Microchip Technology offers a complete line of 8-bit microcontrollers to meet the needs of high-performance embedded applications using the Controller Area Network (CAN) bus. Microchip’s portfolio of 8-bit Flash MCUs with integrated CAN 2.0B functionality allows execution of complex control algorithms and network interfaces on the same device. On-chip peripherals include A/D converters, comparators, pulse-width modulators, addressable USART, and Master I²C™/SPI™.

Microchip also offers ECAN™ technology on many PICmicro MCUs. ECAN Technology is a flexible CAN 2.0B interface specifically designed to address embedded control applications in the automotive and general-purpose market segments. The ECAN module supports the full CAN implementation along with supporting the DeviceNet™ protocol as well as a FIFO state machine.

**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

**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

**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 (Tcy)
    - 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 Mbps
- 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

**ECAN Module Features:**
- Implements full CAN model
- Supports:
  - Standard Bosch CAN 2.0B specifications
  - DeviceNet protocols
  - FIFO state machine
- Three software configurable operating modes:
  - Legacy
  - Enhance
  - FIFO modes

**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
## PIC Microcontrollers Featuring CAN Support

<table>
<thead>
<tr>
<th>Product</th>
<th>Flash Program Memory</th>
<th>Data RAM/Bytes</th>
<th>Memory Type</th>
<th>EEPROM Data</th>
<th>I/O Ports</th>
<th>ADC 10-Bits</th>
<th>Serial I/O</th>
<th>PWM</th>
<th>Programmable Brown-Out Detection</th>
<th>Comp-</th>
<th>Timers</th>
<th>ISCP</th>
<th>nanoWatt Technology</th>
<th>Packages</th>
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<tbody>
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<td>Flash</td>
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</table>

* Call Factory for Availability

USART  LIN Compatible
CAN  RX Buffers - 2, 6 Full 29-bit Acceptance Filters, 2 Full 29-bit Acceptance Masks, TX Buffers - 3
ECAN  RX Buffers - 2, 16 Full 29-bit Acceptance Filters, 2 Full 29-bit Acceptance Masks, TX Buffers - 3, TX/RX Buffers - 3, TX Buffers - 3, 3 Operating Modes, Device Net support

### Development Tools

- **MPLAB® IDE**  Integrated Development Environment (Hardware/Software Project Manager)
- **MPASM™ Assembler**  Universal PICmicro Macro-Assembler Software
- **MPLINK™ Object Linker**  Linker/Librarian Software
- **MPLAB SIM**  Simulator Software
- **MPLAB C18**  C Compiler
- **C Compilers**  Sold by third-party vendors (HI-TECH, IAE, CCS)
- **MPLAB ICD 2**  Low Cost, In-Circuit Debugger
- **MPLAB ICE 4000**  Full Featured, In-Circuit Emulator

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