# PIC16F630/676 Microcontroller Family

The PIC16F630/676 microcontroller products merge all the advantages of the mid-range x14 architecture and the flexibility of FLASH program memory into a 14-pin package. The PIC16F6XX devices feature a 14-bit instruction set, small footprint package, and a wide operating voltage of 2.0 - 5.5 volts. In addition, these devices offer an internal programmable 4 MHz oscillator, on-board EEPROM Data Memory, on-chip voltage reference and up to 8 channels of 10-bit A/D. These 14-pin microcontrollers provide the features and intelligence not previously available due to cost and board space limitations. With the flexibility of FLASH and an excellent development tool suite including a low cost In-Circuit Debugger (ICD), In-Circuit Serial Programming<sup>™</sup> (ICSP<sup>™</sup>) and full ICE 2000 emulation. these devices are ideal for just about any embedded control application.

## High-Performance RISC CPU:

- Only 35 single word instructions to learn
- All single cycle instructions except program branches, which are two-cycle
- Operating Speed: DC 20 MHz oscillator/clock input

DC - 200 ns instruction cycle

- Memory:
  - 1024 x 14 words of FLASH Program Memory
  - 64 x 8 bytes of Data Memory (SRAM)
  - 128 x 8 bytes of EEPROM Data Memory
- 8-level deep stack
- Direct, indirect, and relative addressing modes for data and instructions

## **Peripheral Features:**

- High current sink/source: 25 mA
- 12 I/O pins with individual direction control
- Programmable interrupt-on-pin change
- Programmable pull-ups on input pins
- TimerO module: 8-bit timer/counter with 8-bit prescaler
- Timer1 module: 16-bit timer/counter with prescaler, can be incremented during SLEEP via external crystal/clock



## **Advanced Analog Features:**

- Analog-to-Digital Converter A/D with:
  - 10-bit resolution
  - Programmable 8-channel input
  - Voltage reference input
- Analog Comparator module with 1 comparator:
  - Programmable On-Chip Voltage Reference (CVREF) module
  - Programmable input multiplexing from device inputs
  - Comparator output is externally accessible

#### **Special Microcontroller Features:**

- 100,000 erase/write cycle FLASH program memory
- 1,000,000 erase/write cycle data EEPROM memory
- Low power Brown-out Reset (BOR)
- Low power Power-on Reset (POR)
- Watchdog Timer (WDT) with its own on-chip RC oscillator for reliable operation
- Programmable code protection
- Power saving SLEEP mode
- Internal 4 MHz oscillator
- In-Circuit Serial Programming<sup>™</sup> (ICSP<sup>™</sup>) via two pins
- Low cost MPLAB<sup>®</sup> In-Circuit Debugger (ICD)

## **CMOS Technology:**

- Low power, high speed FLASH technology
- Fully static design
- Wide operating voltage range (2.0V to 5.5V)
- Industrial and Extended temperature ranges
- Low power consumption



#### **Additional Information:**

- Microchip's web site: www.microchip.com
- Microchip's Technical Library CD-ROM, Order No. DS00148
- Application Notes are available in:
  - Embedded Control Handbook, Order No. DS00092
  - Embedded Control Handbook Update 2000, Order No. DS00711
- Microchip's Quality Systems and Customer Interface System, Order No. DS00169

PIC12F629/675 Microcontroller Family												
Device	FLASH Program Memory Bytes	Data RAM Bytes	EEPROM Data Bytes	I/0 Pins	ADC 10 bits	Comparator	BOR	Timers	ICSP™	Comments		
PIC16F630	1792	64	128	12	-	1	Yes	1x8-bit, 1x16-bit, 1-WDT	Yes	4 MHz Internal Oscillator, ICD*		
PIC16F676	1792	64	128	12	8	1	Yes	1x8-bit, 1x16-bit, 1-WDT	Yes	4 MHz Internal Oscillator, ICD*		
* Requires pure	chase of sep	arate ada	pter module.									
Abbreviation: ADC = Analog-to-Digital Co WDT = Watchdog Timer			igital Converte Timer	nverter ICSP™ = In-Circuit Serial Programming BOR = Brown-out Reset					ICD = In-Circuit Debugger			
				Devel	opment To	ols from Microc	hip					
MPLAB® IDE			Integ (Hard	rated Deve lware/Soft	lopment Env ware Project	ironment (IDE) Manager)						
MPASM <sup>™</sup> Assembler			Unive	Universal PICmicro Macro-assembler Software								
MPLINK <sup>™</sup> Object Linker			Linke	Linker Software								
MPLIB™ Object Librarian			Libra	Librarian Software								
MPLAB SIM Simulator			Softw	Software Simulator								
MPLAB ICE 2000			Full-fe	Full-featured Modular in-circuit Emulator								
PICSTART® Plus Programmer			Entry	Entry-level Program Loader and Development Kit								
PRO MATE <sup>®</sup> II Device Programmer			Full-fe	Full-featured, Modular Device Programmer								
MPLAB ICD2			In-Cir	In-Circuit Debugger								
AC162052			Head	Header Adapter for ICD2								
Americas			Asia	/Pacific			I	Europe				
Atlanta	(770) 6	40-0034	Aust	ralia		61-2-9868-6733	3	Austria	2	13-7242-2244-399		
Boston	(978) 6	92-3848	Chin	a – Beijing	5	86-10-85282100	)	Denmark		45-4420-9895		
Chicago	(630) 2	85-0071	Chin	a – Cheng	du a	86-28-86766200	)	France		33-1-69-53-63-20		
Dallas	(972) 8	318-7423	Chin	a – Fuzhoi	1	86-591-7503506		Germany		49-89-627-144-0		

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