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Details

Product Status	Active
Core Processor	PIC
Core Size	8-Bit
Speed	20MHz
Connectivity	-
Peripherals	POR, WDT
Number of I/O	13
Program Memory Size	3.5KB (2K x 14)
Program Memory Type	OTP
EEPROM Size	-
RAM Size	128 x 8
Voltage - Supply (Vcc/Vdd)	3V ~ 5.5V
Data Converters	-
Oscillator Type	External
Operating Temperature	0°C ~ 70°C (TA)
Mounting Type	Surface Mount
Package / Case	18-SOIC (0.295", 7.50mm Width)
Supplier Device Package	18-SOIC
Purchase URL	https://www.e-xfl.com/product-detail/microchip-technology/pic16c558-20-so

Table of Contents

1.0	General Description.....	5
2.0	PIC16C55X Device Varieties	7
3.0	Architectural Overview	9
4.0	Memory Organization	13
5.0	I/O Ports	23
6.0	Special Features of the CPU.....	31
7.0	Timer0 Module	47
8.0	Instruction Set Summary	53
9.0	Development Support.....	67
10.0	Electrical Specifications.....	73
11.0	Packaging Information.....	87
Appendix A:	Enhancements.....	97
Appendix B:	Compatibility	97
Index		99
On-Line Support.....		101
Systems Information and Upgrade Hot Line		101
Reader Response		102
Product Identification System		103

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PIC16C55X

TABLE 1-1: PIC16C55X FAMILY OF DEVICES

		PIC16C554	PIC16C557	PIC16C558
Clock	Maximum Frequency of Operation (MHz)	20	20	20
Memory	EPROM Program Memory (x14 words)	512	2K	2K
	Data Memory (bytes)	80	128	128
Peripherals	Timer Module(s)	TMR0	TMR0	TMR0
Features	Interrupt Sources	3	3	3
	I/O Pins	13	22	13
	Voltage Range (Volts)	2.5-5.5	2.5-5.5	2.5-5.5
	Brown-out Reset	—	—	—
	Packages	18-pin DIP, SOIC; 20-pin SSOP	28-pin DIP, SOIC; 28-pin SSOP	18-pin DIP, SOIC, SSOP

All PIC[®] Family devices have Power-on Reset, selectable Watchdog Timer, selectable code protect and high I/O current capability. All PIC16C55X Family devices use serial programming with clock pin RB6 and data pin RB7.

4.0 MEMORY ORGANIZATION

4.1 Program Memory Organization

The PIC16C55X has a 13-bit program counter capable of addressing an 8 K x 14 program memory space. Only the first 512 x 14 (0000h - 01FFh) for the PIC16C554 and 2K x 14 (0000h - 07FFh) for the PIC16C557 and PIC16C558 are physically implemented. Accessing a location above these boundaries will cause a wrap-around within the first 512 x 14 spaces in the PIC16C554, or 2K x 14 space of the PIC16C558 and PIC16C557. The RESET vector is at 0000h and the interrupt vector is at 0004h (Figure 4-1, Figure 4-2).

FIGURE 4-1: PROGRAM MEMORY MAP AND STACK FOR THE PIC16C554

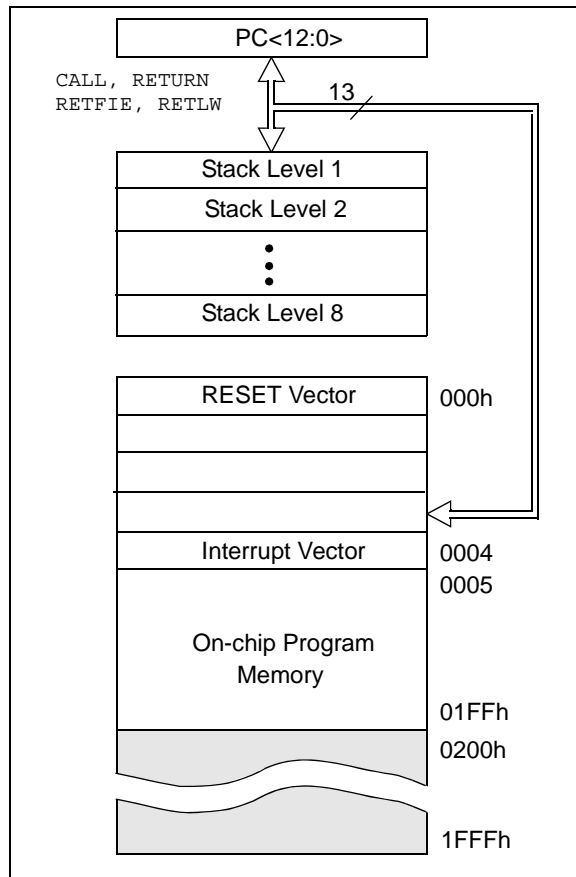
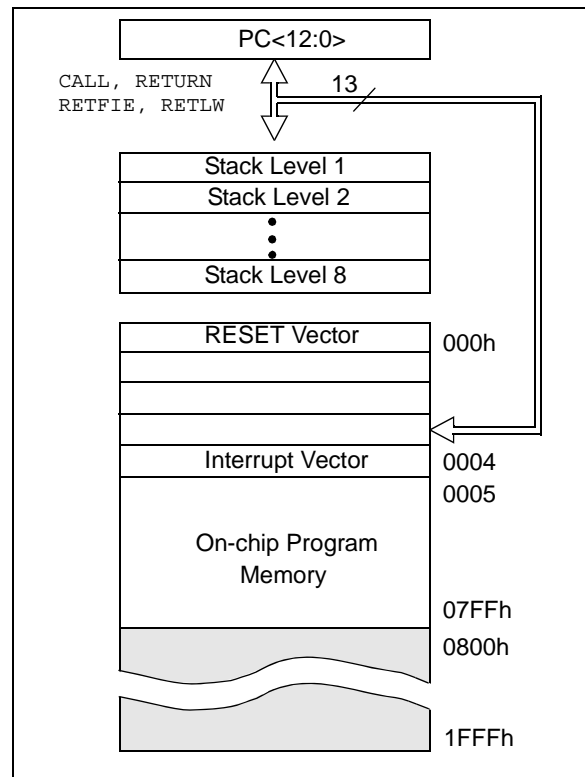


FIGURE 4-2: PROGRAM MEMORY MAP AND STACK FOR THE PIC16C557 AND PIC16C558



4.2 Data Memory Organization

The data memory (Figure 4-3 through Figure 4-5) is partitioned into two banks which contain the General Purpose Registers (GPR) and the Special Function Registers (SFR). Bank 0 is selected when the RP0 bit (STATUS <5>) is cleared. Bank 1 is selected when the RP0 bit is set. The Special Function Registers are located in the first 32 locations of each Bank. Register locations 20-6Fh (Bank 0) on the PIC16C554 and 20-7Fh (Bank 0) and A0-BFh (Bank 1) on the PIC16C558 and PIC16C557 are General Purpose Registers implemented as static RAM. Some special purpose registers are mapped in Bank 1.

4.2.1 GENERAL PURPOSE REGISTER FILE

The register file is organized as 80 x 8 in the PIC16C554 and 128 x 8 in the PIC16C557 and PIC16C558. Each can be accessed either directly or indirectly through the File Select Register, FSR (Section 4.4).

PIC16C55X

TABLE 4-1: SPECIAL REGISTERS FOR THE PIC16C55X

Address	Name	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Value on POR Reset	Detail on Page:
Bank 0											
00h	INDF	Addressing this location uses contents of FSR to address data memory (not a physical register)								xxxx xxxx	21
01h	TMR0	Timer0 Module's Register								xxxx xxxx	47
02h	PCL	Program Counter's (PC) Least Significant Byte								0000 0000	21
03h	STATUS	IRP ⁽²⁾	RP1 ⁽²⁾	RP0	\overline{TO}	\overline{PD}	Z	DC	C	0001 1xxx	17
04h	FSR	Indirect data memory address pointer								xxxx xxxx	21
05h	PORTA	—	—	—	RA4	RA3	RA2	RA1	RA0	---x xxxx	23
06h	PORTB	RB7	RB6	RB5	RB4	RB3	RB2	RB1	RB0	xxxx xxxx	25
07h	PORTC ⁽⁴⁾	RC7	RC6	RC5	RC4	RC3	RC2	RC1	RC0	xxxx xxxx	27
08h	—	Unimplemented								—	—
09h	—	Unimplemented								—	—
0Ah	PCLATH	—	—	—	Write buffer for upper 5 bits of program counter				---0 0000	21	
0Bh	INTCON	GIE	(3)	TOIE	INTE	RBIE	TOIF	INTF	RBIF	0000 000x	19
0Ch	—	Unimplemented								—	—
0Dh-1Eh	—	Unimplemented								—	—
1Fh	—	Unimplemented								—	—
Bank 1											
80h	INDF	Addressing this location uses contents of FSR to address data memory (not a physical register)								xxxx xxxx	21
81h	OPTION	\overline{RBPU}	INTEDG	T0CS	T0SE	PSA	PS2	PS1	PS0	1111 1111	18
82h	PCL	Program Counter's (PC) Least Significant Byte								0000 0000	21
83h	STATUS	—	—	RP0	\overline{TO}	\overline{PD}	Z	DC	C	0001 1xxx	17
84h	FSR	Indirect data memory address pointer								xxxx xxxx	21
85h	TRISA	—	—	—	TRISA4	TRISA3	TRISA2	TRISA1	TRISA0	---1 1111	23
86h	TRISB	TRISB7	TRISB6	TRISB5	TRISB4	TRISB3	TRISB2	TRISB1	TRISB0	1111 1111	25
87h	TRISC ⁽⁴⁾	TRISC7	TRISC6	TRISC5	TRISC4	TRISC3	TRISC2	TRISC1	TRISC0	1111 1111	27
88h	—	Unimplemented								—	—
89h	—	Unimplemented								—	—
8Ah	PCLATH	—	—	—	Write buffer for upper 5 bits of program counter				---0 0000	21	
8Bh	INTCON	GIE	(3)	TOIE	INTE	RBIE	TOIF	INTF	RBIF	0000 000x	19
8Ch	—	Unimplemented								—	—
8Dh	—	Unimplemented								—	—
8Eh	PCON	—	—	—	—	—	—	\overline{POR}	—	---- --0-	20
8Fh-9Eh	—	Unimplemented								—	—
9Fh	—	Unimplemented								—	—

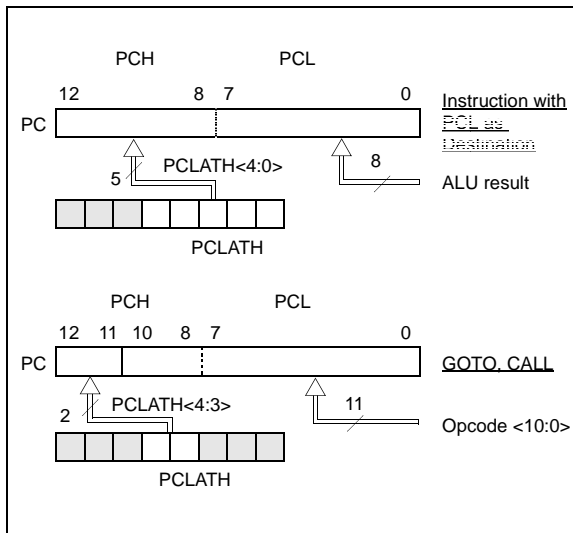
Legend: — = Unimplemented locations read as '0', u = unchanged, x = unknown, q = value depends on condition, shaded = unimplemented

- Note**
- 1: Other (non Power-up) Resets include \overline{MCLR} Reset and Watchdog Timer Reset during normal operation.
 - 2: IRP & RP1 bits are reserved, always maintain these bits clear.
 - 3: Bit 6 of INTCON register is reserved for future use. Always maintain this bit as clear.
 - 4: PIC16C557 only.

4.3 PCL and PCLATH

The program counter (PC) is 13-bits wide. The low byte comes from the PCL register, which is a readable and writable register. The high bits (PC<12:8>) are not directly readable or writable and come from PCLATH. On any RESET, the PC is cleared. Figure 4-6 shows the two situations for the loading of the PC. The upper example in the figure shows how the PC is loaded on a write to PCL (PCLATH<4:0> → PCH). The lower example in Figure 4-6 shows how the PC is loaded during a CALL or GOTO instruction (PCLATH<4:3> → PCH).

FIGURE 4-6: LOADING OF PC IN DIFFERENT SITUATIONS



4.3.1 COMPUTED GOTO

A computed GOTO is accomplished by adding an offset to the program counter (ADDWF PCL). When doing a table read using a computed GOTO method, care should be exercised if the table location crosses a PCL memory boundary (each 256 byte block). Refer to the application note "Implementing a Table Read" (AN556).

4.3.2 STACK

The PIC16C55X family has an 8-level deep x 13-bit wide hardware stack (Figure 4-1 and Figure 4-2). The stack space is not part of either program or data space and the stack pointer is not readable or writable. The PC is PUSHed onto the stack when a CALL instruction is executed or an interrupt causes a branch. The stack is POPed in the event of a RETURN, RETLW or a RETFIE instruction execution. PCLATH is not affected by a PUSH or POP operation.

The stack operates as a circular buffer. This means that after the stack has been PUSHed eight times, the ninth push overwrites the value that was stored from the first push. The tenth push overwrites the second push (and so on).

Note 1: There are no status bits to indicate stack overflow or stack underflow conditions.

2: There are no instructions mnemonics called PUSH or POP. These are actions that occur from the execution of the CALL, RETURN, RETLW and RETFIE instructions, or vectoring to an interrupt address.

4.4 Indirect Addressing, INDF and FSR Registers

The INDF register is not a physical register. Addressing the INDF register will cause indirect addressing.

Indirect addressing is possible by using the INDF register. Any instruction using the INDF register actually accesses data pointed to by the file select register (FSR). Reading INDF itself indirectly will produce 00h. Writing to the INDF register indirectly results in a no-operation (although status bits may be affected). An effective 9-bit address is obtained by concatenating the 8-bit FSR register and the IRP bit (STATUS<7>), as shown in Figure 4-7. However, IRP is not used in the PIC16C55X.

A simple program to clear RAM locations 20h-2Fh using indirect addressing is shown in Example 4-1.

EXAMPLE 4-1: INDIRECT ADDRESSING

```

        movlw 0x20 ;initialize pointer
        movwf FSR ;to RAM
NEXT    clrf  INDF ;clear INDF register
        incf  FSR ;inc pointer
        btfss FSR,4 ;all done?
        goto  NEXT ;no clear next
                               ;yes continue

```

CONTINUE:

5.2 PORTB and TRISB Registers

PORTB is an 8-bit wide bi-directional port. The corresponding data direction register is TRISB. A '1' in the TRISB register puts the corresponding output driver in a Hi-impedance mode. A '0' in the TRISB register puts the contents of the output latch on the selected pin(s).

Reading PORTB register reads the status of the pins whereas writing to it will write to the port latch. All write operations are read-modify-write operations. So a write to a port implies that the port pins are first read, then this value is modified and written to the port data latch.

Each of the PORTB pins has a weak internal pull-up ($\approx 200 \mu\text{A}$ typical). A single control bit can turn on all the pull-ups. This is done by clearing the $\overline{\text{RBP}}\text{U}$ (OPTION<7>) bit. The weak pull-up is automatically turned off when the port pin is configured as an output. The pull-ups are disabled on Power-on Reset.

Four of PORTB's pins, RB7:RB4, have an interrupt-on-change feature. Only pins configured as inputs can cause this interrupt to occur (i.e., any RB7:RB4 pin configured as an output is excluded from the interrupt-on-change comparison). The input pins (of RB7:RB4) are compared with the old value latched on the last read of PORTB. The "mismatch" outputs of RB7:RB4 are OR'ed together to generate the RBIF interrupt (flag

latched in INTCON<0>). This interrupt can wake the device from SLEEP. The user, in the interrupt service routine, can clear the interrupt in the following manner:

- Any read or write of PORTB (this will end the mismatch condition)
- Clear flag bit RBIF

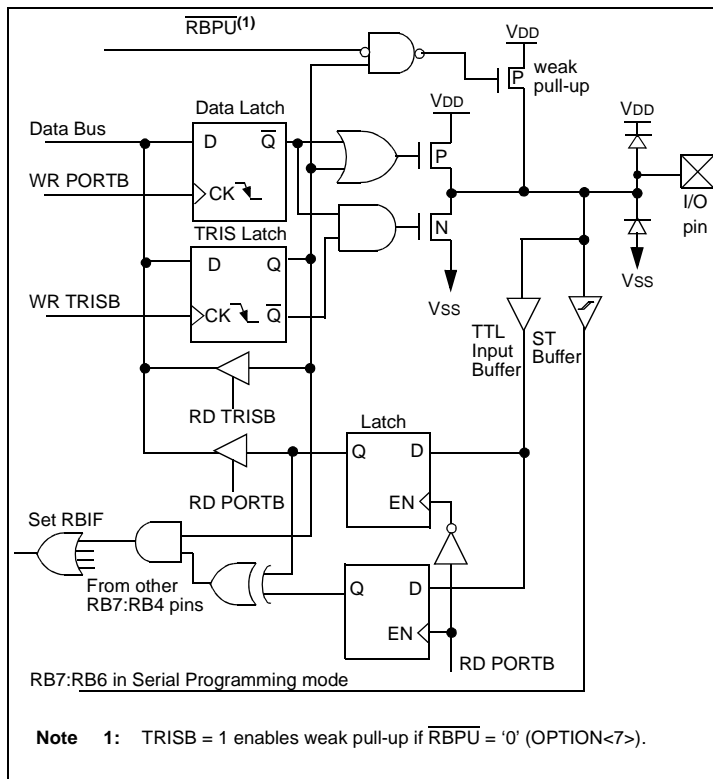
A mismatch condition will continue to set flag bit RBIF. Reading PORTB will end the mismatch condition, and allow flag bit RBIF to be cleared.

The interrupt on mismatch feature, together with software configurable pull-ups on these four pins, allows easy interface to a key pad and make it possible for wake-up on key-depression. (See AN552 in the *Microchip Embedded Control Handbook*.)

Note 1: If a change on the I/O pin should occur when the read operation is being executed (start of the Q2 cycle), then the RBIF interrupt flag may not get set.

The interrupt-on-change feature is recommended for wake-up on key depression operation and operations where PORTB is only used for the interrupt-on-change feature. Polling of PORTB is not recommended while using the interrupt-on-change feature.

FIGURE 5-3: BLOCK DIAGRAM OF RB7:RB4 PINS



PIC16C55X

6.5.1 RB0/INT INTERRUPT

An external interrupt on RB0/INT pin is edge triggered: either rising if INTEDG bit (OPTION<6>) is set, or falling if INTEDG bit is clear. When a valid edge appears on the RB0/INT pin, the INTF bit (INTCON<1>) is set. This interrupt can be disabled by clearing the INTE control bit (INTCON<4>). The INTF bit must be cleared in software in the interrupt service routine before re-enabling this interrupt. The RB0/INT interrupt can wake-up the processor from SLEEP, if the INTE bit was set prior to going into SLEEP. The status of the GIE bit decides whether or not the processor branches to the interrupt vector following wake-up. See Section 6.8 for details on SLEEP and Figure 6-14 for timing of wake-up from SLEEP through RB0/INT interrupt.

6.5.2 TMR0 INTERRUPT

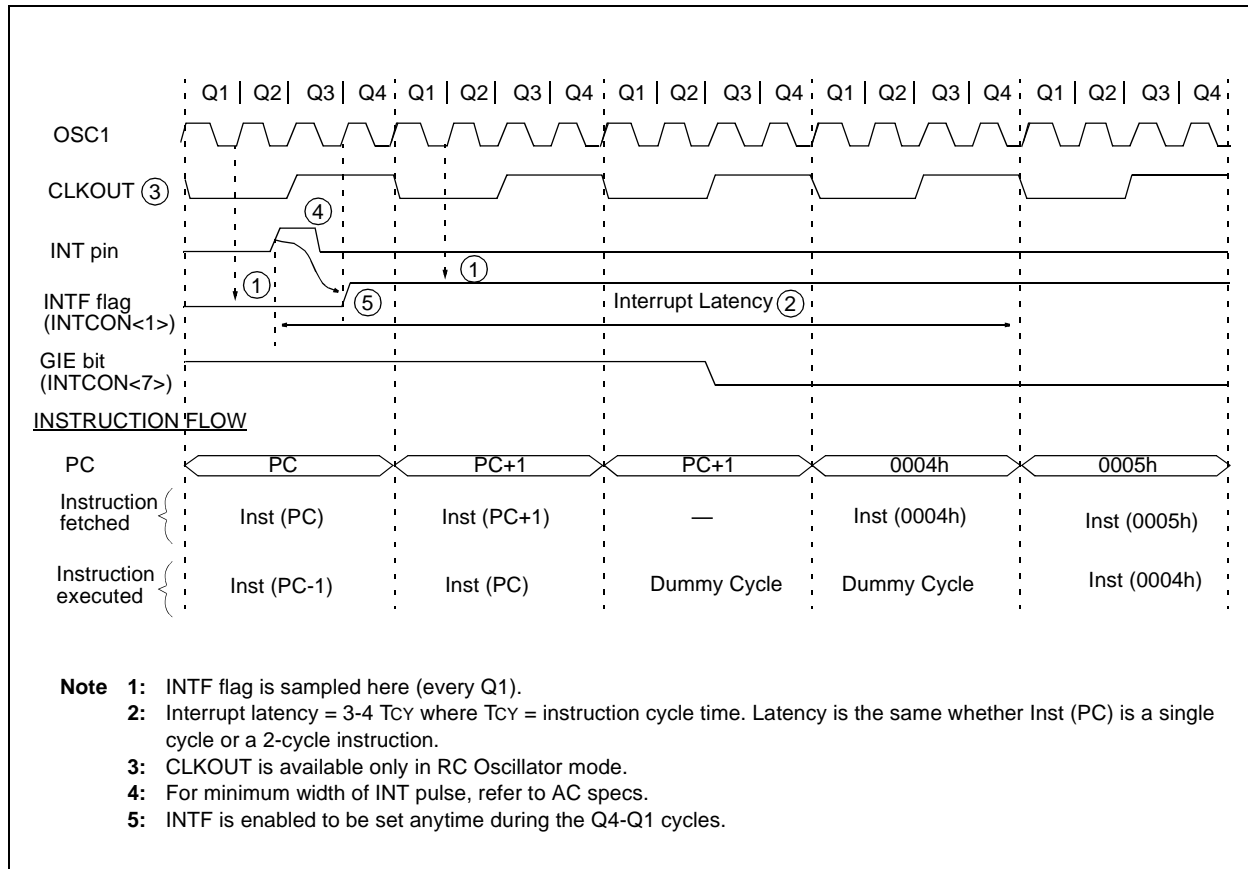
An overflow (FFh → 00h) in the TMR0 register will set the T0IF (INTCON<2>) bit. The interrupt can be enabled/disabled by setting/clearing T0IE (INTCON<5>) bit. For operation of the Timer0 module, see Section 7.0.

6.5.3 PORTB INTERRUPT

An input change on PORTB <7:4> sets the RBIF (INTCON<0>) bit. The interrupt can be enabled/disabled by setting/clearing the RBIE (INTCON<4>) bit. For operation of PORTB (Section 5.2).

Note: If a change on the I/O pin should occur when the read operation is being executed (start of the Q2 cycle), then the RBIF interrupt flag may get set.

FIGURE 6-12: INT PIN INTERRUPT TIMING



PIC16C55X

FIGURE 6-13: WATCHDOG TIMER BLOCK DIAGRAM

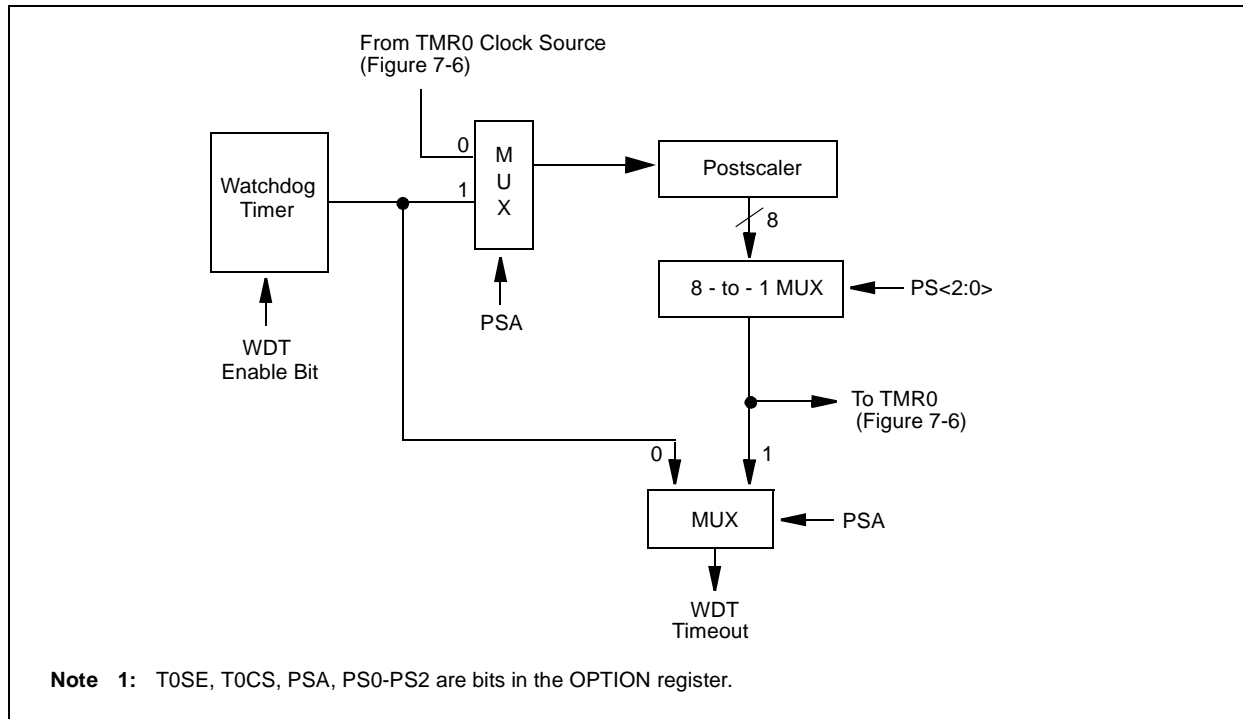


TABLE 6-7: SUMMARY OF WATCHDOG TIMER REGISTERS

Address	Name	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Value on POR	Value on all other RESETS
2007h	Config. bits	—	Reserved	CP1	CP0	PWRTE	WDTE	FOSC1	FOSC0		
81h	OPTION	RBPU	INTEDG	T0CS	T0SE	PSA	PS2	PS1	PS0	1111 1111	1111 1111

Legend: x = unknown, u = unchanged, q = value depends on condition, — = unimplemented, read as '0'.
 Shaded cells are not used by the Watchdog Timer.

7.3.1 SWITCHING PRESCALER ASSIGNMENT

The prescaler assignment is fully under software control (i.e., it can be changed “on the fly” during program execution). To avoid an unintended device RESET, the following instruction sequence (Example 7-1) must be executed when changing the prescaler assignment from Timer0 to WDT. Lines 5-7 are required only if the desired postscaler rate is 1:1 (PS<2:0> = 000) or 1:2 (PS<2:0> = 001).

EXAMPLE 7-1: CHANGING PRESCALER (TIMER0→WDT)

```
BCF STATUS, RP0 ;Skip if already in
                    ;Bank 0 CLRWDT Clear WDT
CLRF TMR0         ;Clear TMR0 & Prescaler
BSF STATUS, RP0  ;Bank 1
MOVLW '00101111'b ;These 3 lines (5, 6, 7)
MOVWF OPTION     ;Are required only if
                    ;Desired PS<2:0> are
                    ;CLRWDT 000 or 001
MOVLW '00101xxx'b ;Set Postscaler to
MOVWF OPTION     ;Desired WDT rate
BCF STATUS, RP0 ;Return to Bank 0
```

To change prescaler from the WDT to the TMR0 module use the sequence shown in Example 7-2. This precaution must be taken even if the WDT is disabled.

EXAMPLE 7-2: CHANGING PRESCALER (WDT→TIMER0)

```
CLRWDT           ;Clear WDT and
                    ;prescaler
BSF STATUS, RP0
MOVLW b'xxx0xxx' ;Select TMR0, new
                    ;prescale value and
                    ;clock source
MOVWF OPTION
BCF STATUS, RP0
```

TABLE 7-1: REGISTERS ASSOCIATED WITH TIMER0

Address	Name	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Value on POR	Value on All Other RESETS
01h	TMR0	Timer0 module's register								xxxx xxxx	uuuu uuuu
0Bh/8Bh	INTCON	GIE	Reserved	TOIE	INTE	RBIE	TOIF	INTF	RBIF	0000 000x	0000 000x
81h	OPTION	$\overline{\text{RBPU}}$	INTEDG	T0CS	T0SE	PSA	PS2	PS1	PS0	1111 1111	1111 1111
85h	TRISA	—	—	—	TRISA4	TRISA3	TRISA2	TRISA1	TRISA0	---1 1111	---1 1111

Legend: — = Unimplemented locations, read as '0',
Note 1: Shaded bits are not used by TMR0 module.

MOVWF	Move W to f				
Syntax:	[<i>label</i>] MOVWF f				
Operands:	0 ≤ f ≤ 127 d ∈ [0,1]				
Operation:	(W) → (dest)				
Status Affected:	Z				
Encoding:	<table border="1" style="display: inline-table;"><tr><td>00</td><td>1000</td><td>dfff</td><td>ffff</td></tr></table>	00	1000	dfff	ffff
00	1000	dfff	ffff		
Description:	The contents of register f is moved to a destination dependant upon the status of d. If d = 0, destination is W register. If d = 1, the destination is file register f itself. d = 1 is useful to test a file register since status flag Z is affected.				
Words:	1				
Cycles:	1				
Example	MOVWF FSR, 0 After Instruction W = value in FSR register Z = 1				

NOP	No Operation				
Syntax:	[<i>label</i>] NOP				
Operands:	None				
Operation:	No operation				
Status Affected:	None				
Encoding:	<table border="1" style="display: inline-table;"><tr><td>00</td><td>0000</td><td>0xx0</td><td>0000</td></tr></table>	00	0000	0xx0	0000
00	0000	0xx0	0000		
Description:	No operation.				
Words:	1				
Cycles:	1				
Example	NOP				

MOVWF	Move W to f				
Syntax:	[<i>label</i>] MOVWF f				
Operands:	0 ≤ f ≤ 127				
Operation:	(W) → (f)				
Status Affected:	None				
Encoding:	<table border="1" style="display: inline-table;"><tr><td>00</td><td>0000</td><td>1fff</td><td>ffff</td></tr></table>	00	0000	1fff	ffff
00	0000	1fff	ffff		
Description:	Move data from W register to register 'f'.				
Words:	1				
Cycles:	1				
Example	MOVWF OPTION Before Instruction OPTION = 0xFF W = 0x4F After Instruction OPTION = 0x4F W = 0x4F				

OPTION	Load Option Register				
Syntax:	[<i>label</i>] OPTION				
Operands:	None				
Operation:	(W) → OPTION				
Status Affected:	None				
Encoding:	<table border="1" style="display: inline-table;"><tr><td>00</td><td>0000</td><td>0110</td><td>0010</td></tr></table>	00	0000	0110	0010
00	0000	0110	0010		
Description:	The contents of the W register are loaded in the OPTION register. This instruction is supported for code compatibility with PIC16C5X products. Since OPTION is a readable/writable register, the user can directly address it.				
Words:	1				
Cycles:	1				
Example	<div style="border: 1px solid black; padding: 5px; width: fit-content;">To maintain upward compatibility with future PIC MCU products, do not use this instruction.</div>				

PIC16C55X

NOTES:

PIC16C55X

10.3 Timing Parameter Symbology

The timing parameter symbols have been created with one of the following formats:

1. TppS2ppS
2. TppS

T		
F	Frequency	T
		Time

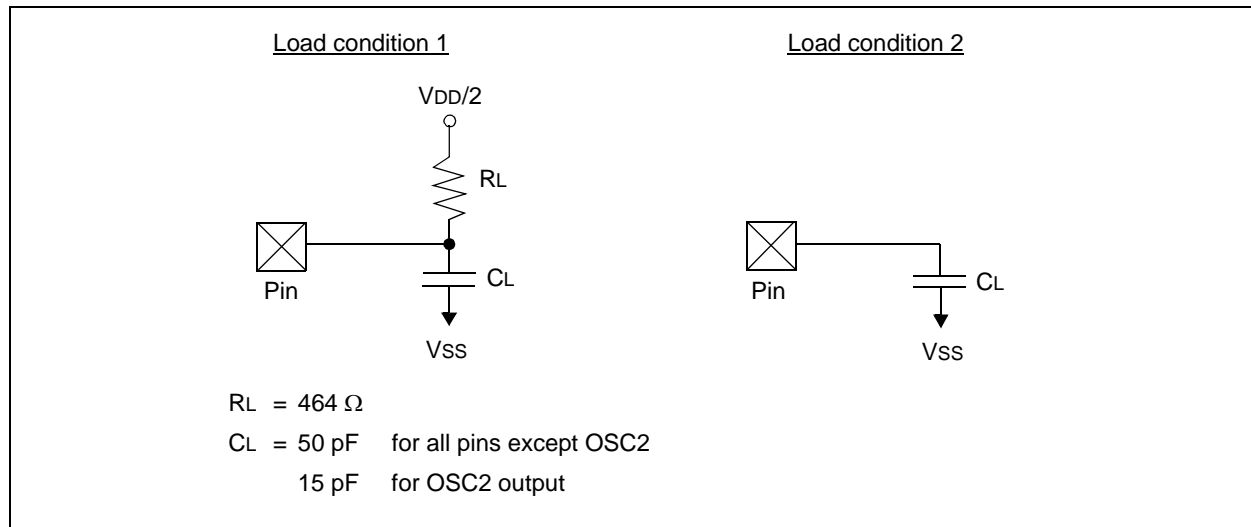
Lowercase subscripts (pp) and their meanings:

pp		
ck	CLKOUT	os
io	I/O port	t0
mc	MCLR	T0CKI

Uppercase letters and their meanings:

S		
F	Fall	P
H	High	R
I	Invalid (Hi-impedance)	V
L	Low	Z
		Hi-impedance

FIGURE 10-5: LOAD CONDITIONS



10.4 Timing Diagrams and Specifications

FIGURE 10-6: EXTERNAL CLOCK TIMING

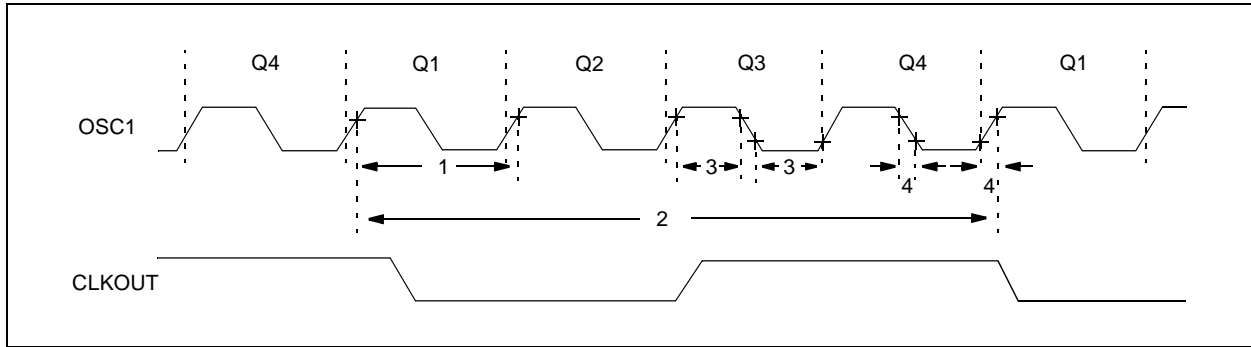


TABLE 10-1: EXTERNAL CLOCK TIMING REQUIREMENTS

Parameter No.	Sym	Characteristic	Min	Typ†	Max	Units	Conditions
	Fos	External CLKIN Frequency ⁽¹⁾	DC	—	4	MHz	XT and RC osc mode, VDD=5.0V
			DC	—	20	MHz	HS osc mode
			DC	—	200	kHz	LP osc mode
		Oscillator Frequency ⁽¹⁾	DC	—	4	MHz	RC osc mode, VDD=5.0V
			0.1	—	4	MHz	XT osc mode
			1	—	20	MHz	HS osc mode
			DC	—	200	kHz	LP osc mode
1	Tosc	External CLKIN Period ⁽¹⁾	250	—	—	ns	XT and RC osc mode
			50	—	—	ns	HS osc mode
			5	—	—	μs	LP osc mode
		Oscillator Period ⁽¹⁾	250	—	—	ns	RC osc mode
		250	—	10,000	ns	XT osc mode	
50	—	1,000	ns	HS osc mode			
5	—	—	μs	LP osc mode			
2	Tcy	Instruction Cycle Time ⁽¹⁾	1.0	Fos/4	DC	μs	Tcy=Fos/4
3*	TosL, TosH	External Clock in (OSC1) High or Low Time	100*	—	—	ns	XT osc mode
			2*	—	—	μs	LP osc mode
			20*	—	—	ns	HS osc mode
4*	TosR, TosF	External Clock in (OSC1) Rise or Fall Time	25*	—	—	ns	XT osc mode
			50*	—	—	ns	LP osc mode
			15*	—	—	ns	HS osc mode

* These parameters are characterized but not tested.

† Data in "Typ" column is at 5.0 V, 25°C unless otherwise stated. These parameters are for design guidance only and are not tested.

Note 1: Instruction cycle period (Tcy) equals four times the input oscillator time-base period. All specified values are based on characterization data for that particular oscillator type under standard operating conditions with the device executing code. Exceeding these specified limits may result in an unstable oscillator operation and/or higher than expected current consumption. All devices are tested to operate at "min." values with an external clock applied to the OSC1 pin. When an external clock input is used, the "Max." cycle time limit is "DC" (no clock) for all devices.

TABLE 10-2: CLKOUT AND I/O TIMING REQUIREMENTS

Parameter #	Sym	Characteristic	Min	Typ†	Max	Units
10*	TosH2ckL	OSC1↑ to CLKOUT↓ ⁽¹⁾	—	75	200	ns
			—	—	400	ns
11*	TosH2ckH	OSC1↑ to CLKOUT↑ ⁽¹⁾	—	75	200	ns
			—	—	400	ns
12*	TckR	CLKOUT rise time ⁽¹⁾	—	35	100	ns
			—	—	200	ns
13*	TckF	CLKOUT fall time ⁽¹⁾	—	35	100	ns
			—	—	200	ns
14*	TckL2ioV	CLKOUT ↓ to Port out valid ⁽¹⁾	—	—	20	ns
15*	TioV2ckH	Port in valid before CLKOUT ↑ ⁽¹⁾	Tosc +200 ns	—	—	ns
			Tosc +400 ns	—	—	ns
16*	TckH2ioI	Port in hold after CLKOUT ↑ ⁽¹⁾	0	—	—	ns
17*	TosH2ioV	OSC1↑ (Q1 cycle) to Port out valid	—	50	150	ns
			—	—	300	ns
18*	TosH2ioI	OSC1↑ (Q2 cycle) to Port input invalid (I/O in hold time)	100	—	—	ns
			200	—	—	ns
19*	TioV2osH	Port input valid to OSC1↑ (I/O in setup time)	0	—	—	ns
20*	TioR	Port output rise time	—	10	40	ns
			—	—	80	ns
21*	TioF	Port output fall time	—	10	40	ns
			—	—	80	ns
22*	Tinp	RB0/INT pin high or low time	25	—	—	ns
			40	—	—	ns
23*	Trbp	RB<7:4> change interrupt high or low time	Tcy	—	—	ns

* These parameters are characterized but not tested.

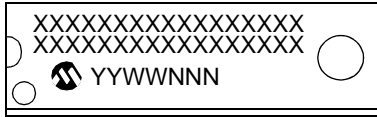
† Data in "Typ" column is at 5.0V, 25°C unless otherwise stated. These parameters are for design guidance only and are not tested.

Note 1: Measurements are taken in RC mode where CLKOUT output is 4 x Tosc.

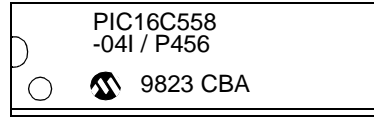
11.0 PACKAGING INFORMATION

11.1 Package Marking Information

18-Lead PDIP



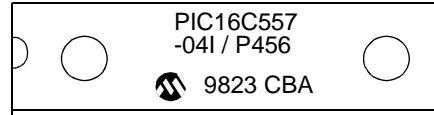
Example



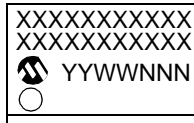
28-Lead PDIP



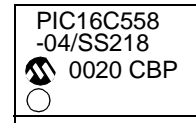
Example



20-Lead SSOP



Example



28-Lead SSOP



Example



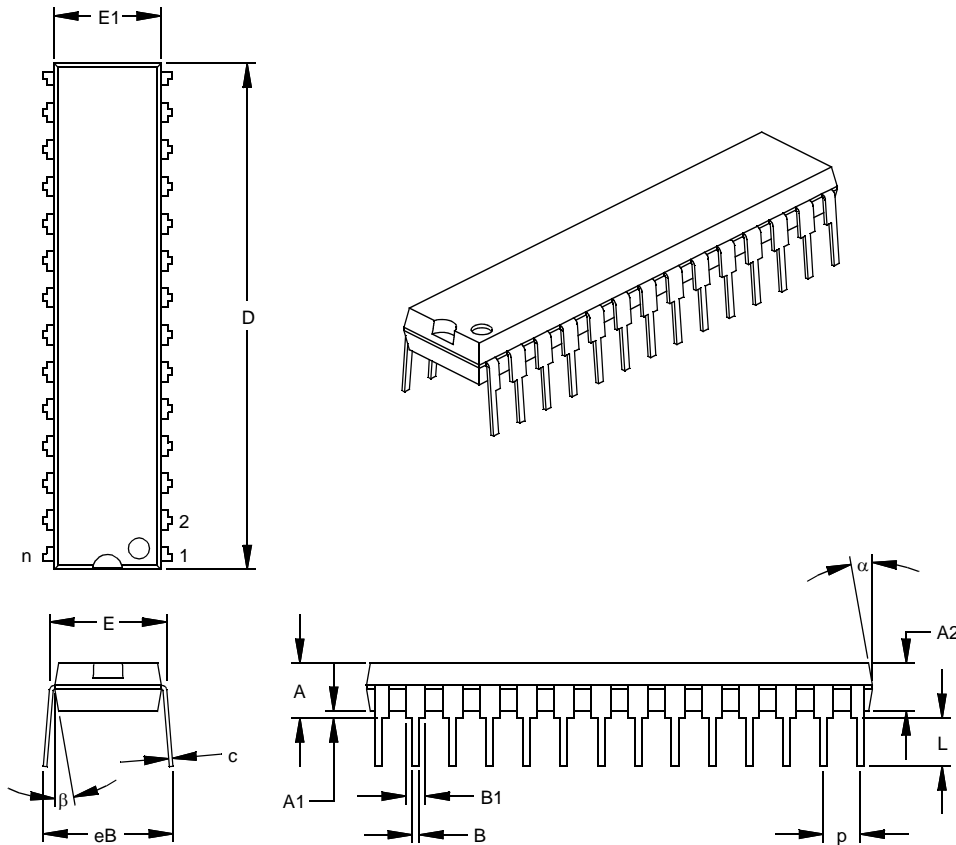
Legend:	XX...X	Customer-specific information
	Y	Year code (last digit of calendar year)
	YY	Year code (last 2 digits of calendar year)
	WW	Week code (week of January 1 is week '01')
	NNN	Alphanumeric traceability code
	(e3)	Pb-free JEDEC designator for Matte Tin (Sn)
	*	This package is Pb-free. The Pb-free JEDEC designator (e3) can be found on the outer packaging for this package.

Note: In the event the full Microchip part number cannot be marked on one line, it will be carried over to the next line, thus limiting the number of available characters for customer-specific information.

PIC16C55X

28-Lead Skinny Plastic Dual In-line (SP) – 300 mil (PDIP)

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



Dimension Limits	Units	INCHES*			MILLIMETERS		
		MIN	NOM	MAX	MIN	NOM	MAX
Number of Pins	n		28			28	
Pitch	p		.100			2.54	
Top to Seating Plane	A	.140	.150	.160	3.56	3.81	4.06
Molded Package Thickness	A2	.125	.130	.135	3.18	3.30	3.43
Base to Seating Plane	A1	.015			0.38		
Shoulder to Shoulder Width	E	.300	.310	.325	7.62	7.87	8.26
Molded Package Width	E1	.275	.285	.295	6.99	7.24	7.49
Overall Length	D	1.345	1.365	1.385	34.16	34.67	35.18
Tip to Seating Plane	L	.125	.130	.135	3.18	3.30	3.43
Lead Thickness	c	.008	.012	.015	0.20	0.29	0.38
Upper Lead Width	B1	.040	.053	.065	1.02	1.33	1.65
Lower Lead Width	B	.016	.019	.022	0.41	0.48	0.56
Overall Row Spacing	§ eB	.320	.350	.430	8.13	8.89	10.92
Mold Draft Angle Top	α	5	10	15	5	10	15
Mold Draft Angle Bottom	β	5	10	15	5	10	15

* Controlling Parameter

§ Significant Characteristic

Notes:

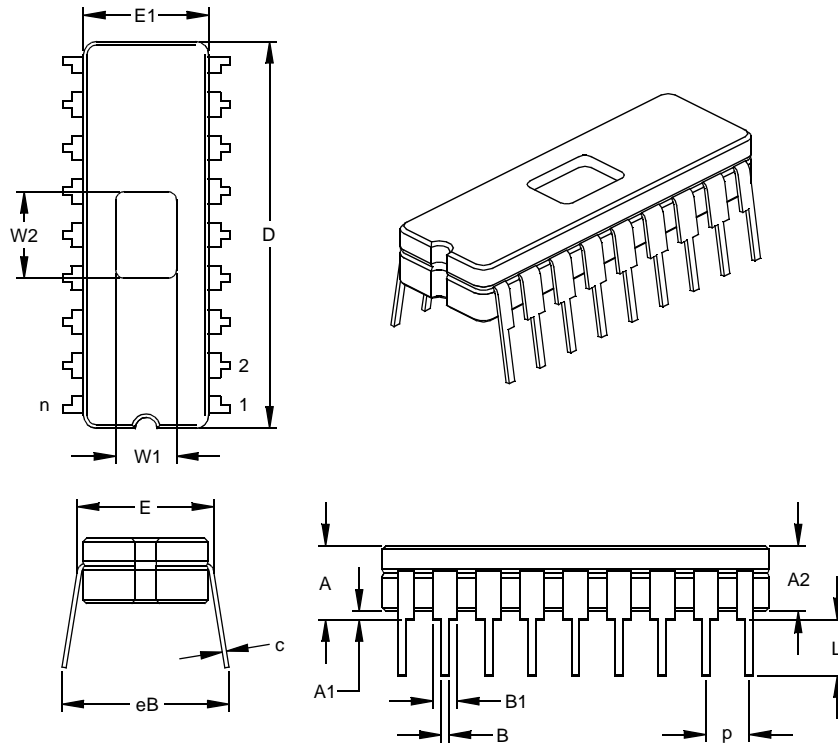
Dimension D and E1 do not include mold flash or protrusions. Mold flash or protrusions shall not exceed .010" (0.254mm) per side.

JEDEC Equivalent: MO-095

Drawing No. C04-070

18-Lead Ceramic Dual In-line with Window (JW) – 300 mil (CERDIP)

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



Units		INCHES*			MILLIMETERS		
Dimension Limits		MIN	NOM	MAX	MIN	NOM	MAX
Number of Pins	n		18			18	
Pitch	p		.100			2.54	
Top to Seating Plane	A	.170	.183	.195	4.32	4.64	4.95
Ceramic Package Height	A2	.155	.160	.165	3.94	4.06	4.19
Standoff	A1	.015	.023	.030	0.38	0.57	0.76
Shoulder to Shoulder Width	E	.300	.313	.325	7.62	7.94	8.26
Ceramic Pkg. Width	E1	.285	.290	.295	7.24	7.37	7.49
Overall Length	D	.880	.900	.920	22.35	22.86	23.37
Tip to Seating Plane	L	.125	.138	.150	3.18	3.49	3.81
Lead Thickness	c	.008	.010	.012	0.20	0.25	0.30
Upper Lead Width	B1	.050	.055	.060	1.27	1.40	1.52
Lower Lead Width	B	.016	.019	.021	0.41	0.47	0.53
Overall Row Spacing	§ eB	.345	.385	.425	8.76	9.78	10.80
Window Width	W1	.130	.140	.150	3.30	3.56	3.81
Window Length	W2	.190	.200	.210	4.83	5.08	5.33

* Controlling Parameter
 § Significant Characteristic
 JEDEC Equivalent: MO-036
 Drawing No. C04-010

INDEX

A

ADDLW Instruction	55
ADDWF Instruction	55
ANDLW Instruction	55
ANDWF Instruction	55
Architectural Overview	9
Assembler	
MPASM Assembler	67

B

BCF Instruction	56
Block Diagram	
TIMER0	47
TMR0/WDT PRESCALER	50
BSF Instruction	56
BTFSC Instruction	56
BTFSS Instruction	57

C

CALL Instruction	57
Clocking Scheme/Instruction Cycle	12
CLRF Instruction	57
CLRW Instruction	58
CLRWDI Instruction	58
Code Protection	46
COMF Instruction	58
Configuration Bits	31

D

Data Memory Organization	13
DECF Instruction	58
DECFSZ Instruction	59
Development Support	67

E

Errata	3
External Crystal Oscillator Circuit	34

G

General purpose Register File	13
GOTO Instruction	59

I

I/O Ports	23
I/O Programming Considerations	28
ICEPIC In-Circuit Emulator	68
ID Locations	46
INCF Instruction	59
INCFSZ Instruction	60
In-Circuit Serial Programming	46
Indirect Addressing, INDF and FSR Registers	21
Instruction Flow/Pipelining	12
Instruction Set	
ADDLW	55
ADDWF	55
ANDLW	55
ANDWF	55
BCF	56
BSF	56
BTFSC	56
BTFSS	57
CALL	57
CLRF	57

CLRW	58
CLRWDI	58
COMF	58
DECF	58
DECFSZ	59
GOTO	59
INCF	59
INCFSZ	60
IORLW	60
IORWF	60
MOVF	61
MOVLW	60
MOVWF	61
NOP	61
OPTION	61
RETFIE	62
RETLW	62
RETURN	62
RLF	62
RRF	63
SLEEP	63
SUBLW	63
SUBWF	64
SWAPF	64
TRIS	64
XORLW	65
XORWF	65

Instruction Set Summary	53
INT Interrupt	42
INTCON Register	19
Interrupts	41
IORLW Instruction	60
IORWF Instruction	60

K

KEELOQ Evaluation and Programming Tools	70
---	----

M

MOVF Instruction	61
MOVLW Instruction	60
MOVWF Instruction	61
MPLAB C17 and MPLAB C18 C Compilers	67
MPLAB ICD In-Circuit Debugger	69
MPLAB ICE High Performance Universal In-Circuit Emulator with MPLAB IDE	68
MPLAB Integrated Development Environment Software	67
MPLINK Object Linker/MPLIB Object Librarian	68

N

NOP Instruction	61
-----------------------	----

O

One-Time-Programmable (OTP) Devices	7
OPTION Instruction	61
OPTION Register	18
Oscillator Configurations	33
Oscillator Start-up Timer (OST)	36

P

PCL and PCLATH	21
PCON Register	20
PICDEM 1 Low Cost PIC MCU Demonstration Board	69
PICDEM 17 Demonstration Board	70
PICDEM 2 Low Cost PIC16CXX Demonstration Board	69
PICDEM 3 Low Cost PIC16CXXX Demonstration Board	70

PRODUCT IDENTIFICATION SYSTEM

To order or obtain information, e.g., on pricing or delivery, refer to the factory or the listed sales office.

<u>PART NO.</u>	<u>X</u>	<u>/XX</u>	<u>XXX</u>
Device	Temperature Range	Package	Pattern
Device	PIC17C756: Standard VDD range PIC17C756T: (Tape and Reel) PIC17LC756: Extended VDD range		
Temperature Range	- = 0°C to +70°C I = -40°C to +85°C		
Package	CL = Windowed LCC PT = TQFP L = PLCC		
Pattern	QTP, SQTP, ROM Code (factory specified) or Special Requirements. Blank for OTP and Windowed devices.		

Examples:

- a) PIC17C756-16L Commercial Temp., PLCC package, 16 MHz, normal VDD limits
- b) PIC17LC756-08/PT Commercial Temp., TQFP package, 8MHz, extended VDD limits
- c) PIC17C756-33I/PT Industrial Temp., TQFP package, 33 MHz, normal VDD limits

* JW Devices are UV erasable and can be programmed to any device configuration. JW Devices meet the electrical requirement of each oscillator type.

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2. The Microchip Worldwide Site (www.microchip.com)

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