080h 0081h 0081h 0082h 0082h 0083h 0083h 0086h 0086h 0087h 0086h 0087h 0086h 0087h 0086h 0087h 0086h 0087h 0086h 0087h 0087h 0087h 0087h 0087h 0097h 0097h 0097h 0097h 0097h 0098h 0098h 0098h 0098h 0098h 0098h 0098h 0098h 0098h 0098h 0098h 0098h 0097h 0098h 0098h 0099h 0098h 0099h 0099h 0099h 0099h 0099h 0099h 0099h 0099h 0090h 0099h 0090h 0091h 0090h 0092h 0090h 0092h <td>007Ch</td> <td></td> <td></td> <td></td>	007Ch			
007Eh 0080h 0081h 0081h 0082h 0082h 0083h 0083h 0086h 0086h 0087h 0086h 0087h 0086h 0087h 0086h 0087h 0086h 0087h 0086h 0087h 0087h 0087h 0087h 0087h 0097h 0097h 0097h 0097h 0097h 0098h 0098h 0098h 0098h 0098h 0098h 0098h 0098h 0098h 0098h 0098h 0098h 0097h 0098h 0098h 0099h 0098h 0099h 0099h 0099h 0099h 0099h 0099h 0099h 0099h 0090h 0099h 0090h 0091h 0090h 0092h 0090h 0092h <td>007Dh</td> <td></td> <td></td> <td></td>	007Dh			
007Ph 008th 008th 008th 008zh 008zh 008zh 009zh 009zh 00pzh 009zh 00pzh 009zh 00pzh 009zh 00pzh 00gzh 00pzh 00gzh 00pzh 00pzh 00pzh 00pzh 00pzh 00pzh 00pzh 00pzh <td></td> <td></td> <td></td> <td></td>				
0080h 0082h 0082h 0083h 0084h 0084h 0085h 0086h 0087h 0088h 0088h 0098h 0082h 0088h 0082h 0088h 0082h 0082h 0082h 0082h 0082h 0092h 0087h 0099h 0091h 0099h 0091h 0099h 0092h 0099h 0093h 0093h 0093h 0093h 0093h 0094h 0095h 0096h 0097h 0097h 0098h 0098h 0098h 0098h 0097h 0098h 0098h 0098h 0099h 0099h 0099h <td></td> <td></td> <td></td> <td></td>				
0081h 0082h 0082h 0083h 0084h 0084h 0085h 0086h 0087h 0088h 0088h 0088h 008kh 008kh 008ch 008ch 008ch 008ch 008fh 009ch 008fh 009ch 008fh 009ch 008fh 009ch 008fh 009ch 009fh 009fh 009fh 00fh 008ch 00fh 008ch 00fh 009fh 00fh 009fh 00fh 009fh 00fh 009fh 00fh 009fh 00fh 00ff 00fh 00ff				
0082h 0084h 0084h 0085h 0085h 0086h 0087h 0087h 0087h 0088h 008Ah 009h 008Ah 008h 008Ch 008h 008Dh 009h 008Fh 009h 009H 009h 009th 009th 009sh 009sh 009sh 009sh 009sh 009sh 009sh 009sh 009sh 009sh 009ch 009sh 009ch 00gh 009sh 00gh 009ch 00gh<				
0083h 0085h 0085h 0086h 0087h 0088h 0088h 0088h 0089h 0088h 0081h 0098h 0099h 0099h 0099h 0099h 0099h 0099h 0099h 0099h 0098h 0099h 0098h 0099h 0098h 0090h 0098h 0098h 0098h 0098h 0098h 0098h 0098h 0098h 0098h 0009h 004h <td></td> <td></td> <td></td> <td></td>				
0084h				
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0089h 008Ah 008Bh 008Ch 008Dh 008Eh 0090h 0091h 0092h 0033h 0094h 0095h 0096h 0097h 0098h 0099h 0091h 0092h 0093h 0094h 0095h 0096h 0097h 0098h 0099h 0091h 0092h 0097h 0097h 0097h 0097h 0097h 0097h 0097h	0087h			
0088h 0080h 008ch 008Eh 008Eh 008Eh 009h 009th 00pth 00pth 00pth<	0088h			
0088h 0080h 008ch 008Eh 008Eh 008Eh 009h 009th 00pth 00pth 00pth<	0089h			
OBBR OBBCh OBBCh				
008Ch 008Dh 008Eh 008Fh 0090h 0090h 0091h 0091h 0092h 0093h 0093h 0094h 0095h 0096h 0097h 0097h 0098h 0099h 0098h 0099h 0090h 009Ch 009Ch 009Ch 009Fh 009Fh 009Ch 009Fh 009Ch 009Ch 009Fh 009Ch 009Ch 0040h UARTO Transmit/Receive Mode Register UOMR 00h 0041h UARTO Transmit Usefer Register UOBRG XXh 00A3h UARTO Transmit/Receive Control Register 0 UOC0 00001000b 00A5h UARTO Transmit/Receive Control Register 1 UOC1 00000010b 00A6h UARTO Transmit/Receive Control Register 1 UOC1 00000010b 00A6h UARTO Receive Buffer Register UORB XXh 00A8h 00A9h 00A8h 00ABh 00ACh 00ACh 00ABh 00ACh <				
008Dh 008Eh 008Fh				
008Eh				
008Fh 0090h 0091h 0092h 0093h 0093h 0094h 0095h 0096h 0097h 0098h 0099h 0099h 0098h 0099h 0090h 009Eh 009Dh 009Eh 009Dh 009Fh 009Dh 0040h UARTO Transmit/Receive Mode Register U0MR 00h 0040h UARTO Bit Rate Register U0BRG XXh 00A3h UARTO Transmit/Receive Control Register U0TB XXh 00A3h UARTO Transmit/Receive Control Register U0C0 00001000b 00A4h UARTO Transmit/Receive Control Register U0C0 0000100b 00A6h UARTO Transmit/Receive Control Register U0C1 00000010b 00A6h UARTO Receive Buffer Register U0C1 00000001b 00A6h UARTO Receive Buffer Register U0RB XXh 00A9h 00A9h 00A9h 00A9h 00A9h 00A9h 00A9h 00A9h 00A				
0090h 0091h 0092h				
0091h 0092h 0093h 0094h 0094h 0095h 0096h 0097h 0098h 0099h 0090h 0000h 0000				
0092h 0093h 0094h 0095h 0095h 0096h 0097h 0097h 0098h 0098h 0099h 0098h 0099h 0098h 0099h 0098h 0098h 0096h 0097h 0098h 0098h 0098h 0098h 0098h 0098h 0098h 0098h 0078h 0078h 0078h 0078h 0078h 0088h 0088h <td< td=""><td></td><td></td><td></td><td></td></td<>				
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0.094h 0.095h 0.096h 0.097h 0.098h 0.099h 0.000h 0.0000h 0.00000h 0.0000h 0.0000				
0095h 0096h 0097h 0098h 0099h 0099h 0099h 009Ah 009Ch 009Dh 009Ph 009Eh 009Fh 009Fh 00A0h UARTO Transmit/Receive Mode Register UOMR 00h 00A1h UARTO Bit Rate Register UOBRG XXh 00A2h UARTO Transmit Buffer Register UOTB XXh 00A3h UARTO Transmit/Receive Control Register 0 UOC0 00001000b 00A5h UARTO Transmit/Receive Control Register 1 UOC1 00000010b 00A5h UARTO Receive Buffer Register UORB XXh 00A7h 00A9h 00A9h 00A9h 00A9h 00A8h 00A9h 00ABh 00ABh 00ABh 00ACh 00ABh 00ABh 00ABh 00ABh 00AEh 00AEh 00AEh 00AEh 00AEh				
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009Ch 009Dh 009Eh 009Fh 00A0h UARTO Transmit/Receive Mode Register U0MR 00h 00A1h UARTO Bit Rate Register U0BRG XXh 00A2h UARTO Transmit Buffer Register U0TB XXh 00A3h UARTO Transmit/Receive Control Register 0 U0C0 00001000b 00A5h UARTO Transmit/Receive Control Register 1 U0C1 00000010b 00A6h UARTO Receive Buffer Register U0RB XXh 00A9h 00A9h 00AAh 00AAh 00ACh 00ADh 00AEh 00AEh				
009Dh 009Eh 009Fh 0040h 00A0h UART0 Transmit/Receive Mode Register U0MR 00h 00A1h UART0 Bit Rate Register U0BRG XXh 00A2h UART0 Transmit Buffer Register U0TB XXh 00A3h UART0 Transmit/Receive Control Register 0 U0C0 00001000b 00A5h UART0 Transmit/Receive Control Register 1 U0C1 00000010b 00A6h UART0 Receive Buffer Register U0RB XXh 00A7h 00A8h 00A9h 00A9h 00AAh 00ACh 00ACh 00ACh 00ACh 00ACh 00ACh 00ACh 00AEh 00AEh 00AEh 00AEh				
009Eh 009Fh 00A0h UART0 Transmit/Receive Mode Register U0MR 00h 00A1h UART0 Bit Rate Register U0BRG XXh 00A2h UART0 Transmit Buffer Register U0TB XXh 00A3h UART0 Transmit/Receive Control Register 0 U0C0 00001000b 00A5h UART0 Transmit/Receive Control Register 1 U0C1 00000010b 00A6h UART0 Receive Buffer Register U0RB XXh 00A7h 00A8h 00A9h 00A9h 00AAh 00AAh 00ACh 00ACh 00ADh 00ACh 00AEh 00AEh 00AEh				
009Fh 00A0h UART0 Transmit/Receive Mode Register U0MR 00h 00A1h UART0 Bit Rate Register U0BRG XXh 00A2h UART0 Transmit Buffer Register U0TB XXh 00A3h UART0 Transmit/Receive Control Register 0 U0C0 00001000b 00A5h UART0 Transmit/Receive Control Register 1 U0C1 00000010b 00A6h UART0 Receive Buffer Register U0RB XXh 00A7h VART0 Receive Buffer Register U0RB XXh 00A9h 00A9h 00A9h 00A9h 00ACh 00ACh 00ADh 00AEh 00ACh 00ADh				
00A0h UART0 Transmit/Receive Mode Register U0MR 00h 00A1h UART0 Bit Rate Register U0BRG XXh 00A2h UART0 Transmit Buffer Register U0TB XXh 00A3h UART0 Transmit/Receive Control Register 0 U0C0 00001000b 00A5h UART0 Transmit/Receive Control Register 1 U0C1 00000010b 00A6h UART0 Receive Buffer Register U0RB XXh 00A7h VART0 Receive Buffer Register U0RB XXh 00A9h 00A9h 00A9h 00A9h 00ABh 00ACh 00A0h 00ACh 00ADh 00ACh 00AEh 00AEh 00ACh				
00A1h UART0 Bit Rate Register U0BRG XXh 00A2h UART0 Transmit Buffer Register U0TB XXh 00A3h UART0 Transmit/Receive Control Register 0 U0C0 00001000b 00A5h UART0 Transmit/Receive Control Register 1 U0C1 00000010b 00A6h UART0 Receive Buffer Register U0RB XXh 00A7h VART0 Receive Buffer Register VART0 Receive Buffer Register VART0 Receive Buffer Register 00A9h VART0 Receive Buffer Register VART0 Receive Buffer Register VART0 Receive Buffer Register		LIADTO Terrore in Description Made Description	LIOMP	004
00A2h UART0 Transmit Buffer Register U0TB XXh 00A3h UART0 Transmit/Receive Control Register 0 U0C0 00001000b 00A5h UART0 Transmit/Receive Control Register 1 U0C1 00000010b 00A6h UART0 Receive Buffer Register U0RB XXh 00A7h XXh XXh 00A8h 00A9h 00AAh 00ABh 00ABh 00ACh 00ACh 00ADh 00ABh 00AEh 00AEh 00AEh		UAKTU Transmit/Receive Mode Register		
00A3h XXh 00A4h UART0 Transmit/Receive Control Register 0 U0C0 00001000b 00A5h UART0 Transmit/Receive Control Register 1 U0C1 00000010b 00A6h UART0 Receive Buffer Register U0RB XXh 00A7h XXh XXh 00A8h 00A9h 00A9h 00AAh 00ABh 00ACh 00ACh 00ADh 00ADh 00AEh 00AEh 00AEh		UAKTU Bit Rate Register		
00A4h UART0 Transmit/Receive Control Register 0 U0C0 00001000b 00A5h UART0 Transmit/Receive Control Register 1 U0C1 00000010b 00A6h UART0 Receive Buffer Register U0RB XXh 00A7h XXh XXh 00A9h 00A9h 00AAh 00ABh 00ACh 00ACh 00ACh 00ADh 00AEh	00A2h	UART0 Transmit Buffer Register	U0TB	XXh
00A5h UART0 Transmit/Receive Control Register 1 U0C1 00000010b 00A6h UART0 Receive Buffer Register U0RB XXh 00A7h XXh XXh 00A8h 00A9h 00AAh 00ABh 00ACh 00ACh 00ADh 00AEh 00AEh	00A3h			
00A5h UART0 Transmit/Receive Control Register 1 U0C1 00000010b 00A6h UART0 Receive Buffer Register U0RB XXh 00A7h XXh XXh 00A8h 00A9h 00AAh 00ABh 00ACh 00ACh 00ADh 00AEh 00AEh	00A4h	UART0 Transmit/Receive Control Register 0		00001000b
00A6h UART0 Receive Buffer Register U0RB XXh 00A7h XXh XXh 00A8h XXh XXh 00A9h XXh XXh 00AAh XXh XXh 00ABh XXh XXh 00ACh XXh XXh 00ADh XXh XXh 00ACh XXh XXh 00AEh XXh XXh 00AEh XXh XXh XXh XXh XXh <t< td=""><td>00A5h</td><td>UART0 Transmit/Receive Control Register 1</td><td>U0C1</td><td></td></t<>	00A5h	UART0 Transmit/Receive Control Register 1	U0C1	
00A7h 00A8h 00A9h 00A0h 00AAh 00ABh 00ACh 00ACh 00ADh	00A6h	UART0 Receive Buffer Register	U0RB	XXh
00A8h 00A9h 00AAh 00ABh 00ACh 00ACh 00ADh 00AEh	00A7h			
00A9h 00AAh 00ABh 00ACh 00ADh 00AEh	00A8h			
00AAh 00ABh 00ACh 00ADh 00AEh	00A9h			
00ABh 00ACh 00ADh 00AEh	00AAh			
00ACh 00ADh 00AEh				
00ADh 00AEh				
00AEh				
	OUADN			
UUAFn				
	UUAFh			

X: Undefined
NOTE:

1. The blank regions are reserved. Do not access locations in these regions.

SFR Information (8)⁽¹⁾ Table 4.8

0180h <th>Address</th> <th>Register</th> <th>Symbol</th> <th>After reset</th>	Address	Register	Symbol	After reset
0181h (183h) Flash Memory Control Register 4 FMR4 01000000b 0183h Flash Memory Control Register 4 FMR4 01000000b 0183h Flash Memory Control Register 1 FMR1 10000000b 0183h Flash Memory Control Register 0 FMR0 00000000b 0183h Flash Memory Control Register 0 FMR0 00000000b 0184h Flash Memory Control Register 0 FMR0 00000000b 0185h Flash Memory Control Register 0 FMR0 00000000b 0186h FMR0 00000000b 0186h FMR0 00000000b 0186h FMR0 00000000b 0186h FMR0 0000000b 0186h FMR0 00000000b 0186h	01B0h	-5	-,	
6182h Flash Memory Control Register 4 FMR4 0100000b 6183h Flash Memory Control Register 1 FMR1 1000000xb 6186h Flash Memory Control Register 0 FMR0 00000001b 6187h FMR0 00000001b 6187h FMR0 00000001b FMR0 6187h FMR0 00000001b FMR0 00000001b 6102h FMR0 FMR0 00000001b FMR0 000000001b FMR0 000000000000000000000000000000000000				
01B3h Flash Memory Control Register 4 FMR4 01000000b 01B3h Flash Memory Control Register 1 FMR1 1000000xb 01B3h Flash Memory Control Register 0 FMR0 00000001b 01B3h FMR0 00000001b 01B3h FMR0 00000001b 01B3h FMR0 00000001b 01B4h FMR0 000000001b 01C4h FMR0 000000000000000000000000000000000000	01B2h			
0188h O188h Flash Memory Control Register 1 FMR1 1000000Xb 0188h O188h Flash Memory Control Register 0 FMR0 0000001b 0188h O188h Flash Memory Control Register 0 FMR0 0000001b 0188h O188h Flash Memory Control Register 0 FMR0 0000001b 0188h Flash Memory Control Register 0 FMR0 0000001b 0102h Flash Flash Memory Control Register 0 FMR0 0000001b 0102h Flash Flash Memory Control Register 0 FMR0 00000001b 0102h Flash Flash Memory Control	01B3h	Flash Memory Control Register 4	FMR4	01000000b
01BBh Flash Memory Control Register 1 FMR1 1000000Xb 01B7h Flash Memory Control Register 0 FMR0 00000001b 01BBh FMR0 000000000000000000000000000000000000	01B4h	The same of the sa		0.0000000
01BSh Flash Memory Control Register 0 FMRO 00000001b 01BSh 0000001b 00000001b 01BSh 0000001b 00000001b 01BSh 00000001b 0000001b 01BSh 00000001b 000000000000000000000000000000000000	01B5h	Flash Memory Control Register 1	FMR1	1000000Xb
OHBTh Flash Memory Control Register 0 FMRO 00000001b OHBSh 0 <t< td=""><td></td><td>The same of the sa</td><td></td><td></td></t<>		The same of the sa		
0188h 018Ah 018Ah 018Ah 018Ch 018Ch 018Ch 018Eh	01B7h	Flash Memory Control Register 0	FMR0	00000001b
01B9h 01BBh 01BCh 01BCh 01BCh 01BCh 01BCh 01BCh 01BCh 01Ch 01COh 01Ch 01COh 01Ch 01C2h 01CSh 01C3h 01CSh 01C6h 01CFh 01C8h 01CSh 01CSh 01CCh 01CCh 01CCh 01CCh 01CCh 01CFh 01CFh 01CPh 01CPh 01CPh	01B/h	That Memory Control Register C	TWITTO	00000015
01BAh 01BCh 01BCh 01BDh 01BCh 01BCh 01BFh 01Ch 01Ch 01Ch 01C2h 01Ch 01C2h 01Ch 01C4h 01Ch 01C5h 01Ch 01C7h 01CB 01C8h 01Ch 01C8h 01Ch 01CCh 01Ch 01CCh 01Ch 01CCh 01Ch 01CPh 01Ch 01CPh 01Dh 01Dh 01Dh	01B9h			
018Bh 018Ch 018Ch 018Ch 018Fh 01Ch 01Ch 01Ch 01Dh 01Ch 01Dh 01Ch 01Dh 01Ch 01	01BAh	!		
018Ch 018Eh 018Eh 018Eh 01Ch 01Ch 01Ch 01Ch 01Ch 01Ch 01Ch 01C	01BRh			
018Dh 018Fh 016Th 016Th 01C0h 01C1h 01C3h 01C3h 01C3h 01C5h 01C5h 01C6h 01C6h 01C6h 01C6h 01C6h 01C6h 01C6h 01C6h 01C8h 01C9h 01C9h 01Ch 01Ch 01Ch 01Ch 01Ch 01Ch 01Ch 01C	01BDh			
OHBER OTISH OTICOR OTIC	01B0h			
OTESPH OTCOM	01BBh			
01C0h 01C2h 01C2h 01C2h 01C3h 01C4h 01C5h 01C6h 01C6h 01C6h 01C6h 01C8h 01C0h 01CAh 01CBh 01CCh 01CDh 01CDh 01CDh 01CDh 01CDh 01CDh 01Dh 01Dh 01Dh 01Dh 01Dsh 01Ds	01BEh			
01C1h 01C2h 01C3h 01C3h 01C5h 01C5h 01C5h 01C6h 01C7h 01C8h 01C7h 01C8h 01C9h 01C9h 01C0h 01Ch 01Ch 01Ch 01Ch 01Ch 01Ch 01				
01C2h 01C3h 01C4h 01C5h 01C6h 01C7h 01C7h 01C8h 01C8h 01C8h 01C8h 01C8h 01C8h 01C9h 01C1b 01C1b 01C1ch 01C1	01C0h			
01C3h 01C5h 01C5h 01C7h 01C7h 01C8h 01C9h 01C9h 01C8h 01C9h 01C8h 01C8h 01C8h 01C8h 01C8h 01C8h 01C8h 01C8h 01C9h 01C8h 01C9h 01C8h 01C9h 01C9h 01C9h 01C9h 01C9h 01C9h 01C9h 01D9h 01D9h 01D1h 01D1h 01D2h 01D2h 01D8h 01D8h 01D8h 01D8h 01D9h	01C1h			
01C4h 01C6h 01C6h 01C8h 01C7h 01C8h 01C9h 01C8h 01C9h 01C6h 01CCh 01CCh 01CCh 01CPh 01Dh 01Dh 01Dh 01Dh 01Dh 01Dh 01Dh 01D	0102H			
01C5h 01C7h 01C8h 01C7h 01C8h 01C9h 01CAh 01CAh 01CBh 01CCCh 01CBh 01CCCh 01CBh 01CPh 01Dh 01CEh 01Dh 01Dh 01Dh 01Dh 01Dh 01Dh 01Dh 01D	01C4h			
01C8h 01C9h 01C9h 01C9h 01C9h 01C8h 01C8h 01C6h 01CCh 01CCh 01CCh 01CCh 01Ch 01Ch 01Ch	01C5h			
01C7h 01C8h 01C8h 01CAh 01CAh 01CCh 01CCh 01CCh 01CEh 01CFh 01Dh 01Dh 01Dh 01Dh 01Dh 01Dh 01Dh 01D	010311 0106h			
01C8h 01CAh 01CBh 01CCh 01CCCh 01CCCCh 01CCCC 01CCCCCCCCCC				
01C8h 01CBh 01CCh 01CCh 01CPh 01CFh 01CFh 01Dh 01Dh 01Dh 01Dh 01Dh 01Dh 01Dh 01D	01C711			
01CAh 01CCh 01CCh 01CDh 01CEh 01CFh 01DOh 01DIh 01DIh 01DIh 01D3h 01D3h 01D3h 01D3h 01D8h 01D8h 01D8h 01D8h 01D8h 01D9h 01D8h 01D8h 01DBh 01DCh 01DCh 01DCh 01DFh 01DFh 01Eh 01DFh 01Eh 01Eh	01C0h			
01CBh 01CCh 01CDh 01CEh 01CFh 01Dh 01Dh 01Dh 01Dh 01Dh 01Dh 01Dh 01D	01C9H			
01Ch	01CAII			
01Cbh 01CFh 01Doh 01Doh 01Doh 01Dbh 01Dbh 01Dsh	01CBH			
01CFh 01CFh 01Dh 01Dh 01Dth 01Dh 01Dh 01Dh 01Dsh				
01CFh 01D0h 01D1h 01D2h 01D3h 01D3h 01D4h 01D5h 01D6h 01D7h 01D8h 01D9h 01D8h 01D9h 01DBh 01DBh 01DBh 01DBh 01DCh 01DBh 01DCh 01DBh 01DEh 01DCh 01DEh 01ESh				
01Dh	01CEh			
01D1h 01D2h 01D3h 01D3h 01D4h 01D5h 01D5h 01D6h 01D7h 01D8h 01D9h 01D9h 01DAh 01DBh 01DCh 01DDh 01DDh 01DEh 01DEh 01DEh 01DFh 01DFh 01Eh 01Eh 01Eh 01Eh 01Eh 01E3h 01E3h 01E5h 01E8h				
01D2h 01D3h 01D4h 01D5h 01D6h 01D6h 01D7h 01D8h 01D9h 01D9h 01DBh 01DDh 01DCh 01DDh 01DEh 01DEh 01DEh 01DEh 01DEh 01DEh 01DEh 01DEh 01Eh 01Eh 01Eh 01Eh 01E1h 01E2h 01E3h 01E3h 01E3h 01E3h 01E3h 01E3h 01E3h 01E3h 01E5h 01E6h 01E5h 01E6h 01E7h 01E8h 01E9h 01E8h 01E9h	01D0H			
01D3h 01D4h 01D5h 01D6h 01D7h 01D8h 01D9h 01D9h 01DAh 01DBh 01DCh 01DDh 01DEh 01DEh 01DEh 01DEh 01EDh 01EOh 01E1h 01E2h 01E3h 01E3h 01E4h 01E5h 01E5h 01E5h 01E6h 01E7h 01E8h 01E7h 01E8h 01E8h 01E9h 01E8h 01E9h 01EAh 01EBh				
01D4h 01D5h 01D6h 01D7h 01D8h 01D9h 01DAh 01DBh 01DCh 01DCh 01DCh 01DDh 01DEh 01DEh 01DEh 01Eh 01Eh 01EOh 01El 01El 01El 01E2h 01E3h 01E4h 01E5h 01E5h 01E6h 01E7h 01E8h 01E9h 01E9h 01ERh 01EBh 01EBh				
01D5h 01D6h 01D7h 01D8h 01D9h 01D9h 01DAh 01DBh 01DCh 01DDh 01DEh 01DEh 01Eh 01ESh	01D3H			
01D6h 01D7h 01D8h 01D9h 01DAh 01DBh 01DCh 01DCh 01DDh 01DEh 01DEh 01Eh 01EGh 01ESh 01E3h 01E4h 01E5h 01E6h 01E8h 01E8h 01E8h 01E8h 01E9h 01E8h 01E9h 01E8h 01E9h 01E8h 01E9h 01E8h 01E9h 01E9h 01E8h 01E9h 01E8h 01E9h 01EBh 01ECh 01ECh				
01D7h 01D8h 01D9h 01DAh 01DBh 01DCh 01DDh 01DEh 01DFh 01DEh 01DFh 01ESh	01D3II			
01D8h 01DAh 01DBh 01DCh 01DCh 01DDh 01DFh 01DFh 01E0h 01E3h 01E3h 01E4h 01E5h 01E6h 01E8h 01E9h 01E9h 01E9h 01E9h 01E9h 01E9h 01EN	01D0H			
01D9h 01DAh 01DBh 01DCh 01DDh 01DEh 01DFh 01DFh 01Eh 01Eh 01ESh 01E3h 01E4h 01E5h 01E6h 01E8h 01E9h 01E8h 01E9h 01EAh				
01DAh 01DBh 01DCh 01DCh 01DCh 01DFh 01DFh 01Eh 01E0h 01E1h 01E2h 01E3h 01E3h 01E4h 01E5h 01E6h 01E6h 01E6h 01E7h 01E8h 01E8h 01E8h 01E8h 01E8h 01E8h 01E9h 01E9h 01E9h 01EOH	01D0H			
01DBh 01DCh 01DDh 01DBh 01DFh 01DFh 01E0h 01E0h 01E1h 01E2h 01E3h 01E4h 01E5h 01E6h 01E6h 01E7h 01E8h 01E9h 01EAh 01EBh 01ECh 01ECh 01EOh 01EDh				
01DCh 01DDh 01DFh 01DFh 01E0h 01E0h 01E1h 01E2h 01E3h 01E4h 01E6h 01E6h 01E7h 01E8h 01E9h 01E9h 01EAh 01EBh 01ECh 01ECh 01ECh 01EDh				
01DDh 01DEh 01DFh 01E0h 01E0h 01E1h 01E2h 01E3h 01E4h 01E6h 01E6h 01E6h 01E7h 01E8h 01E8h 01E8h 01E8h 01E9h 01E8h 01E9h 01EOh 01EOh	01DDH			
01DEh 01DFh 01E0h 01E0h 01E1h 01E2h 01E3h 01E4h 01E5h 01E6h 01E7h 01E8h 01E9h 01E9h 01EAh 01EBh 01ECh 01ECh 01EOh 01EDh	010011			
01DFh 01E0h 01E1h 01E2h 01E3h 01E4h 01E5h 01E6h 01E7h 01E8h 01E9h 01EAh 01EBh 01ECh 01ECh 01EDh				
01E0h 01E1h 01E2h 01E3h 01E4h 01E5h 01E6h 01E7h 01E8h 01E9h 01EAh 01EBh 01ECh 01EDh	01DEN			
01E1h 01E2h 01E3h 01E4h 01E5h 01E6h 01E7h 01E8h 01E9h 01EAh 01EBh 01ECh 01ECh 01EDh				
01E2h 01E3h 01E4h 01E5h 01E6h 01E6h 01E7h 01E8h 01E9h 01EAh 01EAh 01EBh 01ECh 01ECh 01EDh 01EDh	01500			
01E3h 01E4h 01E5h 01E6h 01E7h 01E8h 01E9h 01E9h 01EAh 01EBh 01EBh 01ECh 01ECh	015111			
01E4h 01E5h 01E6h 01E7h 01E8h 01E9h 01EAh 01EBh 01ECh 01EDh	01EZII			
01E5h 01E6h 01E7h 01E8h 01E9h 01EAh 01EBh 01EBh 01ECh 01ECh				
01E6h 01E7h 01E8h 01E9h 01E9h 01EAh 01EBh 01ECh 01EDh 01EDh				
01E7h 01E8h 01E9h 01EAh 01EBh 01ECh 01ECh				
01E8h 01E9h 01EAh 01EBh 01ECh 01ECh				
01E9h 01EAh 01EBh 01ECh 01EDh	015/0			
01EAh 01EBh 01ECh 01EDh	UTE8N			
01EBh 01ECh 01EDh				
01ECh				
01EDh				
U1EDN				
	01EDh			
VIEEN	01EEh			
01EFh	01EFh			

X: Undefined NOTE:

1. The blank regions are reserved. Do not access locations in these regions.

Table 5.13 Electrical Characteristics (2) [Vcc = 5 V] (Topr = -20 to 85°C (N version) / -40 to 85°C (D version), unless otherwise specified.)

Symbol	Parameter		Condition		Standar		Unit
•				Min.	Тур.	Max.	
CC	Power supply current (Vcc = 3.3 to 5.5 V)	High-speed on-chip oscillator mode	High-speed on-chip oscillator on = 8 MHz Low-speed on-chip oscillator on = 125 kHz No division	_	5	8	mA
	Single-chip mode, output pins are open, other pins are Vss		High-speed on-chip oscillator on = 8 MHz Low-speed on-chip oscillator on = 125 kHz Divide-by-8	_	2	=	mA
	other pins are vss	Low-speed on-chip oscillator mode	High-speed on-chip oscillator off Low-speed on-chip oscillator on = 125 kHz Divide-by-8, FMR47 = 1	-	130	300	μА
		Low-speed clock mode	High-speed on-chip oscillator off Low-speed on-chip oscillator off XCIN clock oscillator on = 32 kHz (low drive) FMR47 = 1	=	130	300	μА
			High-speed on-chip oscillator off Low-speed on-chip oscillator off XCIN clock oscillator on = 32 kHz (low drive) Program operation on RAM Flash memory off, FMSTP = 1	-	30	_	μА
		Wait mode	High-speed on-chip oscillator off Low-speed on-chip oscillator on = 125 kHz While a WAIT instruction is executed Peripheral clock operation VCA27 = VCA26 = VCA25 = 0 VCA20 = 1	-	25	75	μА
			High-speed on-chip oscillator off Low-speed on-chip oscillator on = 125 kHz While a WAIT instruction is executed Peripheral clock off VCA27 = VCA26 = VCA25 = 0 VCA20 = 1	-	23	60	μА
			High-speed on-chip oscillator off Low-speed on-chip oscillator off XCIN clock oscillator on = 32 kHz (high drive) While a WAIT instruction is executed VCA27 = VCA26 = VCA25 = 0 VCA20 = 1 BGR trimming circuit disabled (BGRCR0 = 1)	-	4	-	μА
			High-speed on-chip oscillator off Low-speed on-chip oscillator off XCIN clock oscillator on = 32 kHz (low drive) While a WAIT instruction is executed VCA27 = VCA26 = VCA25 = 0 VCA20 = 1 BGR trimming circuit disabled (BGRCR0 = 1)	-	2.2	_	μА
			High-speed on-chip oscillator off Low-speed on-chip oscillator off XCIN clock oscillator on = 32 kHz (high drive) While a WAIT instruction is executed VCA27 = VCA26 = VCA25 = 0 VCA20 = 1 BGR trimming circuit enabled (BGRCR0 = 0)	-	8	-	μА
			High-speed on-chip oscillator off Low-speed on-chip oscillator off XCIN clock oscillator on = 32 kHz (low drive) While a WAIT instruction is executed VCA27 = VCA26 = VCA25 = 0 VCA20 = 1 BGR trimming circuit enabled (BGRCR0 = 0)	-	6	-	μА
		Stop mode	XCIN clock off, Topr = 25°C High-speed on-chip oscillator off Low-speed on-chip oscillator off CM10 = 1 Peripheral clock off VCA27 = VCA26 = VCA25 = 0 BGR trimming circuit disabled (BGRCR0 = 1)	-	0.8	3	μА
			XCIN clock off, Topr = 85°C High-speed on-chip oscillator off Low-speed on-chip oscillator off CM10 = 1 Peripheral clock off VCA27 = VCA26 = VCA25 = 0 BGR trimming circuit disabled (BGRCR0 = 1)	-	1.2	-	μА
			XCIN clock off, Topr = 25°C High-speed on-chip oscillator off Low-speed on-chip oscillator off CM10 = 1 Peripheral clock off VCA27 = VCA26 = VCA25 = 0 BGR trimming circuit enabled (BGRCR0 = 0)	-	5	8	μА
			XCIN clock off, Topr = 85°C High-speed on-chip oscillator off Low-speed on-chip oscillator off CM10 = 1 Peripheral clock off VCA27 = VCA26 = VCA25 = 0	-	5.5	=	μА

Table 5.16 Serial Interface

Symbol	Parameter	Stan	dard	Unit
Symbol	Faranielei	Min.	Max.	Offic
tc(CK)	CLKi input cycle time	200	=	ns
tW(CKH)	CLKi input "H" width	100	-	ns
tW(CKL)	CLKi input "L" width	100	-	ns
td(C-Q)	TXDi output delay time	=	50	ns
th(C-Q)	TXDi hold time	0	-	ns
tsu(D-C)	RXDi input setup time	50	=	ns
th(C-D)	RXDi input hold time	90	_	ns

i = 0 or 2

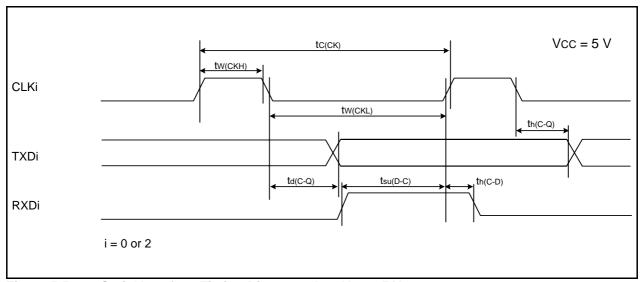


Figure 5.5 Serial Interface Timing Diagram when Vcc = 5 V

Table 5.17 External Interrupt \overline{INTi} (i = 0 or 1) Input

Symbol	Parameter		Standard	
Symbol	Falanielei	Min.	Max.	Unit
tW(INH)	ĪNTi input "H" width	250 ⁽¹⁾	-	ns
tW(INL)	INTi input "L" width	250 ⁽²⁾	-	ns

- 1. When selecting the digital filter by the $\overline{\text{INTi}}$ input filter select bit, use an $\overline{\text{INTi}}$ input HIGH width of either (1/digital filter clock frequency × 3) or the minimum value of standard, whichever is greater.
- 2. When selecting the digital filter by the INTi input filter select bit, use an INTi input LOW width of either (1/digital filter clock frequency × 3) or the minimum value of standard, whichever is greater.

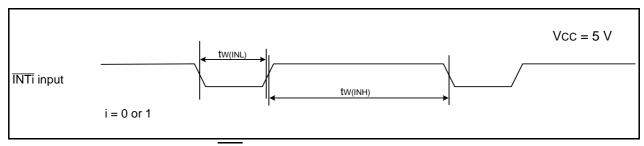


Figure 5.6 External Interrupt INTi Input Timing Diagram when Vcc = 5 V

Electrical Characteristics (3) [Vcc = 3 V] **Table 5.18**

Symbol	Poro	meter	Condition	5	Standard		
Symbol	Falai	neter	Condition	Min.	Тур.	Max.	Unit
Vон	Output "H" voltage		Iон = −1 mA	Vcc - 0.5	=	Vcc	V
Vol	Output "L" voltage		IoL = 1 mA	=	=	0.5	V
VT+-VT-	Hysteresis INT0, INT1, KI0, KI1, KI2, KI3, RXD0, RXD2, CLK0, CLK2			0.1	0.3	_	>
		RESET		0.1	0.4	_	V
Iн	Input "H" current		VI = 3 V, Vcc = 3 V	-	-	4.0	μА
lı∟	Input "L" current		VI = 0 V, Vcc = 3 V	-	-	-4.0	μА
RPULLUP	Pull-up resistance		VI = 0 V, Vcc = 3 V	66	160	500	kΩ
RfXCIN	Feedback resistance	XCIN		-	18	-	MΩ
VRAM	RAM hold voltage		During stop mode	1.8	-	_	V

NOTE:

1. Vcc =2.7 to 3.3 V at Topr = -20 to 85°C (N version) / -40 to 85°C (D version), unless otherwise specified.

Table 5.25 Electrical Characteristics (6) [Vcc = 2.2 V] (Topr = -20 to 85°C (N version) / -40 to 85°C (D version), unless otherwise specified.)

Symbol	Parameter		Condition	,	Standar	d	Unit
				Min.	Тур.	Max.	
Icc	Power supply current (Vcc = 2.2 to 2.7 V)	High-speed on-chip oscillator mode	High-speed on-chip oscillator on = 4 MHz Low-speed on-chip oscillator on = 125 kHz No division	_	3.5	-	mA
	Single-chip mode, output pins are open, other pins are Vss		High-speed on-chip oscillator on = 4 MHz Low-speed on-chip oscillator on = 125 kHz Divide-by-8	-	1.5	=	mA
	other pins are vss	Low-speed on-chip oscillator mode	High-speed on-chip oscillator off Low-speed on-chip oscillator on = 125 kHz Divide-by-8, FMR47 = 1	-	100	230	μА
		Low-speed clock mode	High-speed on-chip oscillator off Low-speed on-chip oscillator off XCIN clock oscillator on = 32 kHz (low drive) FMR47 = 1	_	100	230	μА
			High-speed on-chip oscillator off Low-speed on-chip oscillator off XCIN clock oscillator on = 32 kHz (low drive) Program operation on RAM Flash memory off, FMSTP = 1	-	25	_	μА
		Wait mode	High-speed on-chip oscillator off Low-speed on-chip oscillator on = 125 kHz While a WAIT instruction is executed Peripheral clock operation VCA27 = VCA26 = VCA25 = 0 VCA20 = 1	-	22	60	μА
			High-speed on-chip oscillator off Low-speed on-chip oscillator on = 125 kHz While a WAIT instruction is executed Peripheral clock off VCA27 = VCA26 = VCA25 = 0 VCA20 = 1	-	20	55	μА
			High-speed on-chip oscillator off Low-speed on-chip oscillator off XCIN clock oscillator on = 32 kHz (high drive) While a WAIT instruction is executed VCA27 = VCA26 = VCA25 = 0 VCA20 = 1 BGR trimming circuit disabled (BGRCR0 = 1)	-	3	_	μА
			High-speed on-chip oscillator off Low-speed on-chip oscillator off XCIN clock oscillator on = 32 kHz (low drive) While a WAIT instruction is executed VCA27 = VCA26 = VCA25 = 0 VCA20 = 1 BGR trimming circuit disabled (BGRCR0 = 1)	-	1.8	_	μА
			High-speed on-chip oscillator off Low-speed on-chip oscillator off XCIN clock oscillator on = 32 kHz (high drive) While a WAIT instruction is executed VCA27 = VCA26 = VCA25 = 0 VCA20 = 1 BGR trimming circuit enabled (BGRCR0 = 0)	-	7	-	μА
			High-speed on-chip oscillator off Low-speed on-chip oscillator off XCIN clock oscillator on = 32 kHz (low drive) While a WAIT instruction is executed VCA27 = VCA26 = VCA25 = 0 VCA20 = 1 BGR trimming circuit enabled (BGRCR0 = 0)	-	6	-	μА
		Stop mode	Stop mode	XCIN clock off, Topr = 25°C High-speed on-chip oscillator off Low-speed on-chip oscillator off CM10 = 1 Peripheral clock off VCA27 = VCA26 = VCA25 = 0 BGR trimming circuit disabled (BGRCR0 = 1)	-	0.7	3
			XCIN clock off, Topr = 85°C High-speed on-chip oscillator off Low-speed on-chip oscillator off CM10 = 1 Peripheral clock off VCA27 = VCA26 = VCA25 = 0 BGR trimming circuit disabled (BGRCR0 = 1)	-	1.1	-	μА
			XCIN clock off, Topr = 25°C High-speed on-chip oscillator off Low-speed on-chip oscillator off CM10 = 1 Peripheral clock off VCA27 = VCA26 = VCA25 = 0 BGR trimming circuit enabled (BGRCR0 = 0)	-	5	7	μА
			XCIN clock off, Topr = 85°C High-speed on-chip oscillator off Low-speed on-chip oscillator off CM10 = 1 Peripheral clock off VCA27 = VCA26 = VCA25 = 0 BGR trimming circuit enabled (BGRCR0 = 0)	_	5.5	-	μА

5.2 **R8C/2J Group**

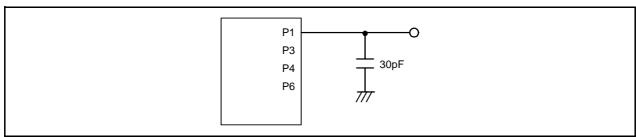
Table 5.30 Absolute Maximum Ratings

Symbol	Parameter	Condition	Rated Value	Unit
Vcc	Supply voltage		-0.3 to 6.5	V
Vı	Input voltage		-0.3 to Vcc + 0.3	V
Vo	Output voltage		-0.3 to Vcc + 0.3	V
Pd	Power dissipation	Topr = 25°C	500	mW
Topr	Operating ambient temperature		-20 to 85 (N version) / -40 to 85 (D version)	°C
Tstg	Storage temperature		-65 to 150	°C

Recommended Operating Conditions Table 5.31

Symbol	Param	otor	Conditions		Standard		Unit
Symbol	Param	leter	Conditions	Min.	Тур.	Max.	Unit
Vcc	Supply voltage			2.2	=	5.5	V
Vss	Supply voltage			-	0	-	V
VIH	Input "H" voltage			0.8 Vcc	-	Vcc	V
VIL	Input "L" voltage			0	=	0.2 Vcc	V
IOH(sum)	Peak sum output "H" current	Sum of all pins IOH(peak)		_	_	-160	mA
IOH(sum)	Average sum output "H" current	Sum of all pins IOH(avg)		-	_	-80	mA
IOH(peak)	Peak output "H" current	All pins		-	-	-10	mA
IOH(avg)	Average output "H" current	All pins		-	_	- 5	mA
IOL(sum)	Peak sum output "L" currents	Sum of all pins IOL(peak)		-	=	160	mA
IOL(sum)	Average sum output "L" currents	Sum of all pins IOL(avg)		-	=	80	mA
IOL(peak)	Peak output "L" currents	All pins		-	-	10	mA
IOL(avg)	Average output "L" current	All pins		_	-	5	mA
=	System clock		HRA01 = 0 Low-speed on-chip oscillator selected	-	125	_	kHz
			HRA01 = 1 High-speed on-chip oscillator selected 2.7 V ≤ Vcc ≤ 5.5 V	-	-	8	MHz
			HRA01 = 1 High-speed on-chip oscillator selected 2.2 V ≤ Vcc ≤ 5.5 V	_	-	4	MHz

- 1. Vcc = 2.2 to 5.5 V at $T_{opr} = -20$ to $85^{\circ}C$ (N version) / -40 to $85^{\circ}C$ (D version), unless otherwise specified.
- 2. The average output current indicates the average value of current measured during 100 ms.



Ports P1, P3, P4, and P6 Timing Measurement Circuit Figure 5.15

Table 5.32 Flash Memory (Program ROM) Electrical Characteristics

Symbol	Parameter	Conditions		Unit		
Symbol	Faiailletei	Conditions	Min.	Тур.	Max.	Offic
-	Program/erase endurance ⁽²⁾		100 ⁽³⁾	-	-	times
=	Byte program time		-	50	400	μS
_	Block erase time		-	0.4	9	S
_	Program, erase voltage		2.7	_	5.5	V
_	Read voltage		2.2	_	5.5	V
-	Program, erase temperature		0	=	60	°C
_	Data hold time ⁽⁷⁾	Ambient temperature = 55°C	20	_	_	year

NOTES:

- 1. Vcc = 2.7 to 5.5 V at Topr = 0 to 60°C, unless otherwise specified.
- 2. Definition of programming/erasure endurance
 - The programming and erasure endurance is defined on a per-block basis.

If the programming and erasure endurance is n (n = 100 or 10,000), each block can be erased n times. For example, if 1,024 1-byte writes are performed to block A, a 1 Kbyte block, and then the block is erased, the programming/erasure endurance still stands at one.

However, the same address must not be programmed more than once per erase operation (overwriting prohibited).

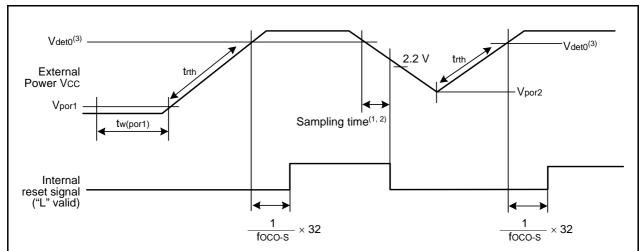
- 3. Endurance to guarantee all electrical characteristics after program and erase. (1 to Min. value can be guaranteed).
- 4. In a system that executes multiple programming operations, the actual erasure count can be reduced by writing to sequential addresses in turn so that as much of the block as possible is used up before performing an erase operation. For example, when programming groups of 16 bytes, the effective number of rewrites can be minimized by programming up to 128 groups before erasing them all in one operation. It is also advisable to retain data on the erase count of each block and limit the number of erase operations to a certain number.
- 5. If an error occurs during block erase, attempt to execute the clear status register command, then execute the block erase command at least three times until the erase error does not occur.
- 6. Customers desiring program/erase failure rate information should contact their Renesas technical support representative.
- 7. The data hold time includes time that the power supply is off or the clock is not supplied.

Table 5.36 Power-on Reset Circuit, Voltage M	Monitor 0 Reset Electrical Characteristics ⁽³⁾
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Symbol	Parameter	Condition -		Unit		
Symbol	Falamete		Min.	Тур.	Max.	Offic
Vpor1	Power-on reset valid voltage ⁽⁴⁾		_	_	0.1	V
Vpor2	Power-on reset or voltage monitor 0 reset valid voltage		0	-	Vdet0	V
trth	External power Vcc rise gradient(2)		20	_	_	mV/msec

NOTES:

- 1. The measurement condition is Topr = -20 to 85°C (N version) / -40 to 85°C (D version), unless otherwise specified.
- 2. This condition (external power Vcc rise gradient) does not apply if Vcc ≥ 1.0 V.
- 3. To use the power-on reset function, enable voltage monitor 0 reset by setting the LVD0ON bit in the OFS register to 0, the VW0C0 and VW0C6 bits in the VW0C register to 1 respectively, and the VCA25 bit in the VCA2 register to 1.
- 4. tw(por1) indicates the duration the external power Vcc must be held below the effective voltage (Vpor1) to enable a power on reset. When turning on the power for the first time, maintain tw(por1) for 30 s or more if $-20^{\circ}C \le T_{opr} \le 85^{\circ}C$, maintain tw(por1) for 3,000 s or more if $-40^{\circ}C \le T_{opr} < -20^{\circ}C$.



- 1. When using the voltage monitor 0 digital filter, ensure that the voltage is within the MCU operation voltage range (2.2 V or above) during the sampling time.
- 2. The sampling clock can be selected. Refer to **6. Voltage Detection Circuit** of Hardware Manual for details.
- Vdet0 indicates the voltage detection level of the voltage detection 0 circuit. Refer to 6. Voltage Detection Circuit of Hardware Manual for details.

Figure 5.16 Reset Circuit Electrical Characteristics

Table 5.37 Comparator Electrical Characteristics

Symbol	Parameter	Condition		Unit		
Symbol	Farameter	Condition	Min.	Тур.	Max.	Offic
Vref	Internal reference voltage	Vcc = 2.2 V to 5.5 V, Topr = 25°C	1.15	1.25	1.35	V
		Vcc = 2.2 V to 5.5 V, Topr = -40 to 85°C	_	1.25	_	V
Vcref	External input reference voltage	Vcc = 2.2 V to 4.0 V	0.5	=	Vcc - 1.1	V
		Vcc = 4.0 V to 5.5 V	0.5	=	Vcc - 1.5	V
Vcin	External comparison voltage input range		-0.3	_	Vcc + 0.3	V
Vofs	Input offset voltage		-	20	120	mV
Tcrsp	Response time		=	4	=	μS

NOTE:

Table 5.38 High-speed On-Chip Oscillator Circuit Electrical Characteristics

Cumbal	Parameter C	Condition		Standard		
Symbol	Farameter	Condition	Min.	Тур.	Max.	Unit
fOCO-F	High-speed on-chip oscillator frequency temperature • supply voltage dependence	VCC = 4.75 V to 5.25 V $T_{\text{Opr}} = 0 \text{ to } 60^{\circ}\text{C}^{(2)}$	7.76	8	8.24	MHz
		Vcc = 2.7 V to 5.5 V $Topr = -20 \text{ to } 85^{\circ}C^{(2)}$	7.68	8	8.32	MHz
		Vcc = 2.7 V to 5.5 V $Topr = -40 \text{ to } 85^{\circ}C^{(2)}$	7.44	8	8.32	MHz
		Vcc = 2.2 V to 5.5 V $Topr = -20 \text{ to } 85^{\circ}C^{(3)}$	7.04	8	8.96	MHz
		Vcc = 2.2 V to 5.5 V $Topr = -40 \text{ to } 85^{\circ}C^{(3)}$	6.8	8	9.2	MHz

NOTES:

- 1. The measurement condition is Topr = -20 to 85°C (N version) / -40 to 85°C (D version), unless otherwise specified.
- 2. These standard values show when the HRA1 register is set to the value before shipment and the HRA2 register is set to 00h.
- 3. These standard values show when the correction value in the FRA6 register is written into the HRA1 register.

Table 5.39 Low-speed On-Chip Oscillator Circuit Electrical Characteristics

Symbol	Parameter	Condition	Standard			Unit
Symbol	i didiffetei	Condition	Min.	Тур.	Max.	Offic
fOCO-S	Low-speed on-chip oscillator frequency		30	125	250	kHz
_	Oscillation stability time		_	10	100	μS
_	Self power consumption at oscillation	VCC = 5.0 V, Topr = 25°C	_	15	_	μА

NOTE:

Table 5.40 Power Supply Circuit Timing Characteristics

Symbol	Parameter	Condition	Standard			Unit
Symbol	Falametei	Condition	Min.	Тур.	Max.	Offic
td(P-R)	Time for internal power supply stabilization during power-on ⁽²⁾		1	=	2000	μS
td(R-S)	STOP exit time ⁽³⁾		ı	Ī	150	μS

- 1. The measurement condition is Vcc = 2.2 to 5.5 V and T_{opr} = 25°C.
- Waiting time until the internal power supply generation circuit stabilizes during power-on.
 Time until system clock supply starts after the interrupt is acknowledged to exit stop mode.



^{1.} The measurement condition is Topr = -20 to 85°C (N version) / -40 to 85°C (D version), unless otherwise specified.

^{1.} Vcc = 2.2 to 5.5 V, Topr = -20 to 85°C (N version) / -40 to 85°C (D version), unless otherwise specified.

Timing Requirements

(Unless Otherwise Specified: Vcc = 5 V, Vss = 0 V at Topr = 25°C) [Vcc = 5 V]

Table 5.43 TRAIO Input

Symbol	Parameter		Standard		
Symbol			Max.	Unit	
tc(TRAIO)	TRAIO input cycle time	100	-	ns	
twh(traio)	TRAIO input "H" width	40	=	ns	
twl(traio)	TRAIO input "L" width	40	=	ns	

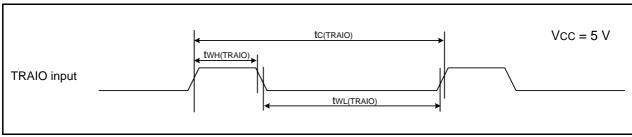


Figure 5.17 TRAIO Input Timing Diagram when Vcc = 5 V

Electrical Characteristics (3) [Vcc = 3 V] **Table 5.46**

Symbol	Poro	Parameter	Condition	Standard			Unit
Symbol	Falai	neter	Condition	Min.	Тур.	Max.	Offic
Voн	Output "H" voltage		Iон = −1 mA	Vcc - 0.5	=	Vcc	V
Vol	Output "L" voltage		IoL = 1 mA	=	=	0.5	V
VT+-VT-	Hysteresis	INT0, INT1, KI0, KI1, KI2, KI3, RXD0, CLK0		0.1	0.3	ı	V
		RESET		0.1	0.4	-	V
Іін	Input "H" current		VI = 3 V, Vcc = 3 V	-	-	4.0	μА
lıL	Input "L" current		VI = 0 V, Vcc = 3 V	=	=	-4.0	μΑ
RPULLUP	Pull-up resistance		VI = 0 V, Vcc = 3 V	66	160	500	kΩ
VRAM	RAM hold voltage		During stop mode	1.8	=	=	V

^{1.} Vcc = 2.7 to 3.3 V at Topr = -20 to $85^{\circ}C$ (N version) / -40 to $85^{\circ}C$ (D version), unless otherwise specified.

Timing requirements

(Unless Otherwise Specified: Vcc = 3 V, Vss = 0 V at Topr = 25°C) [Vcc = 3 V]

Table 5.48 TRAIO Input

Symbol	Symbol Parameter -		Standard		
Symbol			Max.	Unit	
tc(TRAIO)	TRAIO input cycle time	300	-	ns	
twh(traio)	TRAIO input "H" width	120	=	ns	
twl(traio)	TRAIO input "L" width	120	=	ns	

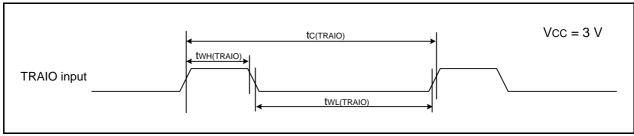


Figure 5.20 TRAIO Input Timing Diagram when Vcc = 3 V