PIC16C6X Microcontroller Family

Product Information

The PIC16C6X microcontroller (MCU) family offers a wide range of options, from upward compatible devices in 18- to 44-pin packages to devices with low to high levels of digital peripheral integration. This family has a 14-bit instruction set, interrupt handling and serial interface capabilities, Capture/Compare/PWM, brown-out detection and a deep 8-level stack. The PIC16C6X family provides the performance and versatility to meet the most demanding requirements of today's cost-sensitive 8-bit MCU applications. The PIC16C6X family is ideally suited for applications ranging from appliance motor control, high-speed automotive, low-power remote sensors, keyboards and telecommunication processors.

High-Performance RISC CPU:

- Only 35 single-word instructions to learn
- All instructions are single cycle (200 ns) except for program branches which are two-cycle
- Operating speed: DC - 20 MHz clock input
  DC - 200 ns instruction cycle
- 1024 x 14 words to 8192 x 14 words of ROM/EPROM/OTP program memory
- 36 to 368 bytes of user RAM
- 14-bit wide instructions
- Interrupt capability
- 8-level deep hardware stack
- Direct, indirect and relative addressing modes
- 13 to 33 I/O
- 18-, 28-, 40- and 44-pin DIP, SOIC, SSOP, PLCC, TQFP and MQFP packages

Peripheral Features:

- Up to 3 timers:
  – Timer0: 8-bit timer/counter with 8-bit prescaler
  – Timer1: 16-bit timer/counter with prescaler, can be incremented during SLEEP via external crystal/clock
  – Timer2: 8-bit timer/counter with 8-bit period register, prescaler and postscaler
- Up to 2 Capture/Compare/PWM (CCP) modules
- Capture is 16-bit, max. resolution is 12.5 ns; Compare is 16-bit, max. resolution is 200 ns; PWM max. resolution is 10-bit. Maximum PWM frequency @ 8-bit resolution = 32 kHz, @ 10-bit resolution = 8 kHz
- Synchronous Serial Port (SSP) with SPI™ and I^2C™
- Universal Synchronous Asynchronous Receiver Transmitter (USART/SCI)
- Parallel Slave Port (PSP) 8-bits wide, with external $\overline{RD}$, $\overline{WR}$ and $\overline{CS}$ controls
- Brown-out detection circuitry for Brown-out Reset (BOR)

Special Microcontroller Features:

- In-Circuit Serial Programming™ (ICSP™) of program memory (via two pins) for EPROM/OTP
- Power-on Reset (POR)
- Power-up Timer (PWRT) and Oscillator Start-up Timer (OST)
- Watchdog Timer (WDT) with its own on-chip RC oscillator for reliable operation
- Programmable code protection
- Power saving SLEEP mode
- Selectable oscillator options:
  EXTRC: External low-cost RC oscillator
  XT: Standard crystal/resonator
  HS: High-speed crystal/resonator
  LP: Power-saving, low-frequency crystal

CMOS Technology:

- Low-power, high-speed CMOS technology offering a Migratable Memory™ path across EPROM/EEPROM/ROM/ FLASH processes
- Fully static design
- Wide operating voltage range: 2.5V to 6.0V
- Commercial, Industrial and Extended temperature ranges
- Low power consumption:
  < 2 mA @ 5V, 4 MHz
  15 µA typical @ 3V, 32 kHz
  < 1 µA typical standby current

PIC16C6X Microcontroller Family *Continued*

Additional Information:

- Microchip's web site: **www.microchip.com**
- Microchip's *Technical Library CD-ROM*, Order No. DS00161
- Application Notes are available in:
  - *Embedded Control Handbook*, Order No. DS00092
  - *Embedded Control Handbook, Volume 2, Math Library*, Order No. DS00167
  - *Embedded Control Handbook Update 2000*, Order No. DS00711
- Microchip's *Non-Volatile Memory Products Data Book*, Order No. DS00157
- Microchip's *Overview, Quality Systems and Customer Interface System*, Order No. DS00169
- Third party software and hardware support:
  - Emulators
  - Programmers
  - Gang Programmers
  - Software Tools
  - Development Boards and Accessories
  - Design Consultants
  - *Third Party Guide*, Order No. DS00104

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Product	Program Memory Bytes	Program Memory Words	Memory Type	Data RAM Bytes	Max. Speed MHz	I/O Ports	Serial I/O	PWM	Brown-Out Detection	Timers	ICSP™	Other Features	Pins
PIC16C62A	3584	2048x14	OTP	128	20	22	I²C/SPI	1	Yes	1-16 bit, 2-8 bit, 1-WDT	Yes	25mA source/sink per I/O, CCP	28
PIC16C62B	3584	2048x14	OTP	128	20	22	I²C/SPI	1	Yes	1-16 bit, 2-8 bit, 1-WDT	Yes	25mA source/sink per I/O, CCP	28
PIC16C63	7168	4096x14	OTP	192	20	22	USART/I²C/SPI	2	Yes	1-16 bit, 2-8 bit, 1-WDT	Yes	25mA source/sink per I/O, 2 CCP	28
PIC16C63A	7168	4096x14	OTP	192	20	22	USART/I²C/SPI	2	Yes	1-16 bit, 2-8 bit, 1-WDT	Yes	25mA source/sink per I/O, 2 CCP	28
PIC16C64A	3584	2048x14	OTP	128	20	33	I²C/SPI	1	Yes	1-16 bit, 2-8 bit, 1-WDT	Yes	25mA source/sink per I/O, Parallel Slave Port, CCP	40, 44
PIC16C65A	7168	4096x14	OTP	192	20	33	USART/I²C/SPI	2	Yes	1-16 bit, 2-8 bit, 1-WDT	Yes	25mA source/sink per I/O, Parallel Slave Port, 2 CCP	40, 44
PIC16C65B	7168	4096x14	OTP	192	20	33	USART/I²C/SPI	2	Yes	1-16 bit, 2-8 bit, 1-WDT	Yes	25mA source/sink per I/O, Parallel Slave Port, 2 CCP	40, 44
PIC16C66	14336	8192x14	OTP	368	20	22	USART/I²C/SPI	2	Yes	1-16 bit, 2-8 bit, 1-WDT	Yes	25mA source/sink per I/O, 2 CCP	28
PIC16C67	14336	8192x14	OTP	368	20	33	USART/I²C/SPI	2	Yes	1-16 bit, 2-8 bit, 1-WDT	Yes	25mA source/sink per I/O, Parallel Slave Port, 2 CCP	40, 44
PIC16CR62	3584	2048x14	ROM	128	20	22	I²C/SPI	1	Yes	1-16 bit, 2-8 bit, 1-WDT	—	25mA source/sink per I/O, CCP	28
PIC16CR63	7168	4096x14	ROM	192	20	22	USART/I²C/SPI	2	Yes	1-16 bit, 2-8 bit, 1-WDT	—	25mA source/sink per I/O, 2 CCP	28
PIC16CR64	3584	2048x14	ROM	128	20	33	I²C/SPI	1	Yes	1-16 bit, 2-8 bit, 1-WDT	—	25mA source/sink per I/O, Parallel Slave Port, CCP	40, 44
PIC16CR65	7168	4096x14	ROM	192	20	33	USART/I²C/SPI	2	Yes	1-16 bit, 2-8 bit, 1-WDT	—	25mA source/sink per I/O, Parallel Slave Port, 2 CCP	40, 44

CCP = Capture/Compare/PWM

Development Tools from Microchip		Resale Price*
MPLAB® IDE	Integrated Development Environment (IDE)	FREE
MPASM	Universal PICmicro macro-assembler	FREE
MPLINK/MPLIB	Linker/Librarian	FREE
C compiler	Sold by third-party vendors (HI-TECH, IAR, CCS)	Contact Vendor
MPLAB-SIM	Software Simulator	FREE
ICEPIC	Low-cost in-circuit emulator	Starting at $789
MPLAB-ICE 2000	Full-featured modular in-circuit emulator	Starting at $1995
PICSTART® Plus	Entry-level development kit with programmer	$199
PRO MATE® II	Full-featured, modular device programmer	$695

*All prices are manufacturer's suggested resale for North America.
** Sale price.

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