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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 "[Embedded - Microcontrollers](#)"

Details

Product Status	Active
Core Processor	FR60 RISC
Core Size	32-Bit Single-Core
Speed	96MHz
Connectivity	CANbus, EBI/EMI, I ² C, LINbus, UART/USART
Peripherals	DMA, LVD, PWM, WDT
Number of I/O	170
Program Memory Size	1.0625MB (1.0625M x 8)
Program Memory Type	FLASH
EEPROM Size	-
RAM Size	72K x 8
Voltage - Supply (Vcc/Vdd)	3V ~ 5.5V
Data Converters	A/D 24x10b
Oscillator Type	External
Operating Temperature	-40°C ~ 105°C (TA)
Mounting Type	Surface Mount
Package / Case	208-BQFP
Supplier Device Package	208-QFP (28x28)
Purchase URL	https://www.e-xfl.com/product-detail/infineon-technologies/cy91f467dbpfvs-gs-uje2

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Pin No.	Pin Name	I/O	I/O Circuit Type*	Function
132 to 135	P17_4 to P17_7	I/O	A	General-purpose input/output ports
	PPG4 to PPG7			Output pins of PPG timer
136 to 139	P16_0 to P16_3	I/O	A	General-purpose input/output ports
	PPG8 to PPG11			PPG timer output pins
140	P16_4	I/O	A	General-purpose input/output port
	PPG12			Output pin of PPG timer
	SGA			SGA output pin of sound generator
141	P16_5	I/O	A	General-purpose input/output port
	PPG13			Output pin of PPG timer
	SGO			SGO output pin of sound generator
142	P16_6	I/O	A	General-purpose input/output port
	PPG14			Output pin of PPG timer
	PFM			Pulse frequency modulator output pin
143	P16_7	I/O	A	General-purpose input/output port
	PPG15			PPG timer output pin
	ATGX			A/D converter external trigger input pin
147	ALARM_0	I	N	Alarm comparator input pin
148 to 155	P29_0 to P29_7	I/O	B	General-purpose input/output ports
	AN0 to AN7			Analog input pins of A/D converter
158	P27_0	I/O	F	General-purpose input/output port
	SMC1P0			Controller output pin of Stepper motor
	AN16			Analog input pin of A/D converter
159	P27_1	I/O	F	General-purpose input/output port
	SMC1M0			Controller output pin of Stepper motor
	AN17			Analog input pin of A/D converter
160	P27_2	I/O	F	General-purpose input/output port
	SMC2P0			Controller output pin of Stepper motor
	AN18			Analog input pin of A/D converter
161	P27_3	I/O	F	General-purpose input/output port
	SMC2M0			Controller output pin of Stepper motor
	AN19			Analog input pin of A/D converter
164	P27_4	I/O	F	General-purpose input/output port
	SMC1P1			Controller output pin of Stepper motor
	AN20			Analog input pin of A/D converter

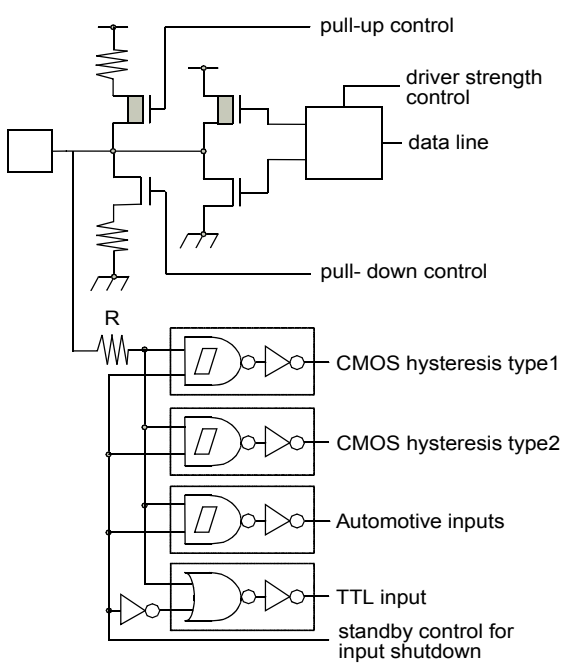
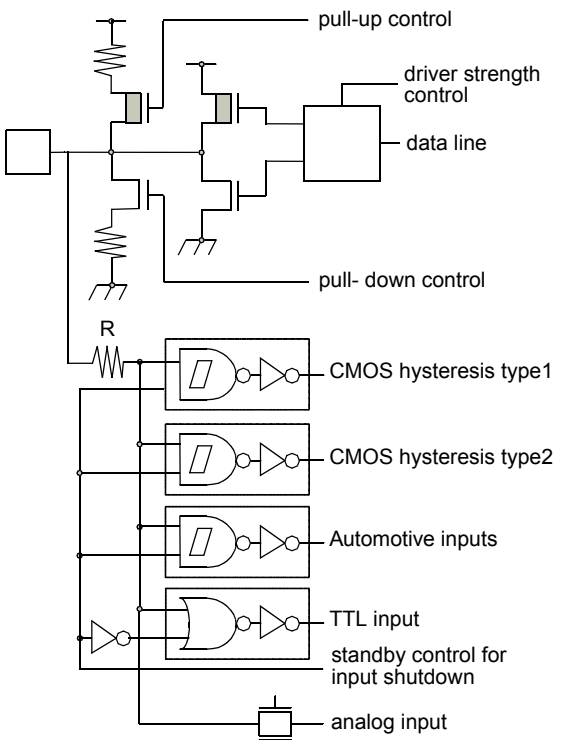
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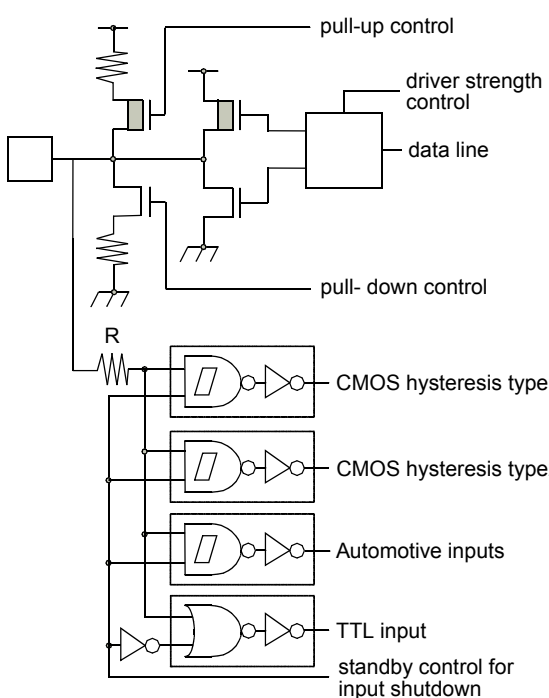
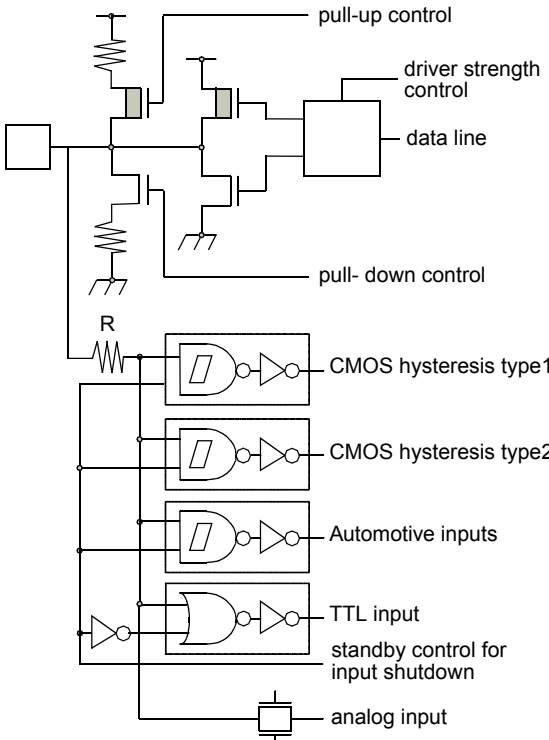
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Pin No.	Pin Name	I/O	I/O Circuit Type*	Function
178	P25_0	I/O	E	General-purpose input/output port
	SMC1P4			Controller output pin of Stepper motor
179	P25_1	I/O	E	General-purpose input/output port
	SMC1M4			Controller output pin of Stepper motor
180	P25_2	I/O	E	General-purpose input/output port
	SMC2P4			Controller output pin of Stepper motor
181	P25_3	I/O	E	General-purpose input/output port
	SMC2M4			Controller output pin of Stepper motor
184	P25_4	I/O	E	General-purpose input/output port
	SMC1P5			Controller output pin of Stepper motor
185	P25_5	I/O	E	General-purpose input/output port
	SMC1M5			Controller output pin of Stepper motor
186	P25_6	I/O	E	General-purpose input/output port
	SMC2P5			Controller output pin of Stepper motor
187	P25_7	I/O	E	General-purpose input/output port
	SMC2M5			Controller output pin of Stepper motor
189	P13_0	I/O	A	General-purpose input/output port
	DREQ0			DMA external transfer request input
190	P13_1	I/O	A	General-purpose input/output port
	DACKX0			DMA external transfer acknowledge output pin
191	P13_2	I/O	A	General-purpose input/output port
	DEOTX0			DMA external transfer EOT (End of Track) output pin
	DEOP0			DMA external transfer EOP (End of Process) output pin
192 to 199	P03_0 to P03_7	I/O	A	General-purpose input/output ports
	D0 to D7			Signal pins of external data bus (bit0 to bit7)
200 to 207	P02_0 to P02_7	I/O	A	General-purpose input/output ports
	D8 to D15			Signal pins of external data bus (bit8 to bit15)

* : For information about the I/O circuit type, refer to "4. I/O Circuit Types".

4. I/O Circuit Types

Type	Circuit	Remarks
A		CMOS level output (programmable $I_{OL} = 5\text{mA}$, $I_{OH} = -5\text{mA}$ and $I_{OL} = 2\text{mA}$, $I_{OH} = -2\text{mA}$) 2 different CMOS hysteresis inputs with input shutdown function Automotive input with input shutdown function TTL input with input shutdown function Programmable pull-up resistor: 50kΩ approx.
B		CMOS level output (programmable $I_{OL} = 5\text{mA}$, $I_{OH} = -5\text{mA}$ and $I_{OL} = 2\text{mA}$, $I_{OH} = -2\text{mA}$) 2 different CMOS hysteresis inputs with input shutdown function Automotive input with input shutdown function TTL input with input shutdown function Programmable pull-up resistor: 50kΩ approx. Analog input

Type	Circuit	Remarks
E	 pull-up control driver strength control data line pull-down control R CMOS hysteresis type1 CMOS hysteresis type2 Automotive inputs TTL input standby control for input shutdown	CMOS level output (programmable $I_{OL} = 5\text{mA}$, $I_{OH} = -5\text{mA}$ and $I_{OL} = 2\text{mA}$, $I_{OH} = -2\text{mA}$, and $I_{OL} = 30\text{mA}$, $I_{OH} = -30\text{mA}$) 2 different CMOS hysteresis inputs with input shutdown function Automotive input with input shutdown function TTL input with input shutdown function Programmable pull-up resistor: 50kΩ approx.
F	 pull-up control driver strength control data line pull-down control R CMOS hysteresis type1 CMOS hysteresis type2 Automotive inputs TTL input standby control for input shutdown analog input	CMOS level output (programmable $I_{OL} = 5\text{mA}$, $I_{OH} = -5\text{mA}$ and $I_{OL} = 2\text{mA}$, $I_{OH} = -2\text{mA}$, and $I_{OL} = 30\text{mA}$, $I_{OH} = -30\text{mA}$) 2 different CMOS hysteresis inputs with input shutdown function Automotive input with input shutdown function TTL input with input shutdown function Programmable pull-up resistor: 50kΩ approx. Analog input

Flash Memory Map CY91F465DA

Addr									
0014:FFFFh 0014:C000h	SA6 (8KB)				SA7 (8KB)				ROMS7
0014:BFFFh 0014:8000h	SA4 (8KB)				SA5 (8KB)				
0014:7FFFh 0014:4000h	SA2 (8KB)				SA3 (8KB)				
0014:3FFFh 0014:0000h	SA0 (8KB)				SA1 (8KB)				
0013:FFFFh 0012:0000h	SA22 (64KB)				SA23 (64KB)				ROMS6
0011:FFFFh 0010:0000h	SA20 (64KB)				SA21 (64KB)				
000F:FFFFh 000E:0000h	SA18 (64KB)				SA19 (64KB)				ROMS5
000D:FFFFh 000C:0000h	SA16 (64KB)				SA17 (64KB)				ROMS4
000B:FFFFh 000A:0000h	SA14 (64KB)				SA15 (64KB)				ROMS3
0009:FFFFh 0008:0000h	SA12 (64KB)				SA13 (64KB)				ROMS2
0007:FFFFh 0006:0000h	SA10 (64KB)				SA11 (64KB)				ROMS1
0005:FFFFh 0004:0000h	SA8 (64KB)				SA9 (64KB)				ROMS0
	addr+0	addr+1	addr+2	addr+3	addr+4	addr+5	addr+6	addr+7	
16bit read/write	dat[31:16]		dat[15:0]		dat[31:16]		dat[15:0]		
32bit read	dat[31:0]				dat[31:0]				
Legend	Memory not available in this area				Memory available in this area				

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Address	Register				Block
	+ 0	+ 1	+ 2	+ 3	
0000A0 _H	PWC22 [R/W] ----- XX XXXXXXXX		PWC12 [R/W] ----- XX XXXXXXXX		Stepper Motor 2
0000A4 _H	Reserved		PWS22 [R/W] -0000000	PWS12 [R/W] - -000000	
0000A8 _H	PWC23 [R/W] ----- XX XXXXXXXX		PWC13 [R/W] ----- XX XXXXXXXX		Stepper Motor 3
0000AC _H	Reserved		PWS23 [R/W] -0000000	PWS13 [R/W] - -000000	
0000B0 _H	PWC24 [R/W] ----- XX XXXXXXXX		PWC14 [R/W] ----- XX XXXXXXXX		Stepper Motor 4
0000B4 _H	Reserved		PWS24 [R/W] -0000000	PWS14 [R/W] - -000000	
0000B8 _H	PWC25 [R/W] ----- XX XXXXXXXX		PWC15 [R/W] ----- XX XXXXXXXX		Stepper Motor 5
0000BC _H	Reserved		PWS25 [R/W] -0000000	PWS15 [R/W] - -000000	
0000C0 _H	Reserved	PWC0 [R/W] -00000--	Reserved	PWC1 [R/W] -00000--	Stepper Motor Control 0 to 5
0000C4 _H	Reserved	PWC2 [R/W] -00000--	Reserved	PWC3 [R/W] -00000--	
0000C8 _H	Reserved	PWC4 [R/W] -00000--	Reserved	PWC5 [R/W] -00000--	
0000CC _H	Reserved				Reserved
0000D0 _H	IBCR0 [R/W] 00000000	IBSR0 [R] 00000000	ITBAH0 [R/W] ----- 00	ITBAL0 [R/W] 00000000	I ² C 0
0000D4 _H	ITMKH0 [R/W] 00 ---- 11	ITMKL0 [R/W] 11111111	ISMK0 [R/W] 01111111	ISBA0 [R/W] - 0000000	
0000D8 _H	Reserved	IDAR0 [R/W] 00000000	ICCR0 [R/W] 00011111	Reserved	
0000DC _H to 000100 _H	Reserved				Reserved
000104 _H	GCN11 [R/W] 00110010 00010000		Reserved	GCN21 [R/W] ---- 0000	PPG Control 4 to 7
000108 _H	GCN12 [R/W] 00110010 00010000		Reserved	GCN22 [R/W] ---- 0000	PPG Control 8 to 11
000110 _H to 00012C _H	Reserved				Reserved

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Address	Register				Block
	+ 0	+ 1	+ 2	+ 3	
000180 _H	Reserved	ICS01 [R/W] 00000000	Reserved	ICS23 [R/W] 00000000	Input Capture 0 to 3
000184 _H	IPCP0 [R] XXXXXXXX XXXXXXXX		IPCP1 [R] XXXXXXXX XXXXXXXX		
000188 _H	IPCP2 [R] XXXXXXXX XXXXXXXX		IPCP3 [R] XXXXXXXX XXXXXXXX		
00018C _H	OCS01 [R/W] --- 0 -- 00 0000 -- 00		OCS23 [R/W] --- 0 -- 00 0000 -- 00		Output Compare 0 to 3
000190 _H	OCCP0 [R/W] XXXXXXXX XXXXXXXX		OCCP1 [R/W] XXXXXXXX XXXXXXXX		
000194 _H	OCCP2 [R/W] XXXXXXXX XXXXXXXX		OCCP3 [R/W] XXXXXXXX XXXXXXXX		
000198 _H	SGCRH [R/W] 0000 -- 00	SGCRL [R/W] -- 0 -- 000	SGFR [R/W, R] XXXXXXXX XXXXXXXX		Sound Generator
00019C _H	SGAR [R/W] 00000000	Reserved	SGTR [R/W] XXXXXXXX	SGDR [R/W] XXXXXXXX	
0001A0 _H	ADERH [R/W] 00000000 00000000		ADERL [R/W] 00000000 00000000		A/D Converter
0001A4	ADCS1 [R/W] 00000000	ADCS0 [R/W] 00000000	ADCR1 [R] 000000XX	ADCR0 [R] XXXXXXXX	
0001A8 _H	ADCT1 [R/W] 00010000	ADCT0 [R/W] 00101100	ADSCH [R/W] --- 00000	ADECH [R/W] --- 00000	
0001AC _H	Reserved	ACSR0 [R/W] - 11XXX00	Reserved		Alarm Comparator 0
0001B0 _H	TMRLR0 [W] XXXXXXXX XXXXXXXX		TMR0 [R] XXXXXXXX XXXXXXXX		Reload Timer 0
0001B4 _H	Reserved		TMCSRH0 [R/W] --- 00000	TMCSRL0 [R/W] 0 - 000000	
0001B8 _H	TMRLR1 [W] XXXXXXXX XXXXXXXX		TMR1 [R] XXXXXXXX XXXXXXXX		Reload Timer 1
0001BC _H	Reserved		TMCSRH1 [R/W] --- 00000	TMCSRL1 [R/W] 0 - 000000	
0001C0 _H	TMRLR2 [W] XXXXXXXX XXXXXXXX		TMR2 [R] XXXXXXXX XXXXXXXX		Reload Timer 2 (PPG 4, PPG 5)
0001C4 _H	Reserved		TMCSRH2 [R/W] --- 00000	TMCSRL2 [R/W] 0 - 000000	

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Address	Register				Block
	+ 0	+ 1	+ 2	+ 3	
000640 _H	ASR0 [R/W] 00000000 00000000		ACR0 [R/W] 1111**00 00100000*2		External Bus
000644 _H	ASR1 [R/W] XXXXXXXX XXXXXXXX		ACR1 [R/W] XXXXXXXX XXXXXXXX		
000648 _H	ASR2 [R/W] XXXXXXXX XXXXXXXX		ACR2 [R/W] XXXXXXXX XXXXXXXX		
00064C _H	ASR3 [R/W] XXXXXXXX XXXXXXXX		ACR3 [R/W] XXXXXXXX XXXXXXXX		
000650 _H	ASR4 [R/W] XXXXXXXX XXXXXXXX		ACR4 [R/W] XXXXXXXX XXXXXXXX		
000654 _H	ASR5 [R/W] XXXXXXXX XXXXXXXX		ACR5 [R/W] XXXXXXXX XXXXXXXX		
000658 _H	ASR6 [R/W] XXXXXXXX XXXXXXXX		ACR6 [R/W] XXXXXXXX XXXXXXXX		
00065C _H	ASR7 [R/W] XXXXXXXX XXXXXXXX		ACR7 [R/W] XXXXXXXX XXXXXXXX		
000660 _H	AWR0 [R/W] 01001111 11111011		AWR1 [R/W] XXXXXXXX XXXXXXXX		
000664 _H	AWR2 [R/W] XXXXXXXX XXXXXXXX		AWR3 [R/W] XXXXXXXX XXXXXXXX		
000668 _H	AWR4 [R/W] XXXXXXXX XXXXXXXX		AWR5 [R/W] XXXXXXXX XXXXXXXX		
00066C _H	AWR6 [R/W] XXXXXXXX XXXXXXXX		AWR7 [R/W] XXXXXXXX XXXXXXXX		
000670 _H	MCRA [R/W] XXXXXXXX	MCRB [R/W] XXXXXXXX	Reserved		
000674 _H	Reserved				
000678 _H	IORW0 [R/W] XXXXXXXX	IORW1 [R/W] XXXXXXXX	IORW2 [R/W] XXXXXXXX	Reserved	
00067C _H	Reserved				
000680 _H	CSER [R/W] 00000001	CHER [R/W] 11111111	Reserved	TCR [R/W] 0000**** *3	
000684 _H	RCRH [R/W] 00XXXXXX	RCRL [R/W] XXXX0XXX	Reserved		
000688 _H to 0007F8 _H	Reserved				
0007FC _H	Reserved	MODR [W] XXXXXXXX	Reserved		Mode Register

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Address	Register				Block
	+ 0	+ 1	+ 2	+ 3	
000800 _H to 000CFC _H	Reserved				Reserved
000D00 _H	PDRD00 [R] XXXXXXXX	PDRD01 [R] XXXXXXXX	PDRD02 [R] XXXXXXXX	PDRD03 [R] XXXXXXXX	R-bus Port Data Direct Read Register
000D04 _H	PDRD04 [R] ----- XX	PDRD05 [R] XXXXXXXX	PDRD06 [R] XXXXXXXX	PDRD07 [R] XXXXXXXX	
000D08 _H	PDRD08 [R] XXXXXXXX	PDRD09 [R] XX - - XXXX	PDRD10 [R] - XXXXXX -	Reserved	
000D0C _H	Reserved	PDRD13 [R] ----- XXX	PDRD14 [R] XXXXXXXX	PDRD15 [R] ---- XXXX	
000D10 _H	PDRD16 [R] XXXXXXXX	PDRD17 [R] XXXX ----	PDRD18 [R] - XXX - XXX	PDRD19 [R] - XXX - XXX	
000D14 _H	PDRD20 [R] ----- XXX	Reserved	PDRD22 [R] -- XX - X - X	PDRD23 [R] -- XXXXXX	
000D18 _H	PDRD24 [R] XXXXXXXX	PDRD25 [R] XXXXXXXX	PDRD26 [R] XXXXXXXX	PDRD27 [R] XXXXXXXX	
000D1C _H	Reserved	PDRD29 [R] XXXXXXXX	Reserved		
000D20 _H to 000D3C _H	Reserved				Reserved
000D40 _H	DDR00 [R/W] 00000000	DDR01 [R/W] 00000000	DDR02 [R/W] 00000000	DDR03 [R/W] 00000000	R-bus Port Direction Register
000D44 _H	DDR04 [R/W] ----- 00	DDR05 [R/W] 00000000	DDR06 [R/W] 00000000	DDR07 [R/W] 00000000	
000D48 _H	DDR08 [R/W] 00000000	DDR09 [R/W] 00 -- 0000	DDR10 [R/W] - 000000 -	Reserved	
000D4C _H	Reserved	DDR13 [R/W] ----- 000	DDR14 [R/W] 00000000	DDR15 [R/W] ---- 0000	
000D50 _H	DDR16 [R/W] 00000000	DDR17 [R/W] 0000 ----	DDR18 [R/W] - 000 - 000	DDR19 [R/W] - 000 - 000	
000D54 _H	DDR20 [R/W] ----- 000	Reserved	DDR22 [R/W] -- 00 - 0 - 0	DDR23 [R/W] -- 000000	
000D58 _H	DDR24 [R/W] 00000000	DDR25 [R/W] 00000000	DDR26 [R/W] 00000000	DDR27 [R/W] 00000000	
000D5C _H	Reserved	DDR29 [R/W] 00000000	Reserved		
000D60 _H to 000D7C _H	Reserved				Reserved

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Address	Register				Block
	+ 0	+ 1	+ 2	+ 3	
000E00 _H	PODR00 [R/W] 00000000	PODR01 [R/W] 00000000	PODR02 [R/W] 00000000	PODR03 [R/W] 00000000	R-bus Port Output Drive Select Register
000E04 _H	PODR04 [R/W] ----- 00	PODR05 [R/W] 00000000	PODR06 [R/W] 00000000	PODR07 [R/W] 00000000	
000E08 _H	PODR08 [R/W] 00000000	PODR09 [R/W] 00 -- 0000	PODR10 [R/W] - 000000 -	Reserved	
000E0C _H	Reserved	PODR13 [R/W] ----- 000	PODR14 [R/W] 00000000	PODR15 [R/W] ---- 0000	
000E10 _H	PODR16 [R/W] 00000000	PODR17 [R/W] 0000 ----	PODR18 [R/W] - 000 - 000	PODR19 [R/W] - 000 - 000	
000E14 _H	PODR20 [R/W] ----- 000	Reserved	PODR22 [R/W] -- 00 - 0 - 0	PODR23 [R/W] -- 000000	
000E18 _H	PODR24 [R/W] 00000000	PODR25 [R/W] 00000000	PODR26 [R/W] 00000000	PODR27 [R/W] 00000000	
000E1C _H	Reserved	PODR29 [R/W] 00000000	Reserved		
000E20 _H to 000E3C _H	Reserved				Reserved
000E40 _H	PILR00 [R/W] 00000000	PILR01 [R/W] 00000000	PILR02 [R/W] 00000000	PILR03 [R/W] 00000000	R-bus Port Input Level Select Register
000E44 _H	PILR04 [R/W] ----- 00	PILR05 [R/W] 00000000	PILR06 [R/W] 00000000	PILR07 [R/W] 00000000	
000E48 _H	PILR08 [R/W] 00000000	PILR09 [R/W] 00 -- 0000	PILR10 [R/W] - 000000 -	Reserved	
000E4C _H	Reserved	PILR13 [R/W] ----- 000	PILR14 [R/W] 00000000	PILR15 [R/W] ---- 0000	
000E50 _H	PILR16 [R/W] 00000000	PILR17 [R/W] 0000 ----	PILR18 [R/W] - 000 - 000	PILR19 [R/W] - 000 - 000	
000E54 _H	PILR20 [R/W] ----- 000	Reserved	PILR22 [R/W] -- 00 - 0 - 0	PILR23 [R/W] -- 000000	
000E58 _H	PILR24 [R/W] 00000000	PILR25 [R/W] 00000000	PILR26 [R/W] 00000000	PILR27 [R/W] 00000000	
000E5C _H	Reserved	PILR29 [R/W] 00000000	Reserved		
000E60 _H to 000E7C _H	Reserved				Reserved

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Address	Register				Block
	+ 0	+ 1	+ 2	+ 3	
000E80 _H	EPILR00 [R/W] 00000000	EPILR01 [R/W] 00000000	EPILR02 [R/W] 00000000	EPILR03 [R/W] 00000000	R-bus Extra Port Input Level Select Register
000E84 _H	EPILR04 [R/W] ----- 00	EPILR05 [R/W] 00000000	EPILR06 [R/W] 00000000	EPILR07 [R/W] 00000000	
000E88 _H	EPILR08 [R/W] 00000000	EPILR09 [R/W] 00 -- 0000	EPILR10 [R/W] - 000000 -	Reserved	
000E8C _H	Reserved	EPILR13 [R/W] ----- 000	EPILR14 [R/W] 00000000	EPILR15 [R/W] ---- 0000	
000E90 _H	EPILR16 [R/W] 00000000	EPILR17 [R/W] 0000 ----	EPILR18 [R/W] - 000 - 000	EPILR19 [R/W] - 000 - 000	
000E94 _H	EPILR20 [R/W] ----- 000	Reserved	EPILR22 [R/W] -- 00 - 0 - 0	EPILR23 [R/W] -- 000000	
000E98 _H	EPILR24 [R/W] 00000000	EPILR25 [R/W] 00000000	EPILR26 [R/W] 00000000	EPILR27 [R/W] 00000000	
000E9C _H	Reserved	EPILR29 [R/W] 00000000	Reserved		
000EA0 _H to 000EBC _H	Reserved				Reserved
000EC0 _H	PPER00 [R/W] 00000000	PPER01 [R/W] 00000000	PPER02 [R/W] 00000000	PPER03 [R/W] 00000000	R-bus Port Pull-Up/Down Enable Register
000EC4 _H	PPER04 [R/W] ----- 00	PPER05 [R/W] 00000000	PPER06 [R/W] 00000000	PPER07 [R/W] 00000000	
000EC8 _H	PPER08 [R/W] 00000000	PPER09 [R/W] 00 -- 0000	PPER10 [R/W] - 000000 -	Reserved	
000ECC _H	Reserved	PPER13 [R/W] ----- 000	PPER14 [R/W] 00000000	PPER15 [R/W] ---- 0000	
000ED0 _H	PPER16 [R/W] 00000000	PPER17 [R/W] 0000 ----	PPER18 [R/W] - 000 - 000	PPER19 [R/W] - 000 - 000	
000ED4 _H	PPER20 [R/W] ----- 000	Reserved	PPER22 [R/W] -- 00 - 0 - 0	PPER23 [R/W] -- 000000	
000ED8 _H	PPER24 [R/W] 00000000	PPER25 [R/W] 00000000	PPER26 [R/W] 00000000	PPER27 [R/W] 00000000	
000EDC _H	Reserved	PPER29 [R/W] 00000000	Reserved		
000EE0 _H to 000EFC _H	Reserved				Reserved

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Address	Register				Block
	+ 0	+ 1	+ 2	+ 3	
00C2B4 _H to 00EFFC _H	Reserved				Reserved
00F000 _H	BCTRL [R/W] ----- 11111100 00000000				EDSU / MPU
00F004 _H	BSTAT [R/W] ----- 000 00000000 10 -- 0000				
00F008 _H	BIAC [R] ----- 00000000 00000000				
00F00C _H	BOAC [R] ----- 00000000 00000000				
00F010 _H	BIRQ [R/W] ----- 00000000 00000000				
00F014 _H to 00F01C _H	Reserved				
00F020 _H	BCR0 [R/W] ----- 00000000 00000000 00000000				
00F024 _H	BCR1 [R/W] ----- 00000000 00000000 00000000				
00F028 _H	BCR2 [R/W] ----- 00000000 00000000 00000000				
00F02C _H	BCR3 [R/W] ----- 00000000 00000000 00000000				
00F030 _H to 00F07C _H	Reserved				Reserved
00F080 _H	BAD0 [R/W] XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				EDSU / MPU
00F084 _H	BAD1 [R/W] XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
00F088 _H	BAD2 [R/W] XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
00F08C _H	BAD3 [R/W] XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
00F090 _H	BAD4 [R/W] XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
00F094 _H	BAD5 [R/W] XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
00F098 _H	BAD6 [R/W] XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				

(Continued)

Address	Register				Block
	+ 0	+ 1	+ 2	+ 3	
00F09C _H	BAD7 [R/W] XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				EDSU / MPU
00F0A0 _H	BAD8 [R/W] XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
00F0A4 _H	BAD9 [R/W] XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
00F0A8 _H	BAD10 [R/W] XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
00F0AC _H	BAD11 [R/W] XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
00F0B0 _H	BAD12 [R/W] XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
00F0B4 _H	BAD13 [R/W] XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
00F0B8 _H	BAD14 [R/W] XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
00F0BC _H	BAD15 [R/W] XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
00F0C0 _H to 01FFFC _H	Reserved				Reserved
020000 _H to 02FFFC _H	CY91F467Dx D-RAM size is 32 Kbytes : 028000 _H to 02FFFC _H CY91F465DA D-RAM size is 32 Kbytes : 028000 _H to 02FFFC _H (data access is 0 wait cycles)				D-RAM area
030000 _H to 03FFFC _H	CY91F467Dx ID-RAM size is 32 Kbytes : 030000 _H to 037FFC _H CY91F465DA ID-RAM size is 16 Kbytes : 030000 _H to 033FFC _H (instruction access is 0 wait cycles, data access is 1 wait cycle)				ID-RAM area

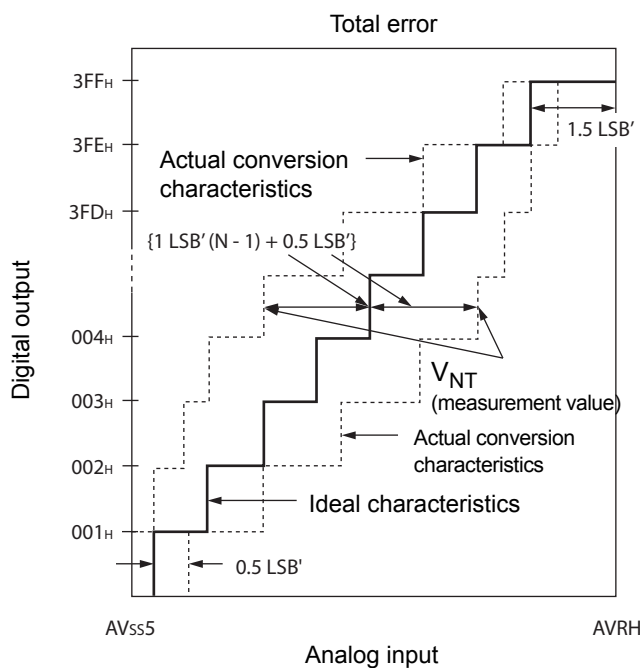
*1 : depends on the number of available CAN channels

*2 : ACR0 [11 : 10] depends on bus width setting in Mode vector fetch information

*3 : TCR [3 : 0] INIT value = 0000, keeps value after RST

- *4 : Maximum output current is defined as the value of the peak current flowing through any one of the corresponding pins.
- *5 : Average output current is defined as the value of the average current flowing through any one of the corresponding pins for a 100 ms period.
- *6 : Total average output current is defined as the value of the average current flowing through all of the corresponding pins for a 100 ms period.

WARNING: Semiconductor devices can be permanently damaged by application of stress (voltage, current, temperature, etc.) in excess of absolute maximum ratings. Do not exceed these ratings.



$$1\text{LSB}' (\text{ideal value}) = \frac{AV_{RH} - AV_{SS5}}{1024} [V]$$

$$\text{Total error of digital output } N = \frac{V_{NT} - \{1 \text{ LSB}' \times (N - 1) + 0.5 \text{ LSB}'\}}{1 \text{ LSB}'}$$

N : A/D converter digital output value

$$V_{OT}' (\text{ideal value}) = AV_{SS5} + 0.5 \text{ LSB}' [V]$$

$$V_{FST}' (\text{ideal value}) = AV_{RH} - 1.5 \text{ LSB}' [V]$$

V_{NT} : Voltage at which the digital output changes from $(N + 1)_H$ to N_H

(Continued)

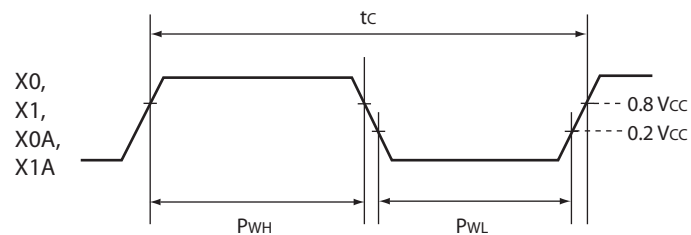
15.7 AC Characteristics

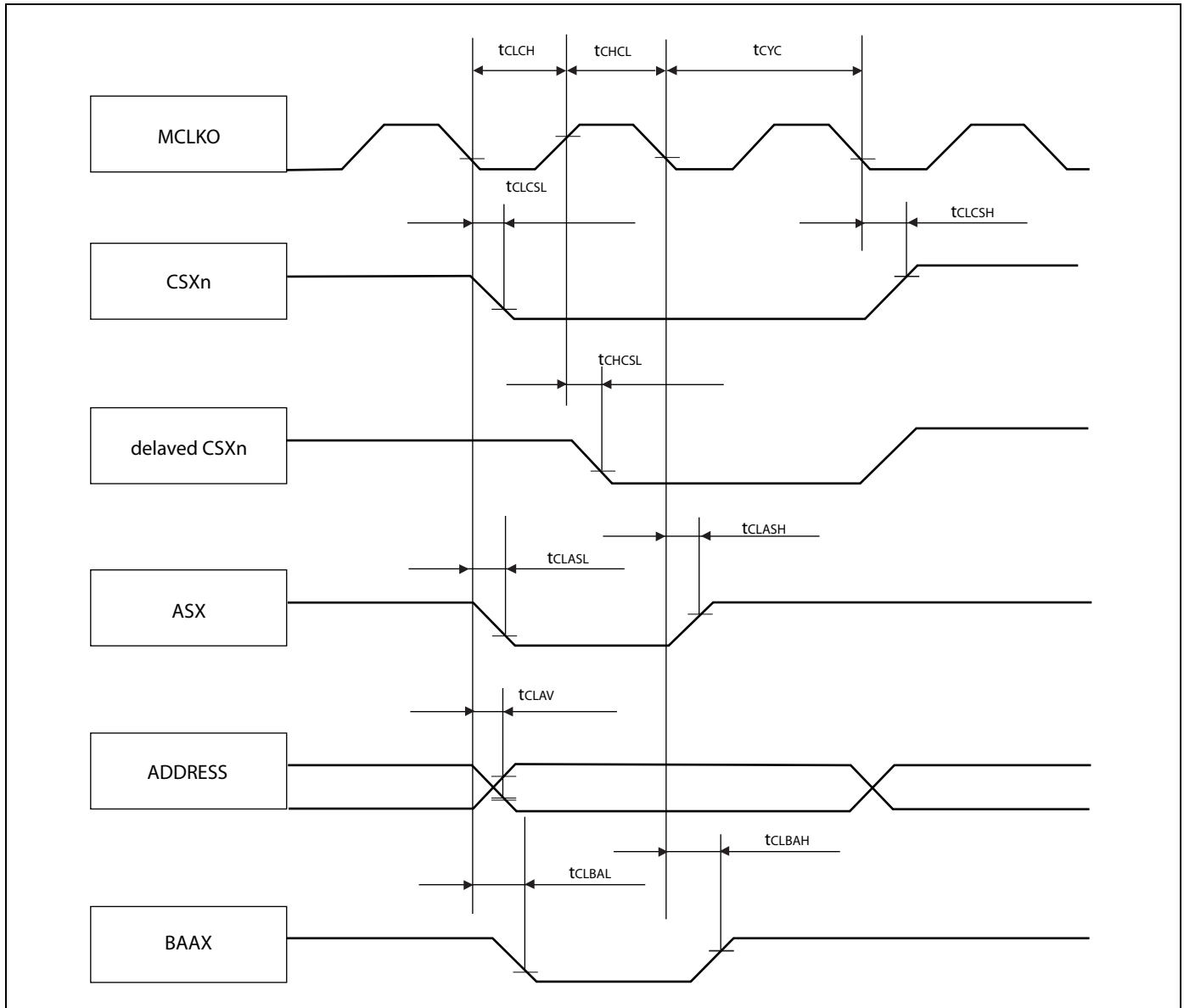
15.7.1 Clock Timing

($V_{DD5} = 3.0\text{ V to } 5.5\text{ V}$, $V_{SS5} = AV_{SS5} = 0\text{ V}$, $T_A = -40^\circ\text{C to } +105^\circ\text{C}$)

Parameter	Symbol	Pin Name	Value			Unit	Condition
			Min	Typ	Max		
Clock frequency	f_C	X0 X1	3.5	4	16	MHz	Opposite phase external supply or crystal
		X0A X1A	32	32.768	100	kHz	

Clock Timing Condition





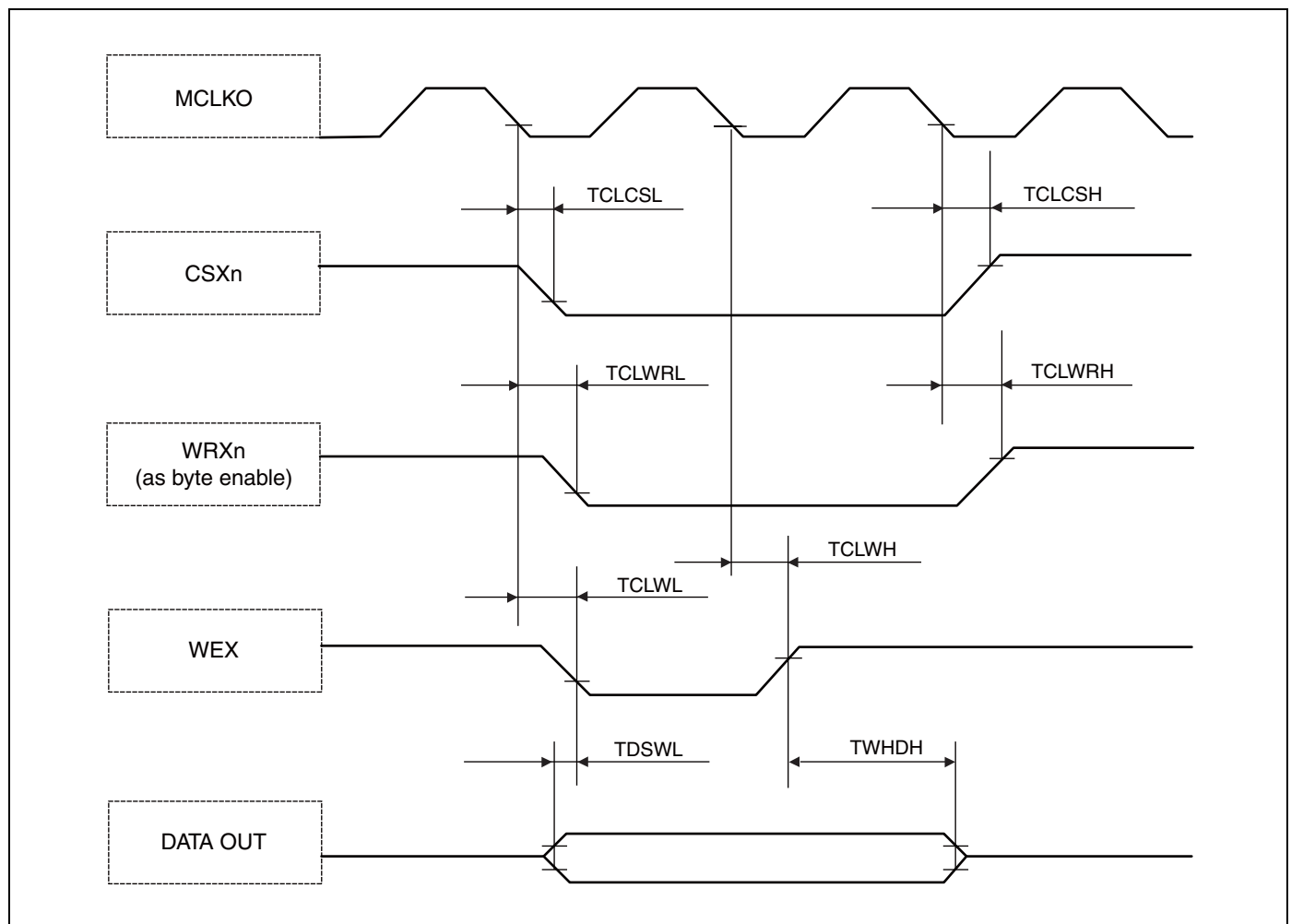
DMA Transfer
 $(V_{DD35} = 4.5 \text{ V to } 5.5 \text{ V}, V_{SS5} = AV_{SS5} = 0 \text{ V}, T_A = -40^\circ\text{C to } +105^\circ\text{C})$

Parameter	Symbol	Pin Name	Value		Unit
			Min	Max	
MCLKO ↓ to DACKX delay time	TCLDAL	MCLKO DACKXn	—	9	ns
	TCLDAH		—	6	ns
MCLKO ↓ to DEOP delay time	TCLDEL	MCLKO DEOPn	—	8	ns
	TCLDEH		—	9	ns
MCLKO ↑ to DACKX delay time (ADDR → delayed CS)	TCHDAL	MCLKO DACKXn	– 4	3	ns
MCLKO ↑ to DEOP delay time (ADDR → delayed CS)	TCHDEL	MCLKO DEOPn	– 4	3	ns
DREQ setup time	TDRQS	MCLKO DREQn	23	—	ns
DREQ hold time	TDRQH	MCLKO DREQn	0	—	ns
DEOTXn setup time	TDTXS	MCLKO DEOTXn	24	—	ns
DEOTXn hold time	TDTXH	MCLKO DEOTXn	0	—	ns

Note : DREQ and DEOTX must be applied for at least $5 \times t_{CLKT}$ to ensure that they are really sampled and evaluated.
 Under best case conditions (DMA not busy) only setup and hold times are required.

Synchronous Write Access - Byte Control Type
 $(V_{DD35} = 3.0 \text{ V to } 4.5 \text{ V}, V_{SS5} = AV_{SS5} = 0 \text{ V}, T_A = -40^{\circ}\text{C to } +105^{\circ}\text{C})$

Parameter	Symbol	Pin Name	Value		Unit
			Min	Max	
MCLKO ↓ to WEX delay time	TCLWL	MCLKO	—	7	ns
	TCLWH	WEX	1	—	ns
Data valid to WEX ↓ setup time	TDSWL	WEX D31 to D0	– 20	—	ns
WEX ↑ to Data valid hold time	TWHDH	WEX D31 to D0	$t_{CLKT} - 19$	—	ns
MCLKO ↓ to WRXn (as byte enable) delay time	TCLWRL	MCLKO	—	6	ns
	TCLWRH	WRXn	0	—	ns
MCLKO ↓ to CSXn delay time	TCLCSL	MCLKO	—	6	ns
	TCLCSH	CSXn	—	7	ns



RDY Waitcycle Insertion
 $(V_{DD35} = 3.0 \text{ V to } 4.5 \text{ V}, V_{SS5} = AV_{SS5} = 0 \text{ V}, T_A = -40^\circ\text{C to } +105^\circ\text{C})$

Parameter	Symbol	Pin Name	Value		Unit
			Min	Max	
RDY setup time	TRDYS	MCLKO RDY	37	—	ns
RDY hold time	TRDYH	MCLKO RDY	0	—	ns

