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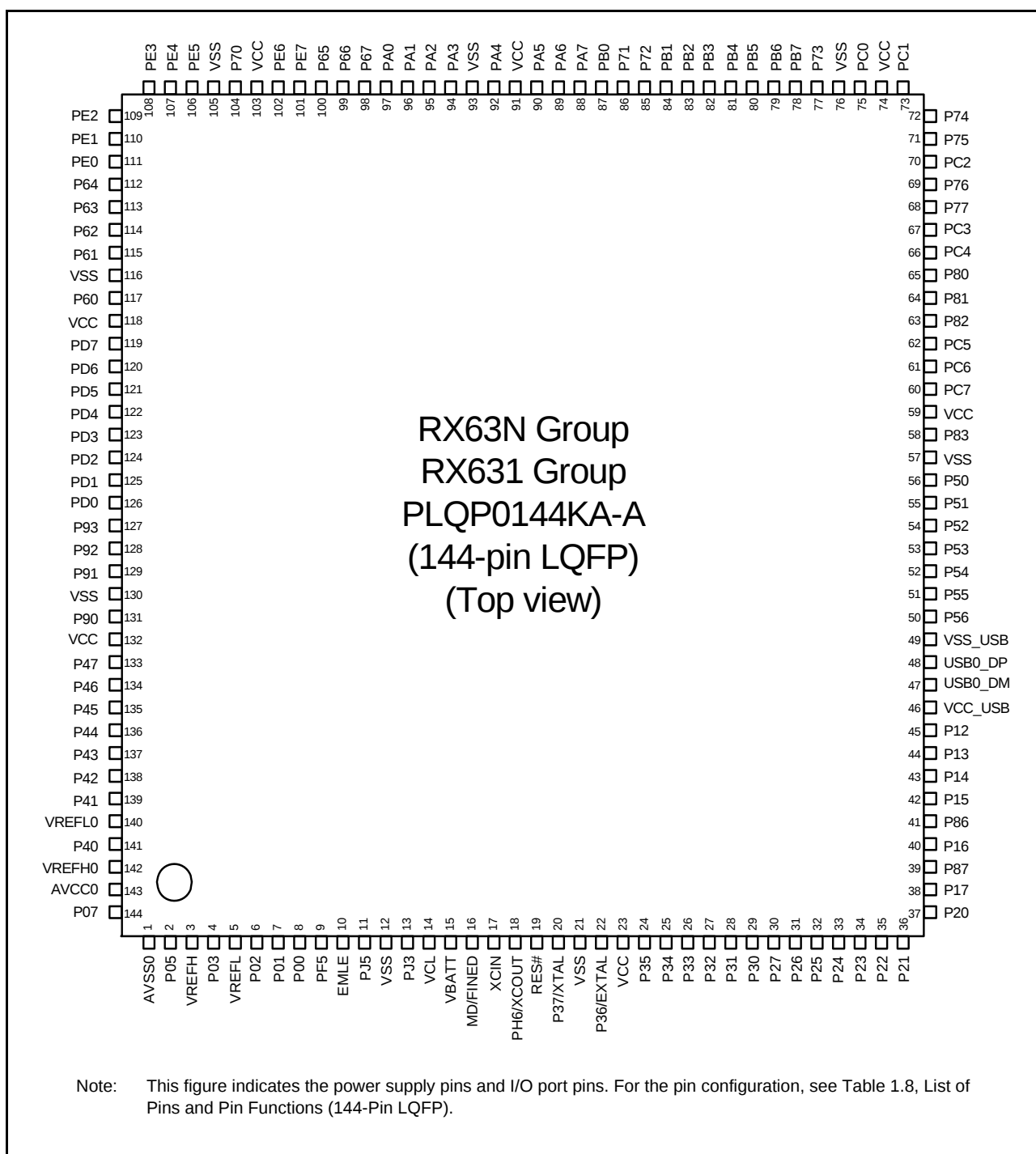
Applications of "[Embedded - Microcontrollers](#)"

Details

Product Status	Discontinued at Digi-Key
Core Processor	RX
Core Size	32-Bit Single-Core
Speed	100MHz
Connectivity	CANbus, EBI/EMI, I ² C, LINbus, SCI, SPI, USB
Peripherals	DMA, LVD, POR, PWM, WDT
Number of I/O	111
Program Memory Size	256KB (256K 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/r5f56316ddfb-v0

Table 1.3 List of Products (3/8)

Group	Part No.	Package	ROM Capacity	RAM Capacity	E2 Data Flash	Operating Frequency (Max.)	Operating Temp. Range
RX63N (D version)	R5F563NYHDFP	PLQP0100KB-A	1 Mbyte	256 Kbytes	32 Kbytes	100 MHz	-40 to +85°C
	R5F563NYDDFP	PLQP0100KB-A	1 Mbyte	256 Kbytes	32 Kbytes	100 MHz	-40 to +85°C
	R5F563NWHDFP	PLQP0100KB-A	1 Mbyte	192 Kbytes	32 Kbytes	100 MHz	-40 to +85°C
	R5F563NWDDFP	PLQP0100KB-A	1 Mbyte	192 Kbytes	32 Kbytes	100 MHz	-40 to +85°C
	R5F563NWGDFP	PLQP0100KB-A*1	1 Mbyte	192 Kbytes	32 Kbytes	100 MHz	-40 to +85°C
	R5F563NWCDFP	PLQP0100KB-A*1	1 Mbyte	192 Kbytes	32 Kbytes	100 MHz	-40 to +85°C
	R5F563NBCDFP	PLQP0100KB-A	1 Mbyte	128 Kbytes	32 Kbytes	100 MHz	-40 to +85°C
	R5F563NBDDFP	PLQP0100KB-A	1 Mbyte	128 Kbytes	32 Kbytes	100 MHz	-40 to +85°C
	R5F563NACDFP	PLQP0100KB-A	768 Kbytes	128 Kbytes	32 Kbytes	100 MHz	-40 to +85°C
	R5F563NADDFP	PLQP0100KB-A	768 Kbytes	128 Kbytes	32 Kbytes	100 MHz	-40 to +85°C
RX63N (G version) *2	R5F563NFHGFC	PLQP0176KB-A	2 Mbytes	256 Kbytes	32 Kbytes	100 MHz	-40 to +105°C
	R5F563NFDGFC	PLQP0176KB-A	2 Mbytes	256 Kbytes	32 Kbytes	100 MHz	-40 to +105°C
	R5F563NKDGFC	PLQP0176KB-A	2 Mbytes	192 Kbytes	32 Kbytes	100 MHz	-40 to +105°C
	R5F563NEDGFC	PLQP0176KB-A	2 Mbytes	128 Kbytes	32 Kbytes	100 MHz	-40 to +105°C
	R5F563NDDGFC	PLQP0176KB-A	1.5 Mbytes	128 Kbytes	32 Kbytes	100 MHz	-40 to +105°C
	R5F563NYHGFC	PLQP0176KB-A	1 Mbyte	256 Kbytes	32 Kbytes	100 MHz	-40 to +105°C
	R5F563NYDGFC	PLQP0176KB-A	1 Mbyte	256 Kbytes	32 Kbytes	100 MHz	-40 to +105°C
	R5F563NWHGFC	PLQP0176KB-A	1 Mbyte	192 Kbytes	32 Kbytes	100 MHz	-40 to +105°C
	R5F563NWDGFC	PLQP0176KB-A	1 Mbyte	192 Kbytes	32 Kbytes	100 MHz	-40 to +105°C
	R5F563NBDGFC	PLQP0176KB-A	1 Mbyte	128 Kbytes	32 Kbytes	100 MHz	-40 to +105°C
	R5F563NADGFC	PLQP0176KB-A	768 Kbytes	128 Kbytes	32 Kbytes	100 MHz	-40 to +105°C
	R5F563NFHGF	PLQP0144KA-A	2 Mbytes	256 Kbytes	32 Kbytes	100 MHz	-40 to +105°C
	R5F563NFDGF	PLQP0144KA-A	2 Mbytes	256 Kbytes	32 Kbytes	100 MHz	-40 to +105°C
	R5F563NKDGF	PLQP0144KA-A	2 Mbytes	192 Kbytes	32 Kbytes	100 MHz	-40 to +105°C
	R5F563NEDGF	PLQP0144KA-A	2 Mbytes	128 Kbytes	32 Kbytes	100 MHz	-40 to +105°C
	R5F563NDDGF	PLQP0144KA-A	1.5 Mbytes	128 Kbytes	32 Kbytes	100 MHz	-40 to +105°C
	R5F563NYHGF	PLQP0144KA-A	1 Mbyte	256 Kbytes	32 Kbytes	100 MHz	-40 to +105°C
	R5F563NYDGF	PLQP0144KA-A	1 Mbyte	256 Kbytes	32 Kbytes	100 MHz	-40 to +105°C
	R5F563NWHGF	PLQP0144KA-A	1 Mbyte	192 Kbytes	32 Kbytes	100 MHz	-40 to +105°C
	R5F563NWDGF	PLQP0144KA-A	1 Mbyte	192 Kbytes	32 Kbytes	100 MHz	-40 to +105°C
	R5F563NBDGF	PLQP0144KA-A	1 Mbyte	128 Kbytes	32 Kbytes	100 MHz	-40 to +105°C
	R5F563NADGF	PLQP0144KA-A	768 Kbytes	128 Kbytes	32 Kbytes	100 MHz	-40 to +105°C
	R5F563NFHGF	PLQP0100KB-A	2 Mbytes	256 Kbytes	32 Kbytes	100 MHz	-40 to +105°C
	R5F563NFDGF	PLQP0100KB-A	2 Mbytes	256 Kbytes	32 Kbytes	100 MHz	-40 to +105°C
	R5F563NKDGF	PLQP0100KB-A	2 Mbytes	192 Kbytes	32 Kbytes	100 MHz	-40 to +105°C
	R5F563NEDGF	PLQP0100KB-A	2 Mbytes	128 Kbytes	32 Kbytes	100 MHz	-40 to +105°C
	R5F563NDDGF	PLQP0100KB-A	1.5 Mbytes	128 Kbytes	32 Kbytes	100 MHz	-40 to +105°C
	R5F563NYHGF	PLQP0100KB-A	1 Mbyte	256 Kbytes	32 Kbytes	100 MHz	-40 to +105°C
	R5F563NYDGF	PLQP0100KB-A	1 Mbyte	256 Kbytes	32 Kbytes	100 MHz	-40 to +105°C
	R5F563NWHGF	PLQP0100KB-A	1 Mbyte	192 Kbytes	32 Kbytes	100 MHz	-40 to +105°C
	R5F563NWDGF	PLQP0100KB-A	1 Mbyte	192 Kbytes	32 Kbytes	100 MHz	-40 to +105°C
	R5F563NBDGF	PLQP0100KB-A	1 Mbyte	128 Kbytes	32 Kbytes	100 MHz	-40 to +105°C
	R5F563NADGF	PLQP0100KB-A	768 Kbytes	128 Kbytes	32 Kbytes	100 MHz	-40 to +105°C
RX631 (D version)	R5F5631ECDLC	PTLG0177KA-A	2 Mbytes	128 Kbytes	32 Kbytes	100 MHz	-40 to +85°C
	R5F5631EDDLC	PTLG0177KA-A	2 Mbytes	128 Kbytes	32 Kbytes	100 MHz	-40 to +85°C

**Figure 1.7 Pin Assignment (144-Pin LQFP)**

Note 3. Enabled only for the ROM capacity: 2 Mbytes/1.5 Mbytes

Table 1.7 List of Pins and Pin Functions (145-Pin TFLGA) (2/5)

Pin No. 145-pin TFLGA	Power Supply Clock System Control	I/O Port	Bus EXDMAC SDRAMC	Timers (MTU, TPU, TMR, PPG, RTC, POE)	Communications (ETHERC, SC1c, SC1d, RSPI, RIIC, CAN, IEB, USB, and PDC)	Interrupt	S12AD AD DA
D5	VCC						
D6		P93	A19		CTS7#/RTS7#/SS7#		AN017
D7		PD5	D5[A5/D5]	MTIC5W/POE2#	SSLC1	IRQ5	AN013
D8		P60	CS0#				
D9		P64	CS4#/WE#				
D10		PE7	D15[A15/D15]	TIOCB11	MISOB	IRQ7	AN5
D11	VCC						
D12		PE5	D13[A13/D13]	MTIOC4C/MTIOC2B/ TIOCB10	RSPCKB/ET_RX_CLK/ REF50CK	IRQ5	AN3
D13		PE6	D14[A14/D14]	TIOCA11	MOSIB	IRQ6	AN4
E1	VSS						
E2	VCL						
E3		PJ5					
E4	EMLE						
E5		P44				IRQ12-DS	AN004
E10		PA0	A0/BC0#	MTIOC4A/TIOCA0/ PO16	SSLA1/ET_TX_EN/ RMII_TXD_EN		
E11		P66	CS6#/DQM0		CTX2*2		
E12		P65	CS5#/CKE				
E13		P67	CS7#/DQM1		CRX2*2	IRQ15	
F1	XCIN						
F2	XCOUT						
F3		PJ3		MTIOC3C	CTS6#/RTS6#/CTS0#/ RTS0#/SS6#/SS0#		
F4	VBATT						
F10		PA3	A3	MTIOC0D/MTCLKD/ TIOC0D/TCLKB/PO19	RXD5/SMISO5/SSCL5/ ET_MDIO	IRQ6-DS	
F11	VSS						
F12		PA1	A1	MTIOC0B/MTCLKC/ TIOCB0/PO17	SCK5/SSLA2/ET_WOL	IRQ11	
F13		PA2	A2	PO18	RXD5/SMISO5/SSCL5/ SSLA3		
G1	XTAL	P37					
G2	RES#						
G3	MD/FINED						
G4	BSCANP						
G10		PA5	A5	TIOCB1/PO21	RSPCKA/ET_LINKSTA		
G11		PA6	A6	MTIC5V/MTCLKB/ TIOCA2/TMCI3/PO22/ POE2#	CTS5#/RTS5#/SS5# MOSIA/ET_EXOUT		
G12	VCC						
G13		PA4	A4	MTIC5U/MTCLKA/ TIOCA1/TMRI0/PO20	TXD5/SMOSI5/SSDA5/ SSLA0/ET_MDC	IRQ5-DS	
H1	EXTAL	P36					
H2	VCC						
H3	VSS						
H4		P35				NMI	
H10		P72	CS2#		ET_MDC		
H11		P71	CS1#		ET_MDIO		

Table 1.9 List of Pins and Pin Functions (100-Pin TFLGA) (2/5)

Pin No. 100-pin TFLGA	Power Supply Clock System Control	I/O Port	Bus EXDMAC	Timers (MTU, TPU, TMR, PPG, RTC, POE)	Communications (ETHERC, SCIC, SCID, RSPI, RIIC, CAN, IEB, USB)	Interrupt	S12AD AD DA
D2	XCOUT						
D3	MD/FINED						
D4	VBATT						
D5		P45				IRQ13-DS	AN005
D6		P46				IRQ14-DS	AN006
D7		PE6	D14[A14/D14]		MOSIB	IRQ6	AN4
D8		PE7	D15[A15/D15]		MISOB	IRQ7	AN5
D9		PA1	A1	MTIOC0B/ MTCLKC/ TIOCBO/PO17	SCK5/SSLA2/ ET_WOL	IRQ11	
D10		PA0	A0/BC0#	MTIOC4A/ TIOCA0/PO16	SSLA1/ET_TX_EN/ RMII_TXD_EN		
E1	XTAL	P37					
E2	VSS						
E3	RES#						
E4	TRST#	P34		MTIOC0A/ TMC13/PO12/ POE2#	SCK6/SCK0/ USB0_DPRPD	IRQ4	
E5		P41				IRQ9-DS	AN001
E6		PA2	A2	PO18	RXD5/SMISO5/ SSCL5/SSLA3		
E7		PA6	A6	MTIC5V/ MTCLKB/ TIOCA2/ TMC13/PO22/ POE2#	CTS5#/RTS5#/ SS5#/MOSIA/ ET_EXOUT		
E8		PA4	A4	MTIC5U/ MTCLKA/ TIOCA1/ TMRI0/PO20	TXD5/SMOSI5/ SSDA5/SSLA0/ ET_MDC	IRQ5-DS	
E9		PA5	A5	TIOCBI/PO21	RSPCKA/ ET_LINKSTA		
E10		PA3	A3	MTIOC0D/ MTCLKD/ TIOCDO/ TCLKB/PO19	RXD5/SMISO5/ SSCL5/ET_MDIO	IRQ6-DS	
F1	EXTAL	P36					
F2	VCC						
F3		P35				NMI	
F4		P32		MTIOC0C/ TIOCC0/TMO3/ PO10/ RTCOUT/ RTCIC2	TXD6/TXD0/ SMOSI6/SMOSI0/ SSDA6/SSDA0/ CTX0*1/ USB0_VBUSEN	IRQ2-DS	
F5		P12		TMC11	RXD2/SMISO2/ SSCL2/SCL0[FM+]	IRQ2	
F6		PB3	A11	MTIOC0A/ MTIOC4A/ TIOCDO/ TCLKD/TMO0/ PO27/POE3#	SCK6/ET_RX_ER/ RMII_RX_ER		

Table 1.10 List of Pins and Pin Functions (100-Pin LQFP) (4/4)

Pin No. 100-pin LQFP	Power Supply Clock System Control	I/O Port	Bus EXDMAC	Timers (MTU, TPU, TMR, PPG, RTC, POE)	Communications (ETHERC, SCId, SCId, RSPI, RIIC, CAN, IEB, USB)	Interrupt	S12AD AD DA
94	VREFL0						
95		P40				IRQ8-DS	AN000
96	VREFH0						
97	AVCC0						
98		P07				IRQ15	ADTRG0#
99	AVSS0						
100		P05				IRQ13	DA1

Note 1. Enabled only for the ROM capacity of 768 Kbytes or more

Note 2. The BCLK function is multiplexed with the I/O port function for pin P53, so the port function is not available if the external bus is enabled.

Table 4.1 List of I/O Registers (Address Order) (6/50)

Address	Module Symbol	Register Name	Register Symbol	Number of Bits	Access Size	Number of Access States		Related Function
						ICLK≥PCLK	ICLK<PCLK	
0008 7047h	ICU	Interrupt request register 071	IR071	8	8	2	ICLK	ICUb
0008 7048h	ICU	Interrupt request register 072	IR072	8	8	2	ICLK	
0008 7049h	ICU	Interrupt request register 073	IR073	8	8	2	ICLK	
0008 704Ah	ICU	Interrupt request register 074	IR074	8	8	2	ICLK	
0008 704Bh	ICU	Interrupt request register 075	IR075	8	8	2	ICLK	
0008 704Ch	ICU	Interrupt request register 076	IR076	8	8	2	ICLK	
0008 704Dh	ICU	Interrupt request register 077	IR077	8	8	2	ICLK	
0008 704Eh	ICU	Interrupt request register 078	IR078	8	8	2	ICLK	
0008 704Fh	ICU	Interrupt request register 079	IR079	8	8	2	ICLK	
0008 705Ah	ICU	Interrupt request register 090	IR090	8	8	2	ICLK	
0008 705Bh	ICU	Interrupt request register 091	IR091	8	8	2	ICLK	
0008 705Ch	ICU	Interrupt request register 092	IR092	8	8	2	ICLK	
0008 705Dh	ICU	Interrupt request register 093	IR093	8	8	2	ICLK	
0008 7062h	ICU	Interrupt request register 098	IR098	8	8	2	ICLK	
0008 7066h	ICU	Interrupt request register 102	IR102	8	8	2	ICLK	
0008 706Ah	ICU	Interrupt request register 106	IR106	8	8	2	ICLK	
0008 706Bh	ICU	Interrupt request register 107	IR107	8	8	2	ICLK	
0008 706Ch	ICU	Interrupt request register 108	IR108	8	8	2	ICLK	
0008 706Dh	ICU	Interrupt request register 109	IR109	8	8	2	ICLK	
0008 706Eh	ICU	Interrupt request register 110	IR110	8	8	2	ICLK	
0008 706Fh	ICU	Interrupt request register 111	IR111	8	8	2	ICLK	
0008 7070h	ICU	Interrupt request register 112	IR112	8	8	2	ICLK	
0008 7072h	ICU	Interrupt request register 114	IR114	8	8	2	ICLK	
0008 707Ah	ICU	Interrupt request register 122	IR122	8	8	2	ICLK	
0008 707Bh	ICU	Interrupt request register 123	IR123	8	8	2	ICLK	
0008 707Ch	ICU	Interrupt request register 124	IR124	8	8	2	ICLK	
0008 707Dh	ICU	Interrupt request register 125	IR125	8	8	2	ICLK	
0008 707Eh	ICU	Interrupt request register 126	IR126	8	8	2	ICLK	
0008 707Fh	ICU	Interrupt request register 127	IR127	8	8	2	ICLK	
0008 7080h	ICU	Interrupt request register 128	IR128	8	8	2	ICLK	
0008 7081h	ICU	Interrupt request register 129	IR129	8	8	2	ICLK	
0008 7082h	ICU	Interrupt request register 130	IR130	8	8	2	ICLK	
0008 7083h	ICU	Interrupt request register 131	IR131	8	8	2	ICLK	
0008 7084h	ICU	Interrupt request register 132	IR132	8	8	2	ICLK	
0008 7085h	ICU	Interrupt request register 133	IR133	8	8	2	ICLK	
0008 7086h	ICU	Interrupt request register 134	IR134	8	8	2	ICLK	
0008 7087h	ICU	Interrupt request register 135	IR135	8	8	2	ICLK	
0008 7088h	ICU	Interrupt request register 136	IR136	8	8	2	ICLK	
0008 7089h	ICU	Interrupt request register 137	IR137	8	8	2	ICLK	
0008 708Ah	ICU	Interrupt request register 138	IR138	8	8	2	ICLK	
0008 708Bh	ICU	Interrupt request register 139	IR139	8	8	2	ICLK	
0008 708Ch	ICU	Interrupt request register 140	IR140	8	8	2	ICLK	
0008 708Dh	ICU	Interrupt request register 141	IR141	8	8	2	ICLK	
0008 708Eh	ICU	Interrupt request register 142	IR142	8	8	2	ICLK	
0008 708Fh	ICU	Interrupt request register 143	IR143	8	8	2	ICLK	
0008 7090h	ICU	Interrupt request register 144	IR144	8	8	2	ICLK	
0008 7091h	ICU	Interrupt request register 145	IR145	8	8	2	ICLK	
0008 7092h	ICU	Interrupt request register 146	IR146	8	8	2	ICLK	
0008 7093h	ICU	Interrupt request register 147	IR147	8	8	2	ICLK	
0008 7094h	ICU	Interrupt request register 148	IR148	8	8	2	ICLK	
0008 7095h	ICU	Interrupt request register 149	IR149	8	8	2	ICLK	

Table 4.1 List of I/O Registers (Address Order) (9/50)

Address	Module Symbol	Register Name	Register Symbol	Number of Bits	Access Size	Number of Access States		Related Function
						ICLK≥PCLK	ICLK<PCLK	
0008 7128h	ICU	DTC activation enable register 040	DTCE040	8	8	2	ICLK	ICUb
0008 712Ah	ICU	DTC activation enable register 042	DTCE042	8	8	2	ICLK	
0008 712Bh	ICU	DTC activation enable register 043	DTCE043	8	8	2	ICLK	
0008 712Dh	ICU	DTC activation enable register 045	DTCE045	8	8	2	ICLK	
0008 712Eh	ICU	DTC activation enable register 046	DTCE046	8	8	2	ICLK	
0008 7140h	ICU	DTC activation enable register 064	DTCE064	8	8	2	ICLK	
0008 7141h	ICU	DTC activation enable register 065	DTCE065	8	8	2	ICLK	
0008 7142h	ICU	DTC activation enable register 066	DTCE066	8	8	2	ICLK	
0008 7143h	ICU	DTC activation enable register 067	DTCE067	8	8	2	ICLK	
0008 7144h	ICU	DTC activation enable register 068	DTCE068	8	8	2	ICLK	
0008 7145h	ICU	DTC activation enable register 069	DTCE069	8	8	2	ICLK	
0008 7146h	ICU	DTC activation enable register 070	DTCE070	8	8	2	ICLK	
0008 7147h	ICU	DTC activation enable register 071	DTCE071	8	8	2	ICLK	
0008 7148h	ICU	DTC activation enable register 072	DTCE072	8	8	2	ICLK	
0008 7149h	ICU	DTC activation enable register 073	DTCE073	8	8	2	ICLK	
0008 714Ah	ICU	DTC activation enable register 074	DTCE074	8	8	2	ICLK	
0008 714Bh	ICU	DTC activation enable register 075	DTCE075	8	8	2	ICLK	
0008 714Ch	ICU	DTC activation enable register 076	DTCE076	8	8	2	ICLK	
0008 714Dh	ICU	DTC activation enable register 077	DTCE077	8	8	2	ICLK	
0008 714Eh	ICU	DTC activation enable register 078	DTCE078	8	8	2	ICLK	
0008 714Fh	ICU	DTC activation enable register 079	DTCE079	8	8	2	ICLK	
0008 7162h	ICU	DTC activation enable register 098	DTCE098	8	8	2	ICLK	
0008 7166h	ICU	DTC activation enable register 102	DTCE102	8	8	2	ICLK	
0008 717Eh	ICU	DTC activation enable register 126	DTCE126	8	8	2	ICLK	
0008 717Fh	ICU	DTC activation enable register 127	DTCE127	8	8	2	ICLK	
0008 7180h	ICU	DTC activation enable register 128	DTCE128	8	8	2	ICLK	
0008 7181h	ICU	DTC activation enable register 129	DTCE129	8	8	2	ICLK	
0008 7182h	ICU	DTC activation enable register 130	DTCE130	8	8	2	ICLK	
0008 7183h	ICU	DTC activation enable register 131	DTCE131	8	8	2	ICLK	
0008 7184h	ICU	DTC activation enable register 132	DTCE132	8	8	2	ICLK	
0008 7185h	ICU	DTC activation enable register 133	DTCE133	8	8	2	ICLK	
0008 7186h	ICU	DTC activation enable register 134	DTCE134	8	8	2	ICLK	
0008 7187h	ICU	DTC activation enable register 135	DTCE135	8	8	2	ICLK	
0008 7188h	ICU	DTC activation enable register 136	DTCE136	8	8	2	ICLK	
0008 7189h	ICU	DTC activation enable register 137	DTCE137	8	8	2	ICLK	
0008 718Ah	ICU	DTC activation enable register 138	DTCE138	8	8	2	ICLK	
0008 718Bh	ICU	DTC activation enable register 139	DTCE139	8	8	2	ICLK	
0008 718Ch	ICU	DTC activation enable register 140	DTCE140	8	8	2	ICLK	
0008 718Dh	ICU	DTC activation enable register 141	DTCE141	8	8	2	ICLK	
0008 718Eh	ICU	DTC activation enable register 142	DTCE142	8	8	2	ICLK	
0008 718Fh	ICU	DTC activation enable register 143	DTCE143	8	8	2	ICLK	
0008 7190h	ICU	DTC activation enable register 144	DTCE144	8	8	2	ICLK	
0008 7191h	ICU	DTC activation enable register 145	DTCE145	8	8	2	ICLK	
0008 7194h	ICU	DTC activation enable register 148	DTCE148	8	8	2	ICLK	
0008 7195h	ICU	DTC activation enable register 149	DTCE149	8	8	2	ICLK	
0008 7196h	ICU	DTC activation enable register 150	DTCE150	8	8	2	ICLK	
0008 7197h	ICU	DTC activation enable register 151	DTCE151	8	8	2	ICLK	
0008 7198h	ICU	DTC activation enable register 152	DTCE152	8	8	2	ICLK	
0008 7199h	ICU	DTC activation enable register 153	DTCE153	8	8	2	ICLK	
0008 719Ah	ICU	DTC activation enable register 154	DTCE154	8	8	2	ICLK	
0008 719Bh	ICU	DTC activation enable register 155	DTCE155	8	8	2	ICLK	

Table 4.1 List of I/O Registers (Address Order) (11/50)

Address	Module Symbol	Register Name	Register Symbol	Number of Bits	Access Size	Number of Access States		Related Function
						ICLK≥PCLK	ICLK<PCLK	
0008 71EEh	ICU	DTC activation enable register 238	DTCER238	8	8	2	ICLK	ICUb
0008 71EFh	ICU	DTC activation enable register 239	DTCER239	8	8	2	ICLK	
0008 71F1h	ICU	DTC activation enable register 241	DTCER241	8	8	2	ICLK	
0008 71F2h	ICU	DTC activation enable register 242	DTCER242	8	8	2	ICLK	
0008 71F4h	ICU	DTC activation enable register 244	DTCER244	8	8	2	ICLK	
0008 71F5h	ICU	DTC activation enable register 245	DTCER245	8	8	2	ICLK	
0008 71F7h	ICU	DTC activation enable register 247	DTCER247	8	8	2	ICLK	
0008 71F8h	ICU	DTC activation enable register 248	DTCER248	8	8	2	ICLK	
0008 71FAh	ICU	DTC activation enable register 250	DTCER250	8	8	2	ICLK	
0008 71FBh	ICU	DTC activation enable register 251	DTCER251	8	8	2	ICLK	
0008 7202h	ICU	Interrupt request enable register 02	IER02	8	8	2	ICLK	
0008 7203h	ICU	Interrupt request enable register 03	IER03	8	8	2	ICLK	
0008 7204h	ICU	Interrupt request enable register 04	IER04	8	8	2	ICLK	
0008 7205h	ICU	Interrupt request enable register 05	IER05	8	8	2	ICLK	
0008 7206h	ICU	Interrupt request enable register 06	IER06	8	8	2	ICLK	
0008 7207h	ICU	Interrupt request enable register 07	IER07	8	8	2	ICLK	
0008 7208h	ICU	Interrupt request enable register 08	IER08	8	8	2	ICLK	
0008 7209h	ICU	Interrupt request enable register 09	IER09	8	8	2	ICLK	
0008 720Bh	ICU	Interrupt request enable register 0B	IER0B	8	8	2	ICLK	
0008 720Ch	ICU	Interrupt request enable register 0C	IER0C	8	8	2	ICLK	
0008 720Dh	ICU	Interrupt request enable register 0D	IER0D	8	8	2	ICLK	
0008 720Eh	ICU	Interrupt request enable register 0E	IER0E	8	8	2	ICLK	
0008 720Fh	ICU	Interrupt request enable register 0F	IER0F	8	8	2	ICLK	
0008 7210h	ICU	Interrupt request enable register 10	IER10	8	8	2	ICLK	
0008 7211h	ICU	Interrupt request enable register 11	IER11	8	8	2	ICLK	
0008 7212h	ICU	Interrupt request enable register 12	IER12	8	8	2	ICLK	
0008 7213h	ICU	Interrupt request enable register 13	IER13	8	8	2	ICLK	
0008 7214h	ICU	Interrupt request enable register 14	IER14	8	8	2	ICLK	
0008 7215h	ICU	Interrupt request enable register 15	IER15	8	8	2	ICLK	
0008 7216h	ICU	Interrupt request enable register 16	IER16	8	8	2	ICLK	
0008 7217h	ICU	Interrupt request enable register 17	IER17	8	8	2	ICLK	
0008 7218h	ICU	Interrupt request enable register 18	IER18	8	8	2	ICLK	
0008 7219h	ICU	Interrupt request enable register 19	IER19	8	8	2	ICLK	
0008 721Ah	ICU	Interrupt request enable register 1A	IER1A	8	8	2	ICLK	
0008 721Bh	ICU	Interrupt request enable register 1B	IER1B	8	8	2	ICLK	
0008 721Ch	ICU	Interrupt request enable register 1C	IER1C	8	8	2	ICLK	
0008 721Dh	ICU	Interrupt request enable register 1D	IER1D	8	8	2	ICLK	
0008 721Eh	ICU	Interrupt request enable register 1E	IER1E	8	8	2	ICLK	
0008 721Fh	ICU	Interrupt request enable register 1F	IER1F	8	8	2	ICLK	
0008 72E0h	ICU	Software interrupt activation register	SWINTR	8	8	2	ICLK	
0008 72F0h	ICU	Fast interrupt set register	FIR	16	16	2	ICLK	
0008 7300h	ICU	Interrupt source priority register 000	IPR000	8	8	2	ICLK	
0008 7301h	ICU	Interrupt source priority register 001	IPR001	8	8	2	ICLK	
0008 7302h	ICU	Interrupt source priority register 002	IPR002	8	8	2	ICLK	
0008 7303h	ICU	Interrupt source priority register 003	IPR003	8	8	2	ICLK	
0008 7304h	ICU	Interrupt source priority register 004	IPR004	8	8	2	ICLK	
0008 7305h	ICU	Interrupt source priority register 005	IPR005	8	8	2	ICLK	
0008 7306h	ICU	Interrupt source priority register 006	IPR006	8	8	2	ICLK	
0008 7307h	ICU	Interrupt source priority register 007	IPR007	8	8	2	ICLK	
0008 7320h	ICU	Interrupt source priority register 032	IPR032	8	8	2	ICLK	
0008 7321h	ICU	Interrupt source priority register 033	IPR033	8	8	2	ICLK	

Table 4.1 List of I/O Registers (Address Order) (16/50)

Address	Module Symbol	Register Name	Register Symbol	Number of Bits	Access Size	Number of Access States		Related Function
						ICLK≥PCLK	ICLK<PCLK	
0008 814Ch	TPU3	Timer general register C	TGRC	16	16	2, 3 PCLKB	2 ICLK	TPUa
0008 814Eh	TPU3	Timer general register D	TGRD	16	16	2, 3 PCLKB	2 ICLK	
0008 8150h	TPU4	Timer control register	TCR	8	8	2, 3 PCLKB	2 ICLK	
0008 8151h	TPU4	Timer mode register	TMDR	8	8	2, 3 PCLKB	2 ICLK	
0008 8152h	TPU4	Timer I/O control register	TIOR	8	8	2, 3 PCLKB	2 ICLK	
0008 8154h	TPU4	Timer interrupt enable register	TIER	8	8	2, 3 PCLKB	2 ICLK	
0008 8155h	TPU4	Timer status register	TSR	8	8	2, 3 PCLKB	2 ICLK	
0008 8156h	TPU4	Timer counter	TCNT	16	16	2, 3 PCLKB	2 ICLK	
0008 8158h	TPU4	Timer general register A	TGRA	16	16	2, 3 PCLKB	2 ICLK	
0008 815Ah	TPU4	Timer general register B	TGRB	16	16	2, 3 PCLKB	2 ICLK	
0008 8160h	TPU5	Timer control register	TCR	8	8	2, 3 PCLKB	2 ICLK	
0008 8161h	TPU5	Timer mode register	TMDR	8	8	2, 3 PCLKB	2 ICLK	
0008 8162h	TPU5	Timer I/O control register	TIOR	8	8	2, 3 PCLKB	2 ICLK	
0008 8164h	TPU5	Timer interrupt enable register	TIER	8	8	2, 3 PCLKB	2 ICLK	
0008 8165h	TPU5	Timer status register	TSR	8	8	2, 3 PCLKB	2 ICLK	
0008 8166h	TPU5	Timer counter	TCNT	16	16	2, 3 PCLKB	2 ICLK	
0008 8168h	TPU5	Timer general register A	TGRA	16	16	2, 3 PCLKB	2 ICLK	
0008 816Ah	TPU5	Timer general register B	TGRB	16	16	2, 3 PCLKB	2 ICLK	
0008 8170h	TPUB	Timer start register	TSTR	8	8	2, 3 PCLKB	2 ICLK	
0008 8171h	TPUB	Timer synchronous register	TSYR	8	8	2, 3 PCLKB	2 ICLK	
0008 8178h	TPU6	Noise filter control register	NFCR	8	8	2, 3 PCLKB	2 ICLK	
0008 8179h	TPU7	Noise filter control register	NFCR	8	8	2, 3 PCLKB	2 ICLK	
0008 817Ah	TPU8	Noise filter control register	NFCR	8	8	2, 3 PCLKB	2 ICLK	
0008 817Bh	TPU9	Noise filter control register	NFCR	8	8	2, 3 PCLKB	2 ICLK	
0008 817Ch	TPU10	Noise filter control register	NFCR	8	8	2, 3 PCLKB	2 ICLK	
0008 817Dh	TPU11	Noise filter control register	NFCR	8	8	2, 3 PCLKB	2 ICLK	
0008 8180h	TPU6	Timer control register	TCR	8	8	2, 3 PCLKB	2 ICLK	
0008 8181h	TPU6	Timer mode register	TMDR	8	8	2, 3 PCLKB	2 ICLK	
0008 8182h	TPU6	Timer I/O control register H	TIORH	8	8	2, 3 PCLKB	2 ICLK	
0008 8183h	TPU6	Timer I/O control register L	TIORL	8	8	2, 3 PCLKB	2 ICLK	
0008 8184h	TPU6	Timer interrupt enable register	TIER	8	8	2, 3 PCLKB	2 ICLK	
0008 8185h	TPU6	Timer status register	TSR	8	8	2, 3 PCLKB	2 ICLK	
0008 8186h	TPU6	Timer counter	TCNT	16	16	2, 3 PCLKB	2 ICLK	
0008 8188h	TPU6	Timer general register A	TGRA	16	16	2, 3 PCLKB	2 ICLK	
0008 818Ah	TPU6	Timer general register B	TGRB	16	16	2, 3 PCLKB	2 ICLK	
0008 818Ch	TPU6	Timer general register C	TGRC	16	16	2, 3 PCLKB	2 ICLK	
0008 818Eh	TPU6	Timer general register D	TGRD	16	16	2, 3 PCLKB	2 ICLK	
0008 8190h	TPU7	Timer control register	TCR	8	8	2, 3 PCLKB	2 ICLK	
0008 8191h	TPU7	Timer mode register	TMDR	8	8	2, 3 PCLKB	2 ICLK	
0008 8192h	TPU7	Timer I/O control register	TIOR	8	8	2, 3 PCLKB	2 ICLK	
0008 8194h	TPU7	Timer interrupt enable register	TIER	8	8	2, 3 PCLKB	2 ICLK	
0008 8195h	TPU7	Timer status register	TSR	8	8	2, 3 PCLKB	2 ICLK	
0008 8196h	TPU7	Timer counter	TCNT	16	16	2, 3 PCLKB	2 ICLK	
0008 8198h	TPU7	Timer general register A	TGRA	16	16	2, 3 PCLKB	2 ICLK	
0008 819Ah	TPU7	Timer general register B	TGRB	16	16	2, 3 PCLKB	2 ICLK	
0008 81A0h	TPU8	Timer control register	TCR	8	8	2, 3 PCLKB	2 ICLK	
0008 81A1h	TPU8	Timer mode register	TMDR	8	8	2, 3 PCLKB	2 ICLK	
0008 81A2h	TPU8	Timer I/O control register	TIOR	8	8	2, 3 PCLKB	2 ICLK	
0008 81A4h	TPU8	Timer interrupt enable register	TIER	8	8	2, 3 PCLKB	2 ICLK	
0008 81A5h	TPU8	Timer status register	TSR	8	8	2, 3 PCLKB	2 ICLK	
0008 81A6h	TPU8	Timer counter	TCNT	16	16	2, 3 PCLKB	2 ICLK	

Table 4.1 List of I/O Registers (Address Order) (34/50)

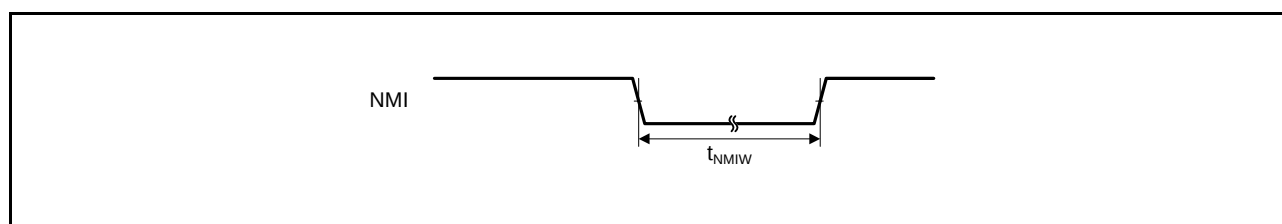
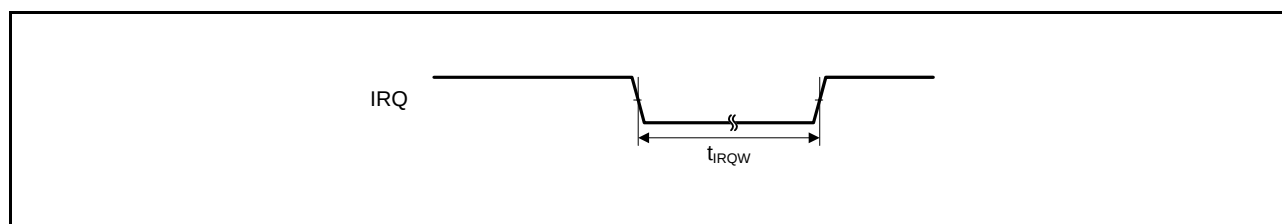
Address	Module Symbol	Register Name	Register Symbol	Number of Bits	Access Size	Number of Access States		Related Function
						ICLK≥PCLK	ICLK<PCLK	
0008 C1B1h	MPC	PE1 pin function control register	PE1PFS	8	8	2, 3 PCLKB	2 ICLK	MPC
0008 C1B2h	MPC	PE2 pin function control register	PE2PFS	8	8	2, 3 PCLKB	2 ICLK	
0008 C1B3h	MPC	PE3 pin function control register	PE3PFS	8	8	2, 3 PCLKB	2 ICLK	
0008 C1B4h	MPC	PE4 pin function control register	PE4PFS	8	8	2, 3 PCLKB	2 ICLK	
0008 C1B5h	MPC	PE5 pin function control register	PE5PFS	8	8	2, 3 PCLKB	2 ICLK	
0008 C1B6h	MPC	PE6 pin function control register	PE6PFS	8	8	2, 3 PCLKB	2 ICLK	
0008 C1B7h	MPC	PE7 pin function control register	PE7PFS	8	8	2, 3 PCLKB	2 ICLK	
0008 C1B8h	MPC	PF0 pin function control register	PF0PFS	8	8	2, 3 PCLKB	2 ICLK	
0008 C1B9h	MPC	PF1 pin function control register	PF1PFS	8	8	2, 3 PCLKB	2 ICLK	
0008 C1BAh	MPC	PF2 pin function control register	PF2PFS	8	8	2, 3 PCLKB	2 ICLK	
0008 C1BDh	MPC	PF5 pin function control register	PF5PFS	8	8	2, 3 PCLKB	2 ICLK	
0008 C1D3h	MPC	PJ3 pin function control register	PJ3PFS	8	8	2, 3 PCLKB	2 ICLK	
0008 C280h	SYSTEM	Deep standby control register	DPSBYCR	8	8	4, 5 PCLKB	2, 3 ICLK	Low Power Consumption
0008 C282h	SYSTEM	Deep standby interrupt enable register 0	DPSIER0	8	8	4, 5 PCLKB	2, 3 ICLK	
0008 C283h	SYSTEM	Deep standby interrupt enable register 1	DPSIER1	8	8	4, 5 PCLKB	2, 3 ICLK	
0008 C284h	SYSTEM	Deep standby interrupt enable register 2	DPSIER2	8	8	4, 5 PCLKB	2, 3 ICLK	
0008 C285h	SYSTEM	Deep standby interrupt enable register 3	DPSIER3	8	8	4, 5 PCLKB	2, 3 ICLK	
0008 C286h	SYSTEM	Deep standby interrupt flag register 0	DPSIFR0	8	8	4, 5 PCLKB	2, 3 ICLK	
0008 C287h	SYSTEM	Deep standby interrupt flag register 1	DPSIFR1	8	8	4, 5 PCLKB	2, 3 ICLK	
0008 C288h	SYSTEM	Deep standby interrupt flag register 2	DPSIFR2	8	8	4, 5 PCLKB	2, 3 ICLK	
0008 C289h	SYSTEM	Deep standby interrupt flag register 3	DPSIFR3	8	8	4, 5 PCLKB	2, 3 ICLK	
0008 C28Ah	SYSTEM	Deep standby interrupt edge register 0	DPSIEGR0	8	8	4, 5 PCLKB	2, 3 ICLK	
0008 C28Bh	SYSTEM	Deep standby interrupt edge register 1	DPSIEGR1	8	8	4, 5 PCLKB	2, 3 ICLK	
0008 C28Ch	SYSTEM	Deep standby interrupt edge register 2	DPSIEGR2	8	8	4, 5 PCLKB	2, 3 ICLK	
0008 C28Dh	SYSTEM	Deep standby interrupt edge register 3	DPSIEGR3	8	8	4, 5 PCLKB	2, 3 ICLK	
0008 C290h	SYSTEM	Reset status register 0	RSTSR0	8	8	4, 5 PCLKB	2, 3 ICLK	Resets
0008 C291h	SYSTEM	Reset status register 1	RSTSR1	8	8	4, 5 PCLKB	2, 3 ICLK	
0008 C293h	SYSTEM	Main clock oscillator forced oscillation control register	MOFCR	8	8	4, 5 PCLKB	2, 3 ICLK	Clock Generation Circuit
0008 C294h	SYSTEM	High-speed on-chip oscillator power supply control register	HOCOPCR	8	8	4, 5 PCLKB	2, 3 ICLK	
0008 C296h	FLASH	Flash write erase protection register	FWEPROR	8	8	4, 5 PCLKB	2, 3 ICLK	ROM
0008 C297h	SYSTEM	Voltage monitoring circuit control register	LVCMPCR	8	8	4, 5 PCLKB	2, 3 ICLK	LVDA
0008 C298h	SYSTEM	Voltage detection level select register	LVDLVL	8	8	4, 5 PCLKB	2, 3 ICLK	
0008 C29Ah	SYSTEM	Voltage monitoring 1 circuit control register 0	LVD1CR0	8	8	4, 5 PCLKB	2, 3 ICLK	
0008 C29Bh	SYSTEM	Voltage monitoring 2 circuit control register 0	LVD2CR0	8	8	4, 5 PCLKB	2, 3 ICLK	
0008 C2A0h to 0008 C2BFh	SYSTEM	Deep standby backup register 0 to 31	DPSBKR0 to 31	8	8	4, 5 PCLKB	2, 3 ICLK	Low Power Consumption
0008 C300h	ICU	Group 0 interrupt source register	GRP00	32	32	1 to 2PCLKB	2 ICLK	ICUb
0008 C304h	ICU	Group 1 interrupt source register	GRP01	32	32	1 to 2PCLKB	2 ICLK	
0008 C308h	ICU	Group 2 interrupt source register	GRP02	32	32	1 to 2PCLKB	2 ICLK	
0008 C30Ch	ICU	Group 3 interrupt source register	GRP03	32	32	1 to 2PCLKB	2 ICLK	
0008 C310h	ICU	Group 4 interrupt source register	GRP04	32	32	1 to 2PCLKB	2 ICLK	
0008 C314h	ICU	Group 5 interrupt source register	GRP05	32	32	1 to 2PCLKB	2 ICLK	
0008 C318h	ICU	Group 6 interrupt source register	GRP06	32	32	1 to 2PCLKB	2 ICLK	
0008 C330h	ICU	Group 12 interrupt source register	GRP12	32	32	1 to 2PCLKB	2 ICLK	
0008 C340h	ICU	Group 0 interrupt enable register	GEN00	32	32	1 to 2PCLKB	2 ICLK	

5.3.2 Clock Timing

Table 5.12 Clock Timing (Except for Sub-Clock Related)

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

Item		Symbol	Min.	Typ.	Max.	Unit	Test Conditions
BCLK pin output cycle time	Packages with 177 to 144 pins	t _{Bcyc}	20	—	—	ns	Figure 5.3
	Packages with 100 pins or less		40	—	—	ns	
BCLK pin output high pulse width		t _{CH}	5	—	—	ns	
BCLK pin output low pulse width		t _{CL}	5	—	—	ns	
BCLK pin output rising time		t _{Cr}	—	—	5	ns	
BCLK pin output falling time		t _{Cf}	—	—	5	ns	
SDCLK pin output cycle time	only 177 to 144 pin	t _{Bcyc}	20	—	—	ns	
SDCLK pin output high pulse width		t _{CH}	5	—	—	ns	
SDCLK pin output low pulse width		t _{CH}	5	—	—	ns	
SDCLK pin output rising time		t _{CH}	—	—	5	ns	
SDCLK pin output falling time		t _{CH}	—	—	5	ns	
EXTAL external clock input cycle time		t _{EXcyc}	50	—	—	ns	Figure 5.4
EXTAL external clock input high pulse width		t _{EXH}	20	—	—	ns	
EXTAL external clock input low pulse width		t _{EXL}	20	—	—	ns	
EXTAL external clock rising time		t _{EXr}	—	—	5	ns	
EXTAL external clock falling time		t _{EXf}	—	—	5	ns	
EXTAL external clock input wait time*1		t _{EXWT}	1	—	—	ms	
Main clock frequency		f _{MAIN}	4	—	16	MHz	
Main clock oscillator start-up time		t _{MAINOSC}	—	—	—*3	ms	Figure 5.5
Main clock oscillation stabilization wait time		t _{MAINOSCWT}	—	—	—*4	ms	
LOCO and IWDTCCLK clock cycle time		t _{cyc}	6.96	8	9.4	μs	
LOCO and IWDTCCLK clock oscillation frequency		f _{LOCO}	106.25	125	143.75	kHz	
LOCO and IWDTCCLK clock oscillation stabilization wait time		t _{LOCOWT}	—	—	20	μs	Figure 5.6
HOCO clock oscillator oscillation frequency		f _{HOCO}	45	50	55	MHz	
HOCO clock oscillation stabilization wait time 1*2		t _{HOCOWT1}	—	—	1.8	ms	Figure 5.7
HOCO clock oscillation stabilization wait time 2		t _{HOCOWT2}	—	—	2.0	ms	Figure 5.8
HOCO clock power supply settling time		t _{HOCOP}	—	—	1	ms	Figure 5.9
PLL clock frequency		f _{PLL}	104	—	200	MHz	
PLL lock time	PLL operation started after main clock oscillation has settled	t _{PLL1}	—	—	500	μs	Figure 5.10
PLL clock oscillation stabilization wait time		t _{PLLWT1}	—	—	—*5	ms	
PLL lock time	PLL operation started before main clock oscillation has settled	t _{PLL2}	—	—	t _{MAINOSC} + t _{PLL1}	ms	Figure 5.11
PLL clock oscillation stabilization wait time		t _{PLLWT2}	—	—	—*5	ms	

**Figure 5.15** NMI Interrupt Input Timing**Figure 5.16** IRQ Interrupt Input Timing

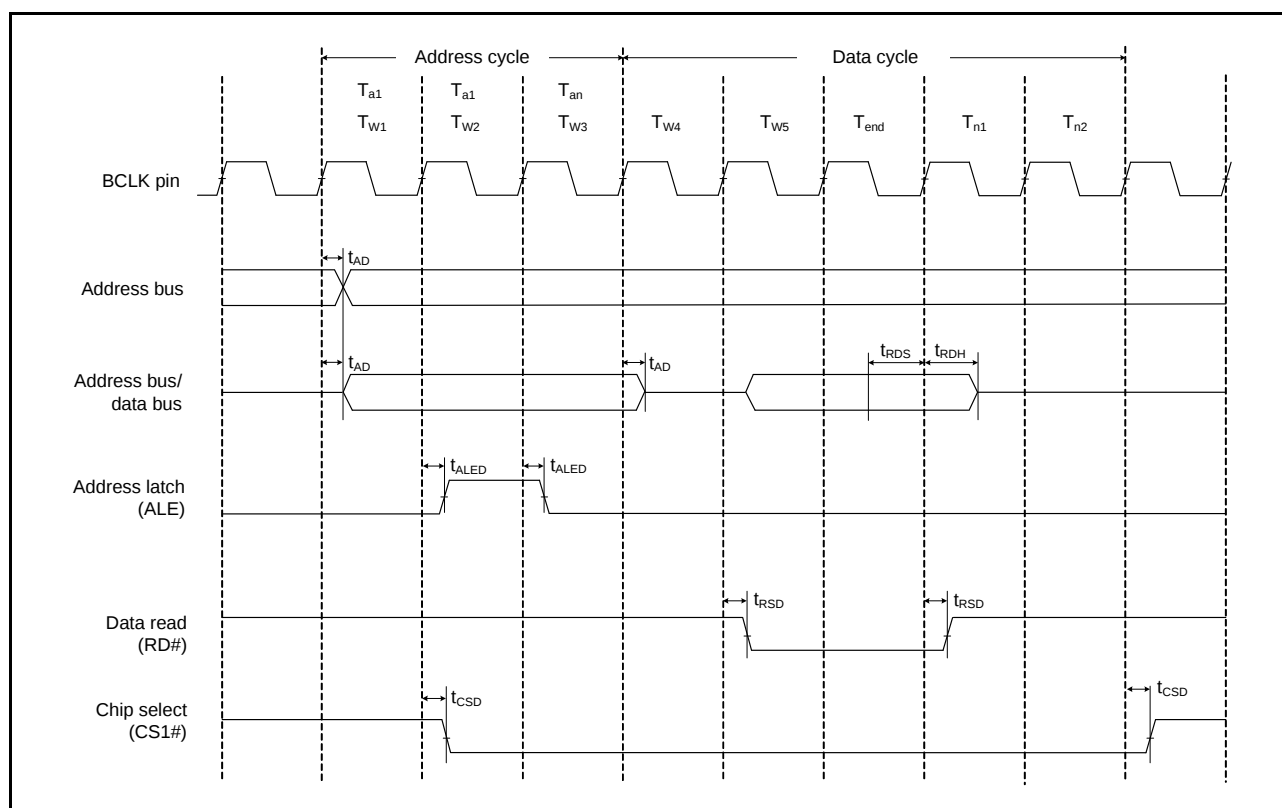


Figure 5.17 Address/Data Multiplexed Bus Read Access Timing

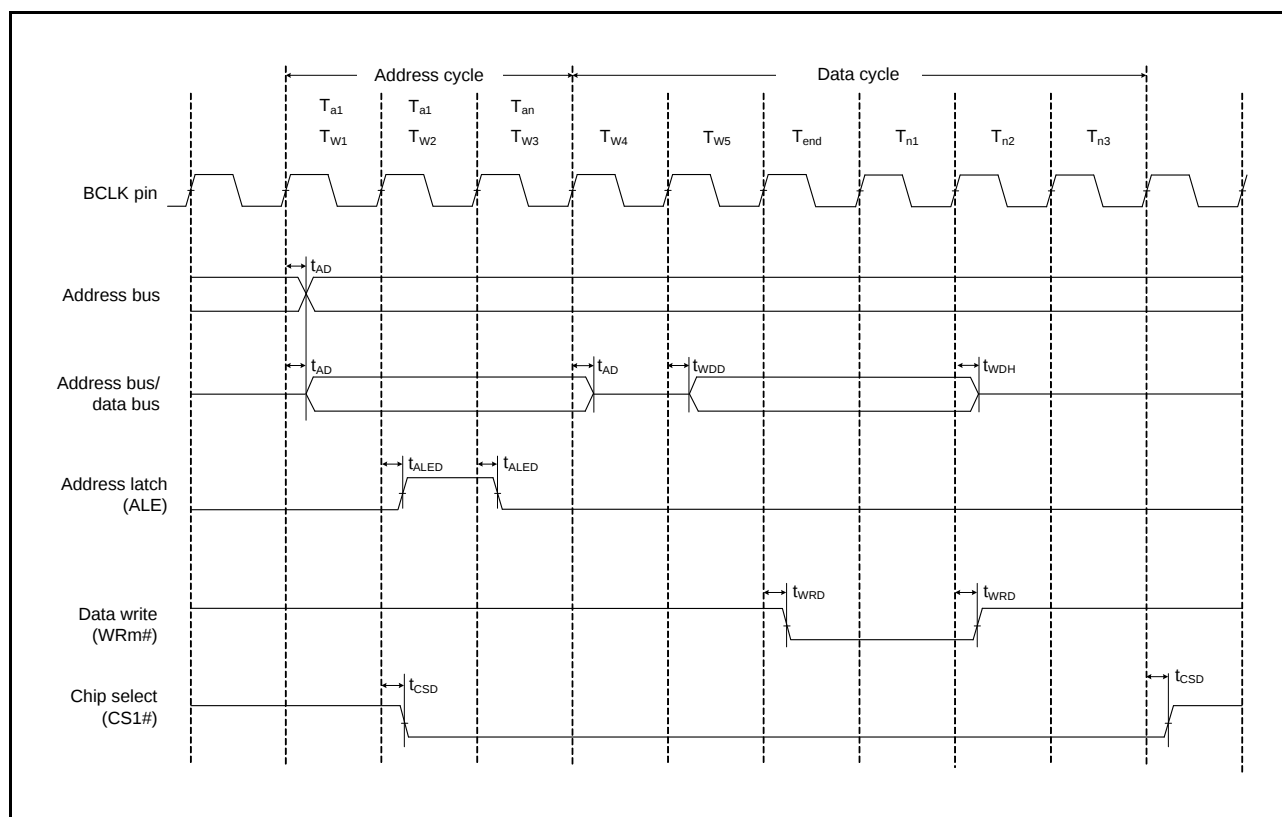


Figure 5.18 Address/Data Multiplexed Bus Write Access Timing

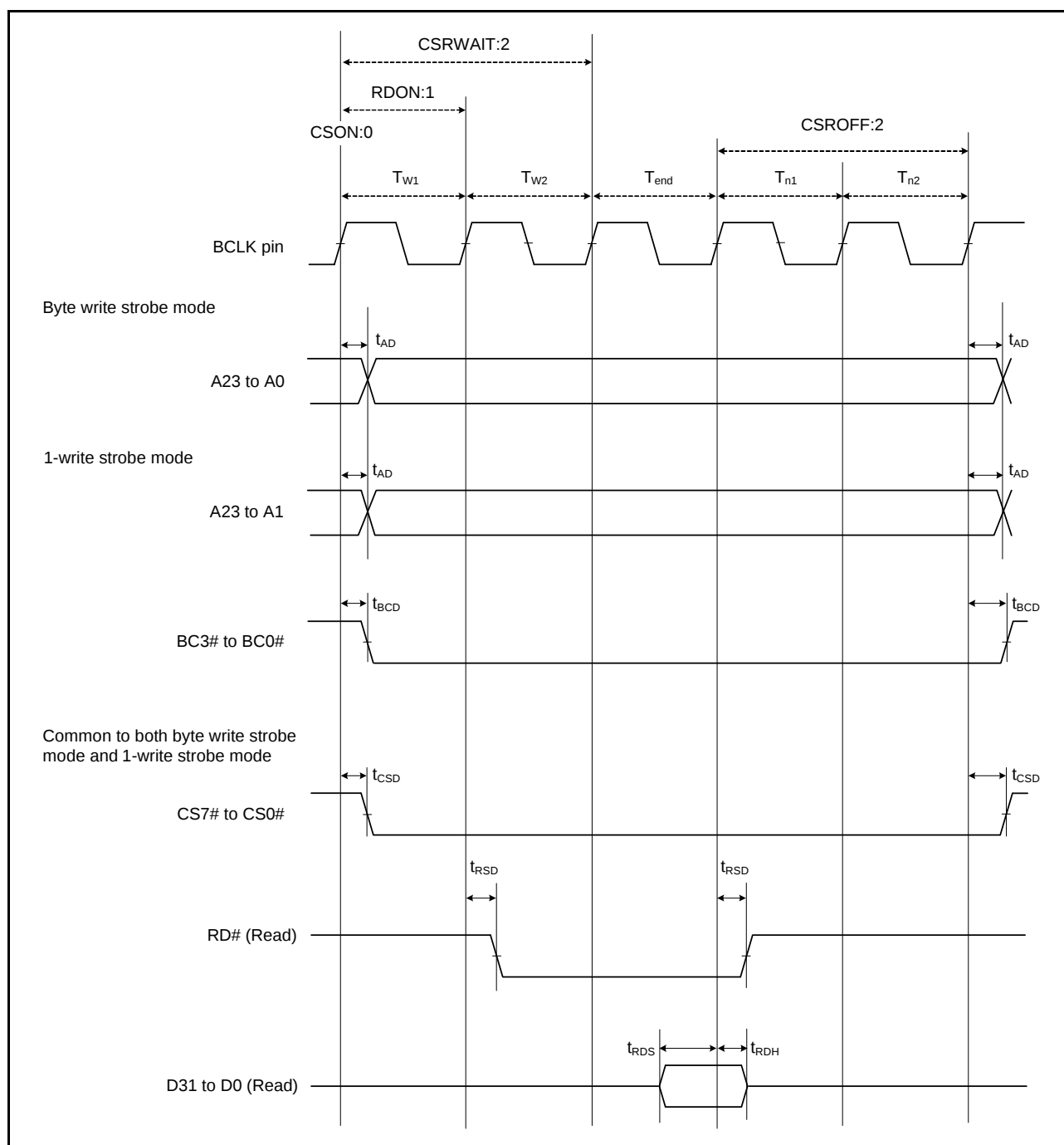
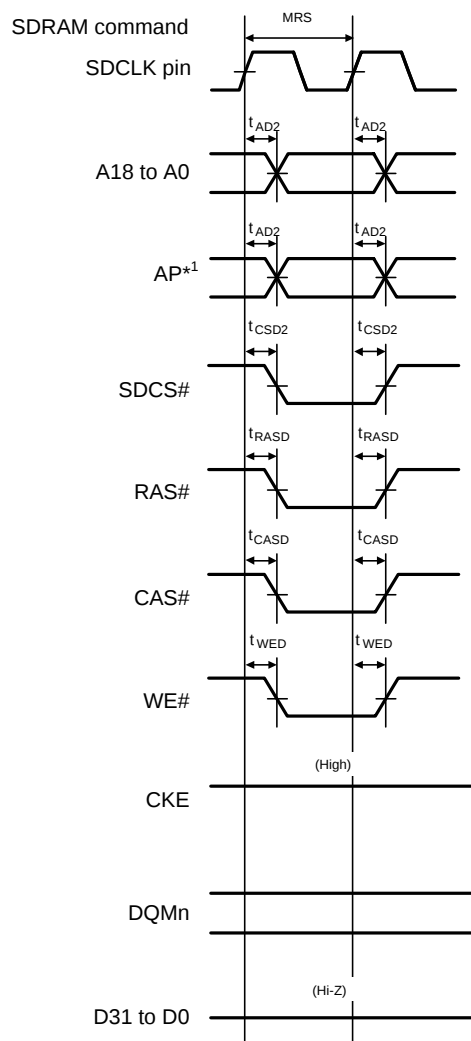


Figure 5.19 External Bus Timing/Normal Read Cycle (Bus Clock Synchronized)



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

Figure 5.29 SDRAM Space Mode Register Set Bus Timing

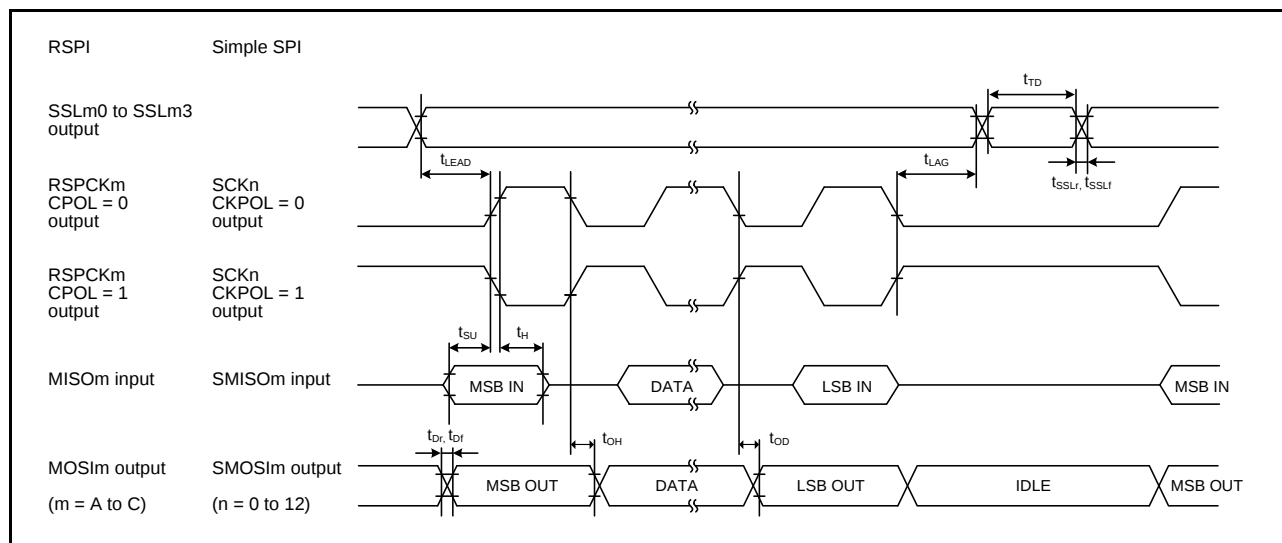


Figure 5.43 RSPI Timing (Master, CPHA = 0) and Simple SPI Timing (Master, CKPH = 1)

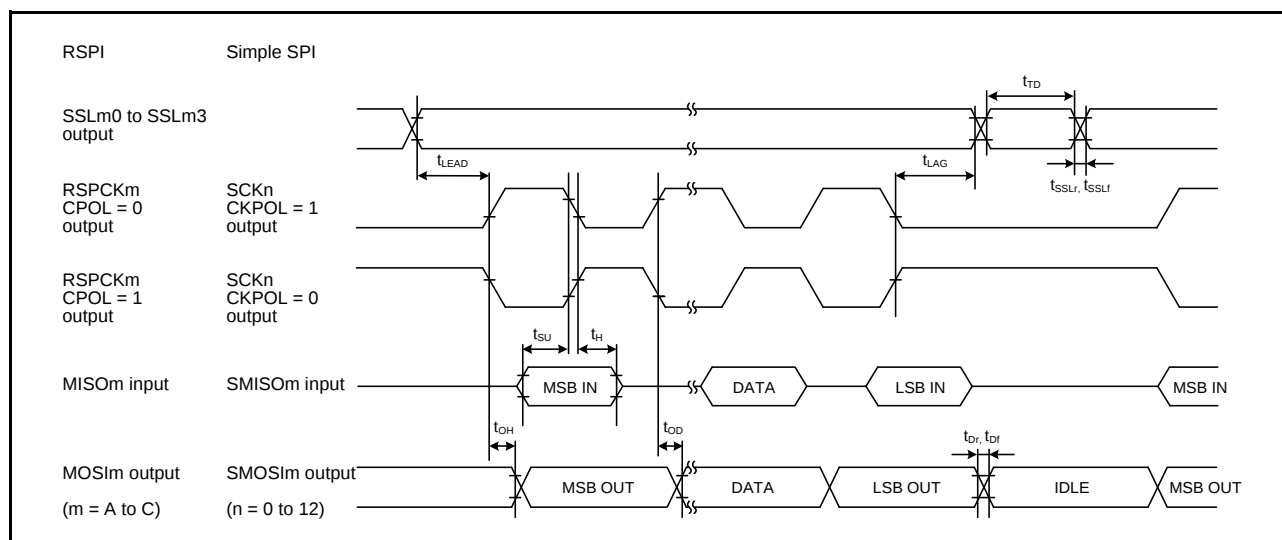


Figure 5.44 RSPI Timing (Master, CPHA = 1) and Simple SPI Timing (Master, CKPH = 0)

Table 5.29 12-Bit A/D Conversion CharacteristicsConditions: $V_{CC} = AVCC0 = VREFH = VCC_USB = 2.7$ to 3.6 V, $VREFH0 = 2.7$ V to $AVCC0$ $VSS = AVSS0 = VREFL/VREFL0 = VSS_USB = 0$ V $PCLK = 8$ to 50 MHz $T_a = T_{opr}$

Item			Min.	Typ.	Max.	Unit	Test Conditions
Resolution			—	—	12	Bit	
Conversion time*1 (Operation at PCLK = 50 MHz)	AN0 to AN7	Permissible signal source impedance (max.) = 1.0 kΩ	1.0 (0.4)*2	—	—	μs	Sampling in 20 states
	Other channels	Permissible signal source impedance (max.) = 1.0 kΩ, AVCC ≥ 3.0 V	2.0 (1.4)*2	—	—	μs	Sampling in 70 states
		Permissible signal source impedance (max.) = 1.0 kΩ, AVCC ≥ 2.7 V	5.6 (5.0)*2	—	—	μs	Sampling in 250 states
Analog input capacitance			—	—	30	pF	
Offset error			—	±2.0	±7.5	LSB	
Full-scale error			—	±2.0	±7.5	LSB	
Quantization error			—	±0.5	—	LSB	
Absolute accuracy			—	±2.5	±8.0	LSB	
DNL differential nonlinearity error			—	±2.0	±4.0	LSB	
INL integral nonlinearity error			—	±2.0	±4.0	LSB	

Note: The above specification values apply when there is no access to the external bus during A/D conversion. If access proceeds during A/D conversion, values may not fall within the above ranges.

Note 1. The conversion time includes the sampling time and the comparison time. As the test conditions, the number of sampling states is indicated.

Note 2. The value in parentheses indicates the sampling time.

Table 5.30 A/D Internal Reference Voltage CharacteristicsConditions: $V_{CC} = AVCC0 = VREFH = VCC_USB = 2.7$ to 3.6 V, $VREFH0 = 2.7$ V to $AVCC0$ $VSS = AVSS0 = VREFL/VREFL0 = VSS_USB = 0$ V $PCLK = 8$ to 50 MHz $T_a = T_{opr}$

Item	Min.	Typ.	Max.	Unit	Test Conditions
A/D Internal reference voltage	1.45	1.50	1.55	V	

5.6 D/A Conversion Characteristics

Table 5.31 D/A Conversion Characteristics

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

Item	Min.	Typ.	Max.	Unit	Test Conditions
Resolution	10	10	10	Bit	
Conversion time	—	—	3.0	μ s	20-pF capacitive load
Absolute accuracy	—	± 2.0	± 4.0	LSB	2-M Ω resistive load
	—	—	± 3.0	LSB	4-M Ω resistive load
	—	—	± 2.0	LSB	10-M Ω resistive load
RO output resistance	—	3.6	—	k Ω	

5.7 Temperature Sensor Characteristics

Table 5.32 Temperature Sensor Characteristics

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

Item	Min.	Typ.	Max.	Unit	Test Conditions
Relative accuracy	—	± 1	—	$^{\circ}$ C	
Temperature slope	—	4.1	—	mV/ $^{\circ}$ C	
Output voltage (@25 $^{\circ}$ C)	—	1.26	—	V	
Temperature sensor start time	—	—	30	μ s	
Sampling time	—	—	5	μ s	

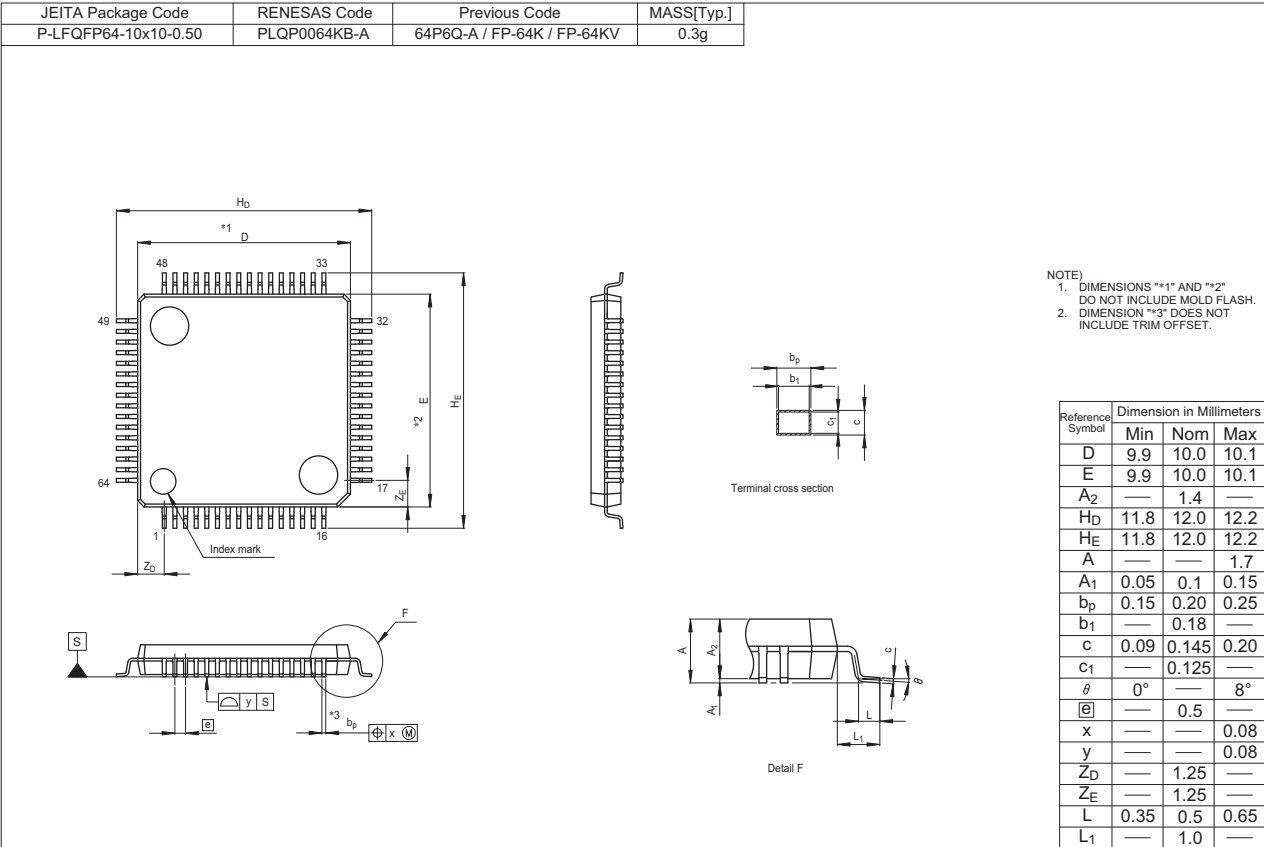


Figure I 64-pin LQFP (PLQP0064KB-A)