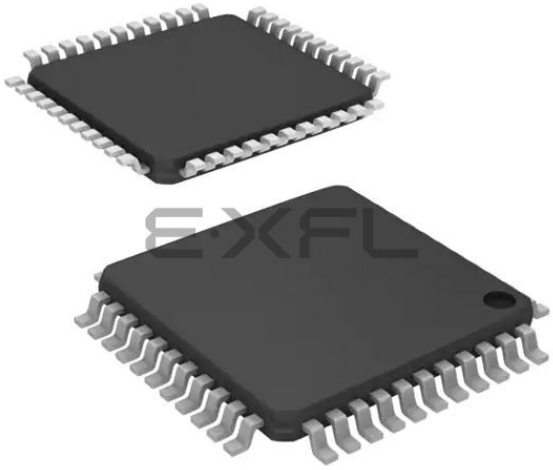

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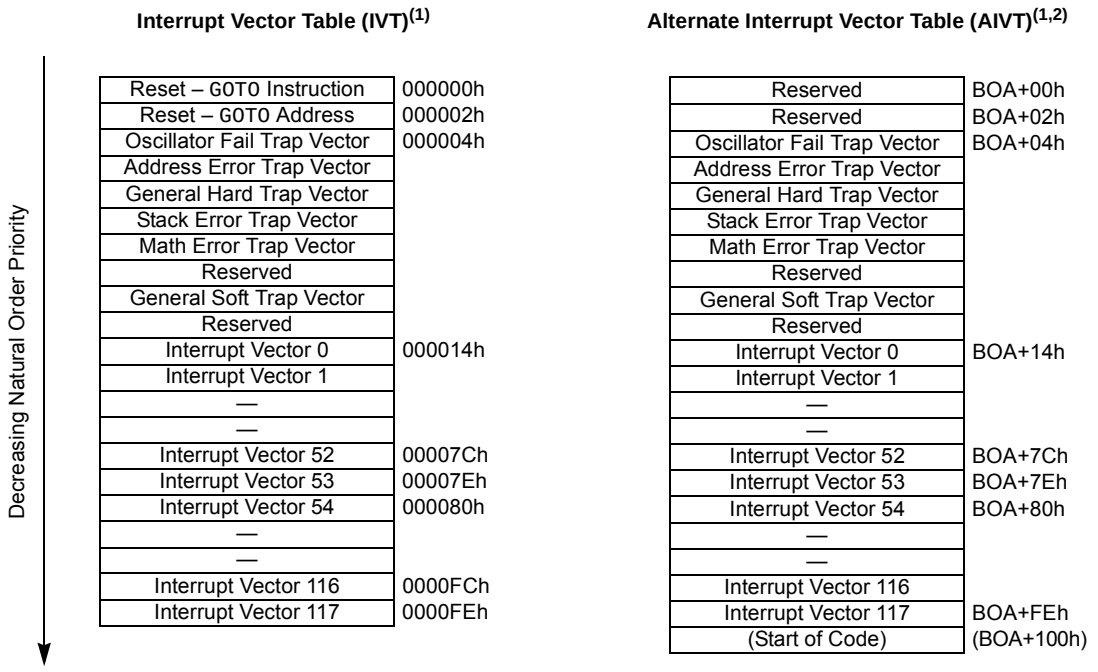
Applications of "Embedded - Microcontrollers"

Details	
Product Status	Active
Core Processor	PIC
Core Size	16-Bit
Speed	32MHz
Connectivity	I²C, IrDA, LINbus, SPI, UART/USART
Peripherals	Brown-out Detect/Reset, DMA, I²S, LVD, POR, PWM, WDT
Number of I/O	36
Program Memory Size	64KB (22K x 24)
Program Memory Type	FLASH
EEPROM Size	-
RAM Size	16K x 8
Voltage - Supply (Vcc/Vdd)	2V ~ 3.6V
Data Converters	A/D 14x12b
Oscillator Type	Internal
Operating Temperature	-40°C ~ 85°C (TA)
Mounting Type	Surface Mount
Package / Case	44-TQFP
Supplier Device Package	44-TQFP (10x10)
Purchase URL	https://www.e-xfl.com/product-detail/microchip-technology/pic24fj64ga704t-i-pt

FIGURE 8-1: PIC24F INTERRUPT VECTOR TABLES



Legend: BOA: Base Offset Address for AIVT, which is the starting address of the last page of the Boot Segment. All addresses are in hexadecimal.

Note 1: See Table 8-2 for the interrupt vector list.

2: AIVT is only available when a Boot Segment is implemented.

TABLE 8-1: TRAP VECTOR DETAILS

Vector Number	IVT Address	AIVT Address	Trap Source
0	000004h	BOA+04h	Oscillator Failure
1	000006h	BOA+06h	Address Error
2	000008h	BOA+08h	General Hardware Error
3	00000Ah	BOA+0Ah	Stack Error
4	00000Ch	BOA+0Ch	Math Error
5	00000Eh	BOA+0Eh	Reserved
6	000010h	BOA+10h	General Software Error
7	000012h	BOA+12h	Reserved

Legend: BOA = Base Offset Address for AIVT segment, which is the starting address of the last page of the Boot Segment.

TABLE 10-2: PERIPHERAL MODULE DISABLE REGISTER SUMMARY

Register	Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	All Resets
PMD1	—	—	T3MD	T2MD	T1MD	—	—	—	I2C1MD	U2MD	U1MD	SPI2MD	SPI1MD	—	—	ADCMD	0000
PMD2	—	—	—	—	—	IC3MD	IC2MD	IC1MD	—	—	—	—	—	OC3MD	OC2MD	OC1MD	0000
PMD3	—	—	—	—	—	CMPMD	RTCCMD	PMPMD	CRCMD	—	—	—	—	—	I2C2MD	—	0000
PMD4	—	—	—	—	—	—	—	—	—	—	—	—	REFOMD	CTMUMD	LVDMD	—	0000
PMD5	—	—	—	—	—	—	—	—	—	—	—	—	CCP4MD	CCP3MD	CCP2MD	CCP1MD	0000
PMD6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	SPI3MD	0000
PMD7	—	—	—	—	—	—	—	—	—	—	DMA1MD	DMA0MD	—	—	—	—	0000
PMD8	—	—	—	—	—	—	—	—	—	—	—	—	CLC2MD	CLC1MD	—	—	0000

Legend: — = unimplemented, read as '0'. Reset values are shown in hexadecimal.

11.4 I/O Port Control Registers

REGISTER 11-1: PADCON: PORT CONFIGURATION REGISTER

R/W-0	U-0	U-0	U-0	U-0	U-0	U-0	U-0
IOCON	—	—	—	—	—	—	—
bit 15							bit 8

U-0	U-0	U-0	U-0	U-0	U-0	U-0	R/W-0
—	—	—	—	—	—	—	PMPTTL
bit 7							bit 0

Legend:			
R = Readable bit	W = Writable bit	U = Unimplemented bit, read as ‘0’	
-n = Value at POR	‘1’ = Bit is set	‘0’ = Bit is cleared	x = Bit is unknown

bit 15 **IOCON:** Interrupt-on-Change Enable bit
1 = Interrupt-on-Change functionality is enabled
0 = Interrupt-on-Change functionality is disabled

bit 14-1 **Unimplemented:** Read as ‘0’

bit 0 **PMPTTL:** PMP Port Type bit
1 = TTL levels on PMP port pins
0 = Schmitt Triggers on PMP port pins

REGISTER 11-2: IOCSTAT: INTERRUPT-ON-CHANGE STATUS REGISTER

U-0	U-0	U-0	U-0	U-0	U-0	U-0	U-0
—	—	—	—	—	—	—	—
bit 15							bit 8

U-0	U-0	U-0	U-0	U-0	R/HS/HC-0	R/HS/HC-0	R/HS/HC-0
—	—	—	—	—	IOCPCF	IOCPBF	IOCPAF
bit 7							bit 0

Legend:	HS = Hardware Settable bit	Hardware Clearable bit	
R = Readable bit	W = Writable bit	U = Unimplemented bit, read as ‘0’	
-n = Value at POR	‘1’ = Bit is set	‘0’ = Bit is cleared	x = Bit is unknown

bit 15-3 **Unimplemented:** Read as ‘0’

bit 2 **IOCPCF:** Interrupt-on-Change PORTC Flag bit
1 = A change was detected on an IOC-enabled pin on PORTC
0 = No change was detected or the user has cleared all detected changes

bit 1 **IOCPBF:** Interrupt-on-Change PORTB Flag bit
1 = A change was detected on an IOC-enabled pin on PORTB
0 = No change was detected or the user has cleared all detected changes

bit 0 **IOCPAF:** Interrupt-on-Change PORTA Flag bit
1 = A change was detected on an IOC-enabled pin on PORTA
0 = No change was detected, or the user has cleared all detected change

REGISTER 11-17: RPINR5: PERIPHERAL PIN SELECT INPUT REGISTER 5

U-0	U-0	R/W-1	R/W-1	R/W-1	R/W-1	R/W-1	R/W-1
—	—	ICM2R5	ICM2R4	ICM2R3	ICM2R2	ICM2R1	ICM2R0
bit 15							bit 8

U-0	U-0	R/W-1	R/W-1	R/W-1	R/W-1	R/W-1	R/W-1
—	—	ICM1R5	ICM1R4	ICM1R3	ICM1R2	ICM1R1	ICM1R0
bit 7							bit 0

Legend:			
R = Readable bit	W = Writable bit	U = Unimplemented bit, read as ‘0’	
-n = Value at POR	‘1’ = Bit is set	‘0’ = Bit is cleared	x = Bit is unknown

bit 15-14 **Unimplemented:** Read as ‘0’

bit 13-8 **ICM2R<5:0>:** Input Capture Mode 2 bits

bit 7-6 **Unimplemented:** Read as ‘0’

bit 5-0 **ICM1R<5:0>:** Input Capture Mode 1 bits

REGISTER 11-18: RPINR6: PERIPHERAL PIN SELECT INPUT REGISTER 6

U-0	U-0	R/W-1	R/W-1	R/W-1	R/W-1	R/W-1	R/W-1
—	—	ICM4R5	ICM4R4	ICM4R3	ICM4R2	ICM4R1	ICM4R0
bit 15							bit 8

U-0	U-0	R/W-1	R/W-1	R/W-1	R/W-1	R/W-1	R/W-1
—	—	ICM3R5	ICM3R4	ICM3R3	ICM3R2	ICM3R1	ICM3R0
bit 7							bit 0

Legend:			
R = Readable bit	W = Writable bit	U = Unimplemented bit, read as ‘0’	
-n = Value at POR	‘1’ = Bit is set	‘0’ = Bit is cleared	x = Bit is unknown

bit 15-14 **Unimplemented:** Read as ‘0’

bit 13-8 **ICM4R<5:0>:** Input Capture Mode 4 bits

bit 7-6 **Unimplemented:** Read as ‘0’

bit 5-0 **ICM3R<5:0>:** Input Capture Mode 3 bits

REGISTER 19-2: UxSTA: UARTx STATUS AND CONTROL REGISTER

R/W-0	R/W-0	R/W-0	R/W-0	R/W-0, HC	R/W-0	R-0, HSC	R-1, HSC
UTXISEL1	UTXINV(1)	UTXISEL0	URXEN	UTXBRK	UTXEN(2)	UTXBF	TRMT
bit 15							bit 8

R/W-0	R/W-0	R/W-0	R-1, HSC	R-0, HSC	R-0, HSC	R/C-0, HS	R-0, HSC
URXISEL1	URXISEL0	ADDEN	RIDLE	PERR	FERR	OERR	URXDA
bit 7							bit 0

Legend:	C = Clearable bit	HSC = Hardware Settable/Clearable bit	
R = Readable bit	W = Writable bit	U = Unimplemented bit, read as '0'	
-n = Value at POR	'1' = Bit is set	'0' = Bit is cleared	x = Bit is unknown
HS = Hardware Settable bit	HC = Hardware Clearable bit		

bit 15,13 **UTXISEL<1:0>:** UARTx Transmission Interrupt Mode Selection bits
- 11 = Reserved; do not use
- 10 = Interrupt when a character is transferred to the Transmit Shift Register (TSR), and as a result, the transmit buffer becomes empty
- 01 = Interrupt when the last character is shifted out of the Transmit Shift Register; all transmit operations are completed
- 00 = Interrupt when a character is transferred to the Transmit Shift Register (this implies there is at least one character open in the transmit buffer)

bit 14 **UTXINV:** UARTx IrDA® Encoder Transmit Polarity Inversion bit(1)

IREN = 0:
- 1 = UxTX Idle state is '0'
- 0 = UxTX Idle state is '1'

IREN = 1:
- 1 = UxTX Idle state is '1'
- 0 = UxTX Idle state is '0'

bit 12 **URXEN:** UARTx Receive Enable bit
- 1 = Receive is enabled, UxRX pin is controlled by UARTx
- 0 = Receive is disabled, UxRX pin is controlled by the port

bit 11 **UTXBRK:** UARTx Transmit Break bit
- 1 = Sends Sync Break on next transmission – Start bit, followed by twelve '0' bits, followed by Stop bit; cleared by hardware upon completion
- 0 = Sync Break transmission is disabled or completed

bit 10 **UTXEN:** UARTx Transmit Enable bit(2)
- 1 = Transmit is enabled, UxTX pin is controlled by UARTx
- 0 = Transmit is disabled, any pending transmission is aborted and the buffer is reset; UxTX pin is controlled by the port

bit 9 **UTXBF:** UARTx Transmit Buffer Full Status bit (read-only)
- 1 = Transmit buffer is full
- 0 = Transmit buffer is not full, at least one more character can be written

bit 8 **TRMT:** Transmit Shift Register Empty bit (read-only)
- 1 = Transmit Shift Register is empty and transmit buffer is empty (the last transmission has completed)
- 0 = Transmit Shift Register is not empty, a transmission is in progress or queued

Note 1: The value of this bit only affects the transmit properties of the module when the IrDA® encoder is enabled (IREN = 1).

2: If UARTEN = 1, the peripheral inputs and outputs must be configured to an available RPn/RPIn pin. For more information, see **Section 11.5 "Peripheral Pin Select (PPS)"**.

20.1 Memory Addressable in Different Modes

The memory space addressable by the device depends on the address/data multiplexing selection; it varies from 1K to 2 MB. Refer to Table 20-1 for different Memory-Addressable modes.

20.2 PMDOUT1 and PMDOUT2 Registers

The EPMP Data Output 1 and Data Output 2 registers are used only in Slave mode. These registers act as a buffer for outgoing data.

20.3 PMDIN1 and PMDIN2 Registers

The EPMP Data Input 1 and Data Input 2 registers are used in Slave modes to buffer incoming data. These registers hold data that is asynchronously clocked in. In Master mode, PMDIN1 is the holding register for incoming data.

TABLE 20-1: EPMP FEATURE DIFFERENCES BY DEVICE PIN COUNT

Data Port Size	PMA<9:8>	PMA<7:0>	PMD<7:4>	PMD<3:0>	Accessible Memory
Demultiplexed Address (ADRMUX<1:0> = 00)					
8-Bit (PTSZ<1:0> = 00)	Addr<9:8>	Addr<7:0>	Data		1K
4-Bit (PTSZ<1:0> = 01)	Addr<9:8>	Addr<7:0>	—	Data	1K
1 Address Phase (ADRMUX<1:0> = 01)					
8-Bit (PTSZ<1:0> = 00)	—	PMALL	Addr<7:0> Data		1K
4-Bit (PTSZ<1:0> = 01)	Addr<9:8>	PMALL	Addr<7:4>	Addr<3:0>	1K
			—	Data (1)	
2 Address Phases (ADRMUX<1:0> = 10)					
8-Bit (PTSZ<1:0> = 00)	—	PMALL	Addr<7:0>		64K
		PMALH	Addr<15:8>		
		—	Data		
4-Bit (PTSZ<1:0> = 01)	Addr<9:8>	PMALL	Addr<3:0>		1K
		PMALH	Addr<7:4>		
		—	Data		
3 Address Phases (ADRMUX<1:0> = 11)					
8-Bit (PTSZ<1:0> = 00)	—	PMALL	Addr<7:0>		2 Mbytes
		PMALH	Addr<15:8>		
		PMALU	Addr<22:16>		
		—	Data		
4-Bit (PTSZ<1:0> = 01)	Addr<13:12>	PMALL	Addr<3:0>		16K
		PMALH	Addr<7:4>		
		PMALU	Addr<11:8>		
		—	Data		

REGISTER 20-8: PMSTAT: EPMP STATUS REGISTER (SLAVE MODE ONLY)

R-0, HSC	R/W-0, HS	U-0	U-0	R-0, HSC	R-0, HSC	R-0, HSC	R-0, HSC
IBF	IBOV	—	—	IB3F(1)	IB2F(1)	IB1F(1)	IB0F(1)
bit 15							bit 8

R-1, HSC	R/W-0, HS	U-0	U-0	R-1, HSC	R-1, HSC	R-1, HSC	R-1, HSC
OBE	OBUF	—	—	OB3E	OB2E	OB1E	OB0E
bit 7							bit 0

Legend:	HS = Hardware Settable bit	HSC = Hardware Settable/Clearable bit	
R = Readable bit	W = Writable bit	U = Unimplemented bit, read as '0'	
-n = Value at POR	'1' = Bit is set	'0' = Bit is cleared	x = Bit is unknown

bit 15 **IBF:** Input Buffer Full Status bit
1 = All writable Input Buffer registers are full
0 = Some or all of the writable Input Buffer registers are empty

bit 14 **IBOV:** Input Buffer Overflow Status bit
1 = A write attempt to a full Input register occurred (must be cleared in software)
0 = No overflow occurred

bit 13-12 **Unimplemented:** Read as '0'

bit 11-8 **IB3F:IB0F:** Input Buffer x Status Full bits(1)
1 = Input buffer contains unread data (reading the buffer will clear this bit)
0 = Input buffer does not contain unread data

bit 7 **OBE:** Output Buffer Empty Status bit
1 = All readable Output Buffer registers are empty
0 = Some or all of the readable Output Buffer registers are full

bit 6 **OBUF:** Output Buffer Underflow Status bit
1 = A read occurred from an empty Output Buffer register (must be cleared in software)
0 = No underflow occurred

bit 5-4 **Unimplemented:** Read as '0'

bit 3-0 **OB3E:OB0E:** Output Buffer x Status Empty bits
1 = Output Buffer x is empty (writing data to the buffer will clear this bit)
0 = Output Buffer x contains untransmitted data

Note 1: Even though an individual bit represents the byte in the buffer, the bits corresponding to the word (Byte 0 and 1 or Byte 2 and 3) get cleared, even on byte reading.

22.0 32-BIT PROGRAMMABLE CYCLIC REDUNDANCY CHECK (CRC) GENERATOR

Note: This data sheet summarizes the features of this group of PIC24F devices. It is not intended to be a comprehensive reference source. For more information, refer to the *"dsPIC33/PIC24 Family Reference Manual"*, **"32-Bit Programmable Cyclic Redundancy Check (CRC)"** (DS30009729), which is available from the Microchip web site (www.microchip.com). The information in this data sheet supersedes the information in the FRM.

The 32-bit programmable CRC generator provides a hardware implemented method of quickly generating checksums for various networking and security applications. It offers the following features:

- User-Programmable CRC Polynomial Equation, up to 32 Bits
- Programmable Shift Direction (little or big-endian)
- Independent Data and Polynomial Lengths
- Configurable Interrupt Output
- Data FIFO

Figure 22-1 displays a simplified block diagram of the CRC generator. A simple version of the CRC shift engine is displayed in Figure 22-2.

FIGURE 22-1: CRC BLOCK DIAGRAM

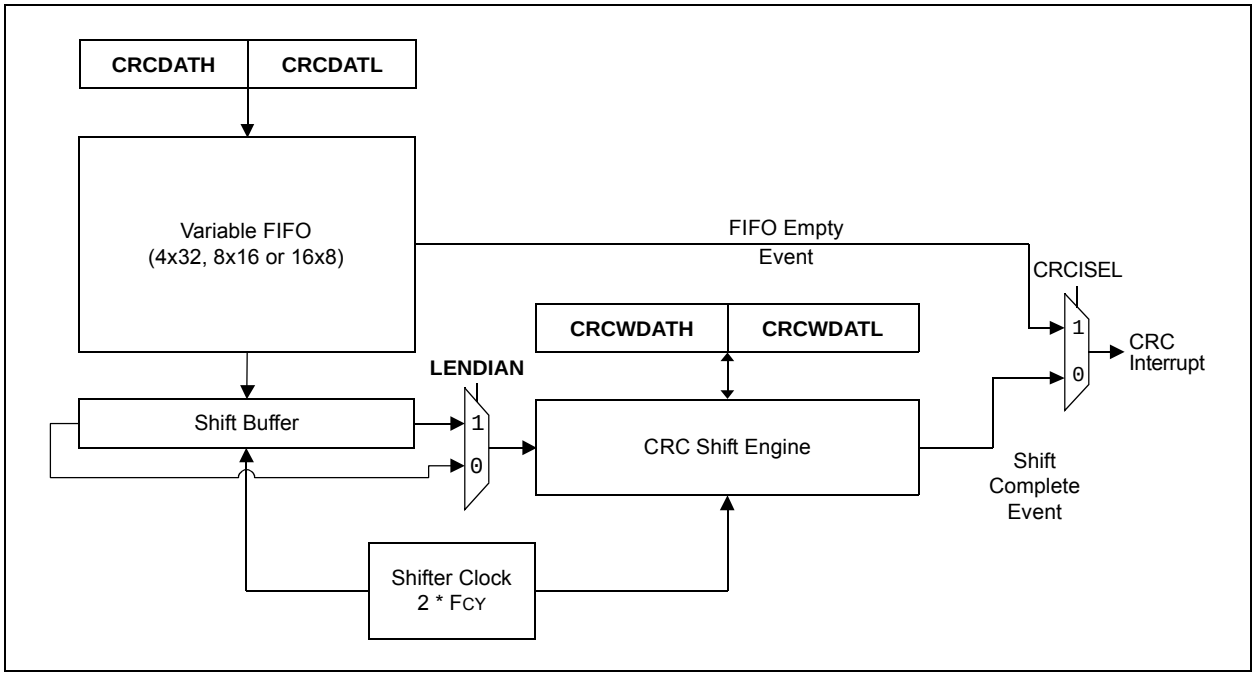
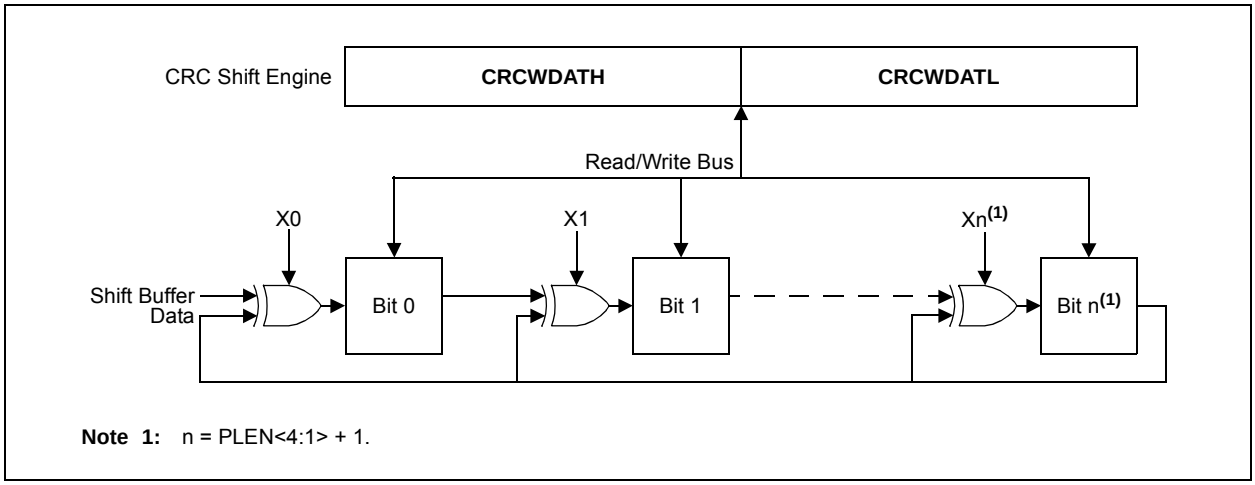


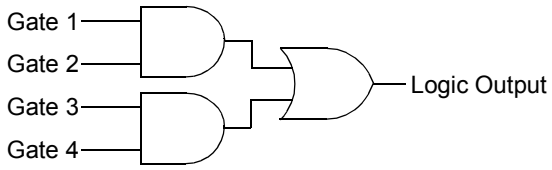
FIGURE 22-2: CRC SHIFT ENGINE DETAIL



Note 1: n = PLEN<4:1> + 1.

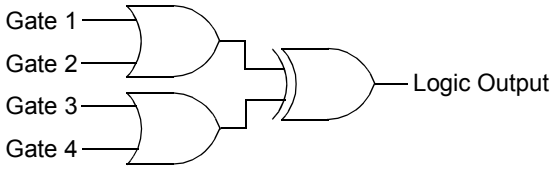
FIGURE 23-2: CLCx LOGIC FUNCTION COMBINATORIAL OPTIONS

AND – OR



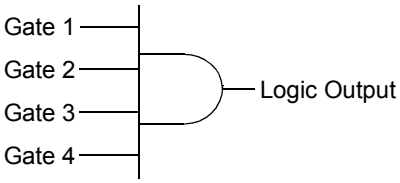
MODE<2:0> = 000

OR – XOR



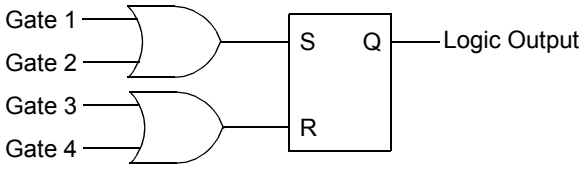
MODE<2:0> = 001

4-Input AND



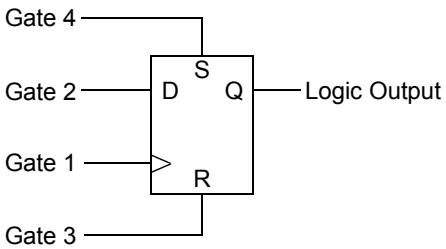
MODE<2:0> = 010

S-R Latch



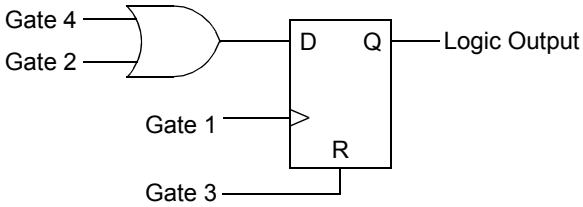
MODE<2:0> = 011

1-Input D Flip-Flop with S and R



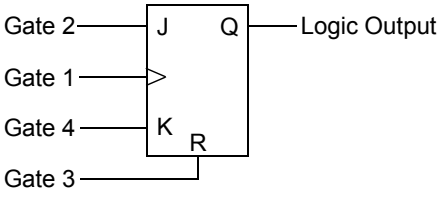
MODE<2:0> = 100

2-Input D Flip-Flop with R



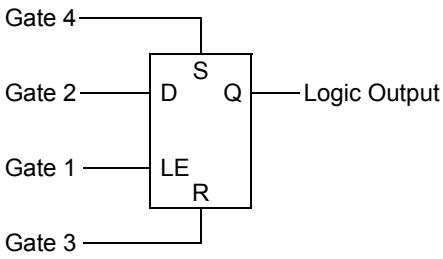
MODE<2:0> = 101

J-K Flip-Flop with R



MODE<2:0> = 110

1-Input Transparent Latch with S and R



MODE<2:0> = 111

REGISTER 23-1: CLCxCONL: CLCx CONTROL REGISTER (LOW) (CONTINUED)

bit 2-0 **MODE<2:0>:** CLCx Mode bits
111 = Cell is a 1-input transparent latch with S and R
110 = Cell is a JK flip-flop with R
101 = Cell is a 2-input D flip-flop with R
100 = Cell is a 1-input D flip-flop with S and R
011 = Cell is an SR latch
010 = Cell is a 4-input AND
001 = Cell is an OR-XOR
000 = Cell is an AND-OR

REGISTER 23-2: CLCxCONH: CLCx CONTROL REGISTER (HIGH)

U-0	U-0	U-0	U-0	U-0	U-0	U-0	U-0
—	—	—	—	—	—	—	—
bit 15							bit 8

U-0	U-0	U-0	U-0	R/W-0	R/W-0	R/W-0	R/W-0
—	—	—	—	G4POL	G3POL	G2POL	G1POL
bit 7							bit 0

Legend:			
R = Readable bit	W = Writable bit	U = Unimplemented bit, read as ‘0’	
-n = Value at POR	‘1’ = Bit is set	‘0’ = Bit is cleared	x = Bit is unknown

bit 15-4 **Unimplemented:** Read as ‘0’

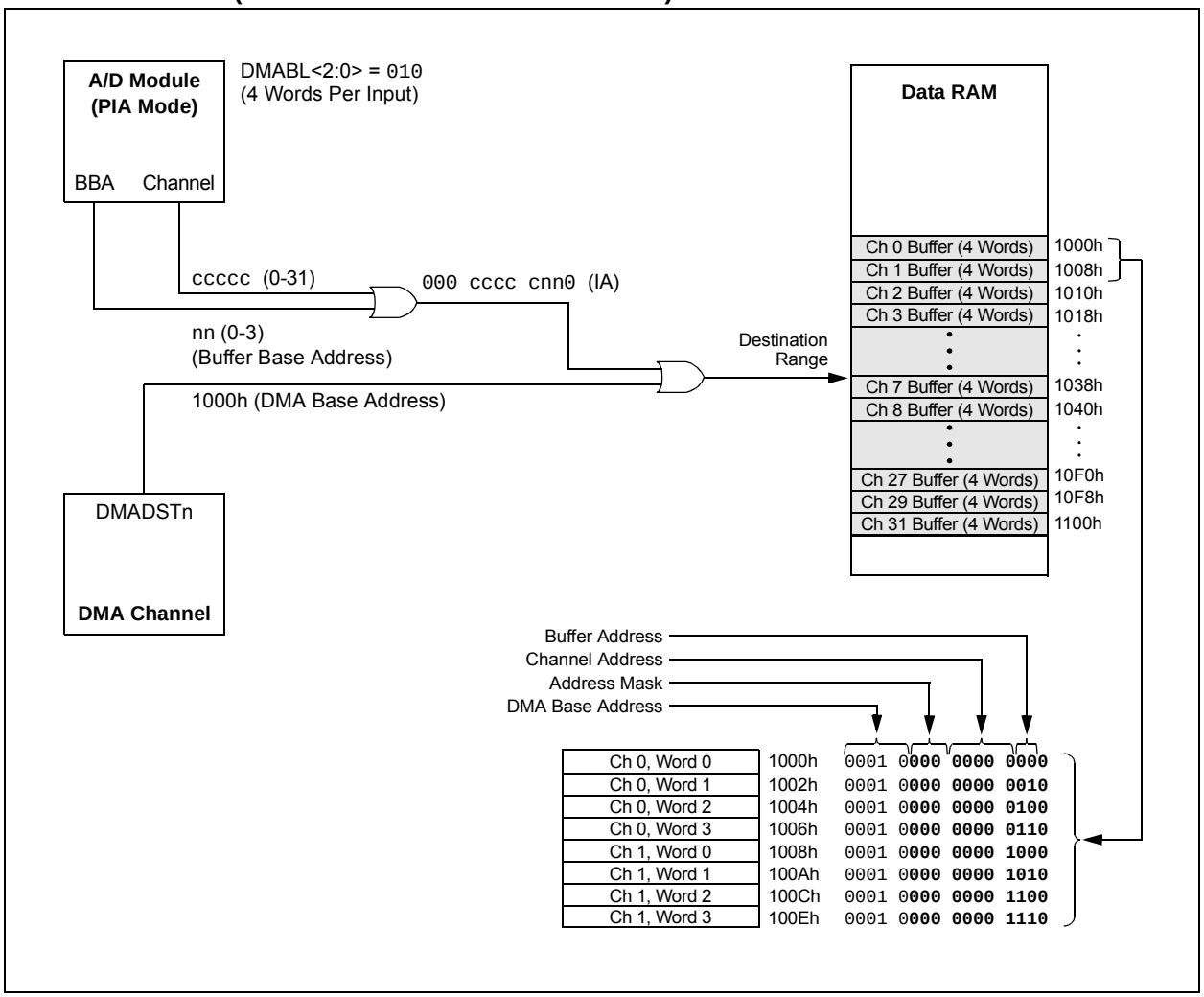
bit 3 **G4POL:** Gate 4 Polarity Control bit
1 = The output of Channel 4 logic is inverted when applied to the logic cell
0 = The output of Channel 4 logic is not inverted

bit 2 **G3POL:** Gate 3 Polarity Control bit
1 = The output of Channel 3 logic is inverted when applied to the logic cell
0 = The output of Channel 3 logic is not inverted

bit 1 **G2POL:** Gate 2 Polarity Control bit
1 = The output of Channel 2 logic is inverted when applied to the logic cell
0 = The output of Channel 2 logic is not inverted

bit 0 **G1POL:** Gate 1 Polarity Control bit
1 = The output of Channel 1 logic is inverted when applied to the logic cell
0 = The output of Channel 1 logic is not inverted

FIGURE 24-2: EXAMPLE OF BUFFER ADDRESS GENERATION IN PIA MODE (4-WORD BUFFERS PER CHANNEL)



REGISTER 24-2: AD1CON2: A/D CONTROL REGISTER 2

R/W-0	R/W-0	R/W-0	r-0	R/W-0	R/W-0	U-0	U-0
PVCFG1	PVCFG0	NVCFG0	—	BUFREGEN	CSCNA	—	—
bit 15							bit 8

R-0	R/W-0	R/W-0	R/W-0	R/W-0	R/W-0	R/W-0	R/W-0
BUFS	SMPI4	SMPI3	SMPI2	SMPI1	SMPI0	BUFM	ALTS
bit 7							bit 0

Legend:	r = Reserved bit		
R = Readable bit	W = Writable bit	U = Unimplemented bit, read as '0'	
-n = Value at POR	'1' = Bit is set	'0' = Bit is cleared	x = Bit is unknown

bit 15-14 **PVCFG<1:0>:** A/D Converter Positive Voltage Reference Configuration bits
1x = Unimplemented, do not use
01 = External VREF+
00 = AVDD

bit 13 **NVCFG0:** A/D Converter Negative Voltage Reference Configuration bit
1 = External VREF-
0 = AVSS

bit 12 **Reserved:** Maintain as '0'

bit 11 **BUFREGEN:** A/D Buffer Register Enable bit
1 = Conversion result is loaded into the buffer location determined by the converted channel
0 = A/D result buffer is treated as a FIFO

bit 10 **CSCNA:** Scan Input Selections for CH0+ During Sample A bit
1 = Scans inputs
0 = Does not scan inputs

bit 9-8 **Unimplemented:** Read as '0'

bit 7 **BUFS:** Buffer Fill Status bit
When DMAEN = 1 and DMABM = 1:
1 = A/D is currently filling the destination buffer from [buffer start + (buffer size/2)] to [buffer start + (buffer size – 1)]. User should access data located from [buffer start] to [buffer start + (buffer size/2) – 1].
0 = A/D is currently filling the destination buffer from [buffer start] to [buffer start + (buffer size/2) – 1]. User should access data located from [buffer start + (buffer size/2)] to [buffer start + (buffer size – 1)].
When DMAEN = 0:
1 = A/D is currently filling ADC1BUF13-ADC1BUF25, user should access data in ADC1BUF0-ADC1BUF12
0 = A/D is currently filling ADC1BUF0-ADC1BUF12, user should access data in ADC1BUF13-ADC1BUF25

REGISTER 24-4: AD1CON4: A/D CONTROL REGISTER 4

U-0	U-0	U-0	U-0	U-0	U-0	U-0	U-0
—	—	—	—	—	—	—	—
bit 15							bit 8

U-0	U-0	U-0	U-0	U-0	R/W-0	R/W-0	R/W-0
—	—	—	—	—	DMABL<2:0>(1)		
bit 7							bit 0

Legend:			
R = Readable bit	W = Writable bit	U = Unimplemented bit, read as '0'	
-n = Value at POR	'1' = Bit is set	'0' = Bit is cleared	x = Bit is unknown

bit 15-3 **Unimplemented:** Read as '0'

bit 2-0 **DMABL<2:0>:** DMA Buffer Size Select bits(1)

111 = Allocates 128 words of buffer to each analog input
110 = Allocates 64 words of buffer to each analog input
101 = Allocates 32 words of buffer to each analog input
100 = Allocates 16 words of buffer to each analog input
011 = Allocates 8 words of buffer to each analog input
010 = Allocates 4 words of buffer to each analog input
001 = Allocates 2 words of buffer to each analog input
000 = Allocates 1 word of buffer to each analog input

Note 1: The DMABL<2:0> bits are only used when AD1CON1<11> = 1 and AD1CON1<12> = 0; otherwise, their value is ignored.

NOTES:

NOTES:

REGISTER 29-2: FBSLIM CONFIGURATION REGISTER

U-1	U-1	U-1	U-1	U-1	U-1	U-1	U-1
—	—	—	—	—	—	—	—
bit 23							bit 16

U-1	U-1	U-1	R/PO-1	R/PO-1	R/PO-1	R/PO-1	R/PO-1
—	—	—	BSLIM<12:8>				
bit 15							bit 8

R/PO-1	R/PO-1	R/PO-1	R/PO-1	R/PO-1	R/PO-1	R/PO-1	R/PO-1
BSLIM<7:0>							
bit 7							bit 0

Legend:	PO = Program Once bit		
R = Readable bit	W = Writable bit	U = Unimplemented bit, read as ‘0’	
-n = Value at POR	‘1’ = Bit is set	‘0’ = Bit is cleared	x = Bit is unknown

bit 23-13 **Unimplemented:** Read as ‘1’

bit 12-0 **BSLIM<12:0>:** Active Boot Segment Code Flash Page Address Limit (Inverted) bits
This bit field contains the last active Boot Segment Page + 1 (i.e., first page address of GS). The value is stored as an inverted page address, such that programming additional ‘0’s can only increase the size of BS. If BSLIM<12:0> is set to all ‘1’s (unprogrammed default), the active Boot Segment size is zero.

REGISTER 29-9: FDEVOPT1 CONFIGURATION REGISTER

U-1	U-1	U-1	U-1	U-1	U-1	U-1	U-1
—	—	—	—	—	—	—	—
bit 23							bit 16

U-1	U-1	U-1	U-1	U-1	U-1	U-1	U-1
—	—	—	—	—	—	—	—
bit 15							bit 8

U-1	U-1	U-1	R/PO-1	R/PO-1	R/PO-1	R/PO-1	U-1
—	—	—	ALTI2C1	SOSCHP	TMPRPIN	ALTCMPI	—
bit 7							bit 0

Legend:	PO = Program Once bit		
R = Readable bit	W = Writable bit	U = Unimplemented bit, read as ‘0’	
-n = Value at POR	‘1’ = Bit is set	‘0’ = Bit is cleared	x = Bit is unknown

bit 23-5 **Unimplemented:** Read as ‘1’

bit 4 **ALTI2C1:** Alternate I2C1 bit
1 = SDA1 and SCL1 on RB9 and RB8
0 = ASDA1 and ASCL1 on RB5 and RB6

bit 3 **SOSCHP:** SOSC High-Power Enable bit (valid only when SOSCSEL = 1)
1 = SOSC High-Power mode is enabled
0 = SOSC Low-Power mode is enabled (see **Section 9.7.3 “Low-Power SOSC Operation”** for more information)

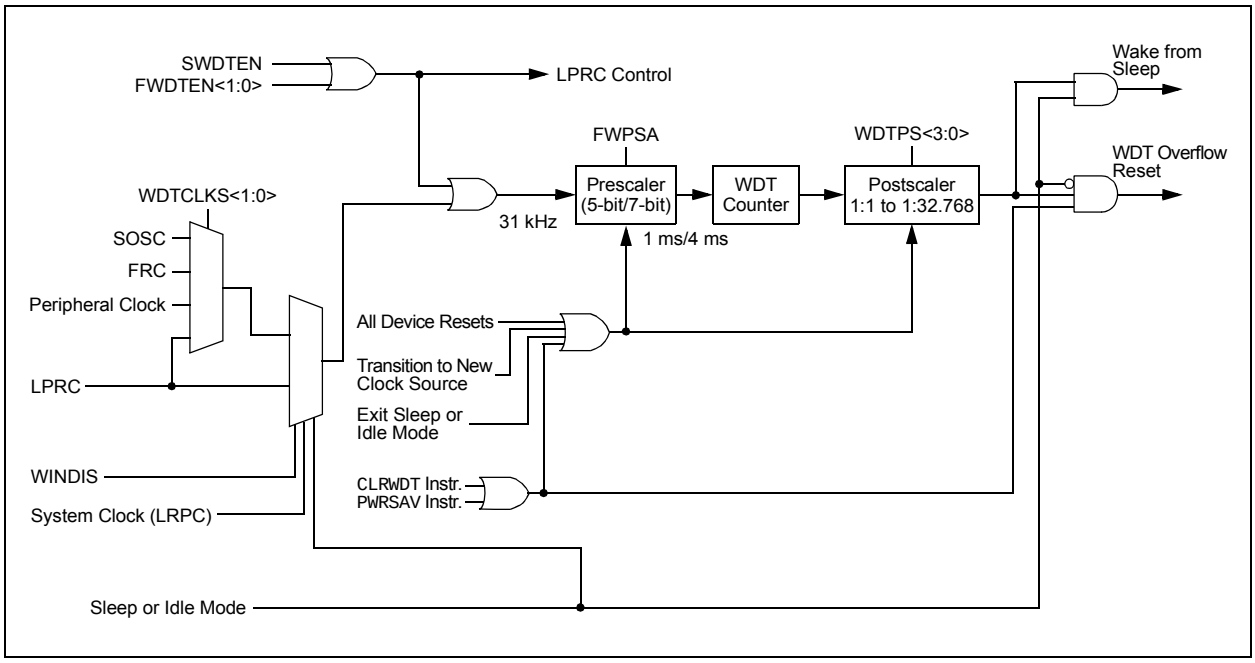
bit 2 **TMPRPIN:** Tamper Pin Enable bit
1 = $\overline{\text{TMPRN}}$ pin function is disabled (RB9)
0 = $\overline{\text{TMPRN}}$ pin function is enabled

bit 1 **ALTCMPI:** Alternate Comparator Input Enable bit
1 = C1INC, C2INC and C3INC are on their standard pin locations
0 = C1INC, C2INC and C3INC are on RB9**(1)**

bit 0 **Unimplemented:** Read as ‘1’

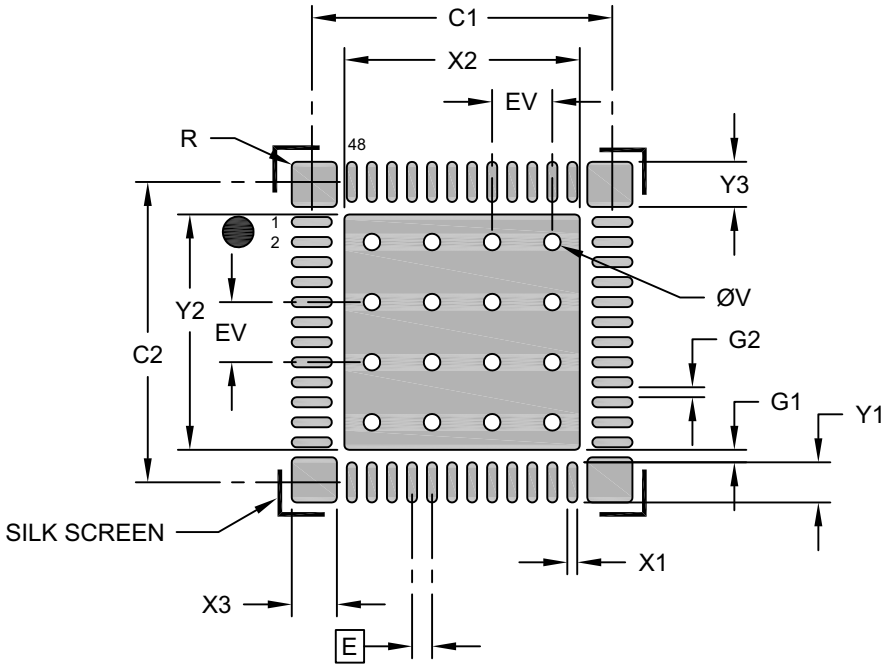
Note 1: RB9 is used for multiple functions, but only one use case is allowable.

FIGURE 29-2: WDT BLOCK DIAGRAM



48-Lead Ultra Thin Plastic Quad Flat, No Lead Package (M4) - 6x6 mm Body [UQFN] With Corner Anchors and 4.6x4.6 mm Exposed Pad

Note: For the most current package drawings, please see the Microchip Packaging Specification located at http://www.microchip.com/packaging



RECOMMENDED LAND PATTERN

Units		MILLIMETERS		
Dimension Limits		MIN	NOM	MAX
Contact Pitch	E		0.40 BSC	
Center Pad Width	X2			4.70
Center Pad Length	Y2			4.70
Contact Pad Spacing	C1		6.00	
Contact Pad Spacing	C2		6.00	
Contact Pad Width (X48)	X1			0.20
Contact Pad Length (X48)	Y1			0.80
Corner Anchor Pad Width (X4)	X3			0.90
Corner Anchor Pad Length (X4)	Y3			0.90
Pad Corner Radius (X 20)	R			0.10
Contact Pad to Center Pad (X48)	G1	0.25		
Contact Pad to Contact Pad	G2	0.20		
Thermal Via Diameter	V		0.33	
Thermal Via Pitch	EV		1.20	

Notes:

1. Dimensioning and tolerancing per ASME Y14.5M
   BSC: Basic Dimension. Theoretically exact value shown without tolerances.
2. For best soldering results, thermal vias, if used, should be filled or tented to avoid solder loss during reflow process

Microchip Technology Drawing C04-2442A-M4