

PICmicro® MCU + CAN Microcontroller Family

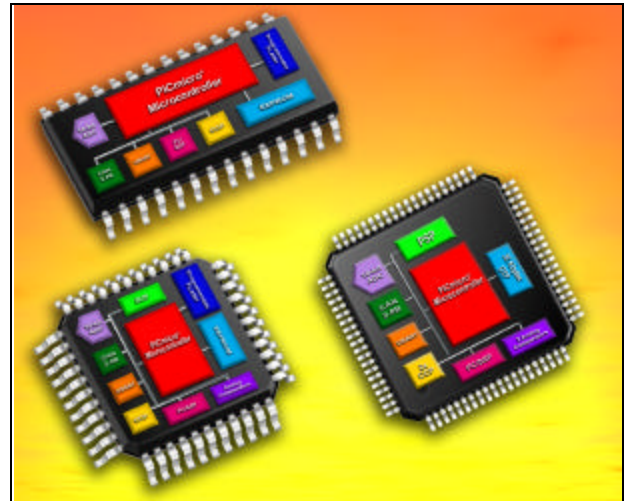
The PICmicro® MCU + CAN microcontroller family merges the power of the PIC18XXXX architecture with the robust Controller Area Network (CAN) Rev. 2.0B serial communication protocol. The PICmicro MCU + CAN family offers a wide berth of products ranging from low pin count 28 and 40 lead devices, up to 68 and 84 lead devices. In addition to the CAN 2.0B serial communication protocol, this product family also provides the user with an industrial leading peripheral set, which includes a 10-bit ADC with up to 16 analog input channels, 3 16-bit Timers and 1 8-bit Timer, Enhanced CCP with up to 4 10-bit PWM outputs, serial communication support for I²C™, SPI™, RS232, RS485 and CAN, 2 analog comparators and an 8x8 hardware multiplier. This rich peripheral set, coupled with the performance of the PIC18 MCU core and wide berth of products, makes the PICmicro MCU + CAN family an ideal solution for just about any embedded applications where a CAN network is being used.

High Performance RISC CPU:

- C compiler optimized architecture instruction set
- Linear program memory addressing to 32 Kbytes
- 65536 bytes on-chip EPROM/FLASH program memory
 - 32768 single word instructions
- 3072 x 8 general purpose registers (SRAM)
- 256 bytes of backup EEPROM data memory
- Up to 10 MIPS operation:
 - DC - 40 MHz clock input
 - 4 MHz - 10 MHz osc./clock input with PLL active
- 16-bit wide instructions, 8-bit wide data path
- Priority levels for interrupts
- 8 x 8 Single Cycle Hardware Multiplier

Peripheral Features:

- High current sink/source 25 mA/25 mA
- Four external interrupt pins
- Timer0 module: 8-bit/16-bit timer/counter with 8-bit programmable prescaler
- Timer1 module: 16-bit timer/counter
- Timer2 module: 8-bit timer/counter with 8-bit period register (time-base for PWM)
- Timer3 module: 16-bit timer/counter
- Secondary clock option - Timer1/Timer3
- Capture/Compare/PWM (CCP) modules
CCP pins can be configured as:
 - Capture input: 16-bit, max. resolution 6.25 ns
 - Compare is 16-bit, max. resolution 100 ns (T_{CV})
 - PWM output: PWM resolution is 1- to 10-bit
Max. PWM frequency @: 8-bit resolution = 156 kHz
10-bit resolution = 39 kHz
- Enhanced CCP module which has all the features of the standard CCP module, but also has the following features for advanced motor control:
 - 1, 2, or 4 PWM outputs
 - Selectable PWM polarity
 - Programmable PWM deadtime
- Master Synchronous Serial Port (MSSP) with two modes of operation:
 - 3-wire SPI™ (supports all 4 SPI modes)
 - I²C™ Master and Slave mode
- Addressable USART module supports interrupt-on-address bit
- Parallel Slave Port (PSP) module
- Up to 68 I/O pins with individual directional control



Advanced Analog Features:

- 10-bit Analog-to-Digital Converter A/D with:
 - Conversion available during SLEEP
- Analog Comparator module with 2 comparators:
 - Programmable input and output multiplexing
 - Programmable on-chip voltage reference
- Programmable Low Voltage Detection (LVD)
 - Supports interrupt-on-low voltage detection
- Programmable Brown-out Reset generation

CAN bus Module Features:

- Implements full CAN model
- Message bit rates up to 1 Mb/s
- Conforms to CAN 2.0B Active Spec with:
 - 29-bit identifier fields
 - 8-byte message length
- 3 Transmit Message Buffers with individual prioritization
- 2 Receive Message Buffers and 1 Receive Message Assembly Buffer
- 6 full 29-bit Acceptance Filters mapped to Receive Buffers
- Prioritization of Acceptance Filters
- 2 full 29-bit Acceptance Filter Masks
- Multiple Receive Buffers for high priority messages to ensure messages are not lost due to overflow
- Advanced Error Management Features

Special Microcontroller Features:

- 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, including:
 - 4X Phase Lock Loop (of primary oscillator)
 - Secondary oscillator (32 kHz) clock input
- In-Circuit Serial Programming™ (ICSP™) via two pins

CMOS Technology:

- Low power, high speed EPROM 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. DS00161
- Microchip's *Product Line Card*, Order No. DS00148
- Microchip's *PIC18CXXX CD-ROM*, Order No. DS30297
- Microchip's *PICmicro® 18C MCU Family Reference Manual*, Order No. DS39500
- 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 *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

PIC18XXXX Microcontroller Family

Product	FLASH Program Memory	Data RAM Bytes	Memory Type	EEPROM Data	RAM Bytes (Words)	I/O Ports	ADC 10-Bits	Serial I/O	PWM	Programmable Brown-out Detection	Comparators	Timers	ICSP™	ROM Equivalent	Packages
PIC18F248	16384	768	FLASH	256	48 x 1	23	5	USART/M ² C/ MSPI/ CAN2.0B	1	Yes	—	3-16 bit, 1-8 bit, 1-WDT	Yes	N/A	28L SDIP, 28L SOIC
PIC18F258	32786	1536	FLASH	256	—	23	5	USART/M ² C/ MSPI/ CAN2.0B	1	Yes	—	3-16 bit, 1-8 bit, 1-WDT	Yes	N/A	28L SDIP, 28L SOIC
PIC18F448	16384	768	FLASH	256	—	35	8	USART/M ² C/ MSPI/ CAN2.0B	5	Yes	2	3-16 bit, 1-8 bit, 1-WDT	Yes	N/A	40L DIP, 44L TQFP, 44L PLCC
PIC18F458	32786	1536	FLASH	256	—	35	8	USART/M ² C/ MSPI/ CAN2.0B	5	Yes	2	3-16 bit, 1-8 bit, 1-WDT	Yes	N/A	40L DIP, 44L TQFP, 44L PLCC
PIC18C658	32786	1536	OTP	—	—	52	12	USART/M ² C/ MSPI/ CAN2.0B	2	Yes	2	3-16 bit, 1-8 bit, 1-WDT	Yes	N/A	64L TQFP, 68L PLCC
PIC18C858	32786	1536	OTP	—	—	68	16	USART/M ² C/ MSPI/ CAN2.0B	2	Yes	2	3-16 bit, 1-8 bit, 1-WDT	Yes	N/A	80L TQFP
PIC18F6680	65536	3072	FLASH	256	—	52	12	USART/M ² C/ MSPI/ CAN2.0B	5	Yes	2	3-16 bit, 1-8 bit, 1-WDT	Yes	N/A	64L TQFP, 68L PLCC
PIC18F8680	65536	3072	FLASH	256	—	68	16	USART/M ² C/ MSPI/ CAN2.0B	5	Yes	2	3-16 bit, 1-8 bit, 1-WDT	Yes	N/A	80L TQFP

Abbreviation: ADC = Analog-to-Digital Converter M²C/MSPI = Master I²C/Master SPI PWM = Pulse Width Modulator
 USART = Universal Synchronous/Asynchronous Receiver/Transmitter WDT = Watchdog Timer

Development Tools from Microchip

Resale Price*

MPLAB® IDE	Integrated Development Environment (Hardware/Software Project Manager)	FREE
MPASM™ Assembler	Universal PICmicro Macro-Assembler Software	FREE
MPLINK™ Object Linker/ MPLIB™ Object Librarian	Linker/Librarian Software	FREE
MPLAB®SIM	Simulator Software	FREE
MPLAB®ICE 2000	Full Featured Modular In-Circuit Emulator	Starting at \$2,045
MPLAB® C18	Code Development Systems	\$495
C compilers	Sold by third-party vendors (HI-TECH, IAR, CCS)	Contact Vendor
PRO MATE® II	Full Featured Modular Device Programmer	Starting at \$854

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

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