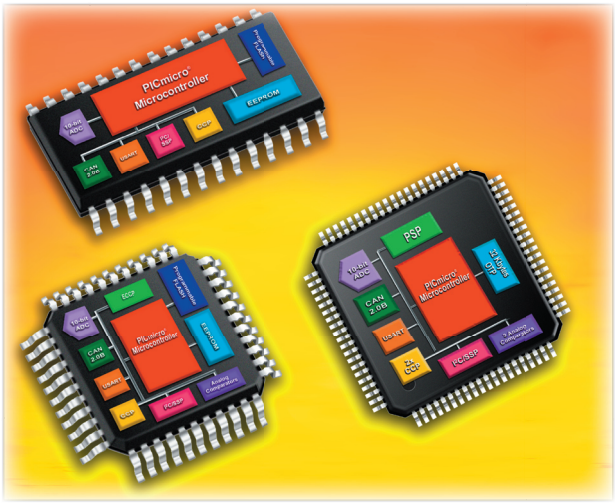
PICmicro® Microcontrollers Featuring CAN and ECAN Modules

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 I^2C™/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)
  – I^2C™ 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

Product	Flash Program Memory	Data RAM Bytes	Memory Type	EEPROM Data	I/O Ports	ADC 10-Bits	Serial I/O	PWM	Programmable Brown-Out Detection	Comp-arators	Timers	ISCP	*nanoWatt* Technology	Packages
PIC18F248	16K x 8	768	Flash	256	23	5	USART/ MI^{2}C/MSPI/ CAN2.0B	1	Yes	-	3-16 bit, 1-8 bit, 1-WDT	Yes	-	28L SDIP, 28LSOIC
PIC18F258	32K x 8	1536	Flash	256	23	5	USART/ MI^{2}C/MSPI/ CAN2.0B	1	Yes	-	3-16 bit, 1-8 bit, 1-WDT	Yes	-	28L SDIP, 28LSOIC
PIC18F448	16K x 8	768	Flash	256	35	8	USART/ MI^{2}C/MSPI/ CAN2.0B	5	Yes	2	3-16 bit, 1-8 bit, 1-WDT	Yes	-	40L DIP, 44L TQFP, 44L PLCC
PIC18F458	32K x 8	1536	Flash	256	35	8	USART/ MI^{2}C/MSPI/ CAN2.0B	5	Yes	2	3-16 bit, 1-8 bit, 1-WDT	Yes	-	40L DIP, 44L TQFP, 44L PLCC
PIC18F2585*	48K x 8	3328	Flash	1024	25	8	USART/ MI^{2}C/MSPI/ ECAN	1	Yes	-	3-16 bit, 1-8 bit, 1-WDT	Yes	Yes	28L SDIP, 28LSOIC
PIC18F2680*	64K x 8	3328	Flash	1024	25	8	USART/ MI^{2}C/MSPI/ ECAN	1	Yes	-	3-16 bit, 1-8 bit, 1-WDT	Yes	Yes	28L SDIP, 28LSOIC
PIC18F4585*	48K x 8	3328	Flash	1024	36	11	USART/ MI^{2}C/MSPI/ ECAN	5	Yes	2	3-16 bit, 1-8 bit, 1-WDT	Yes	Yes	40L DIP, 44L TQFP, 44L PLCC
PIC18F4680*	64K x 8	3328	Flash	1024	36	11	USART/ MI^{2}C/MSPI/ ECAN	5	Yes	2	3-16 bit, 1-8 bit, 1-WDT	Yes	Yes	40L DIP, 44L TQFP, 44L PLCC
PIC18F6585	48K x 8	3328	Flash	1024	52	12	USART/ MI^{2}C/MSPI/ ECAN	2	Yes	2	3-16 bit, 1-8 bit, 1-WDT	Yes	Yes	64L TQFP, 68 PLCC
PIC18F8585	48K x 8	3328	Flash	1024	68	16	USART/ MI^{2}C/MSPI/ ECAN	2	Yes	2	3-16 bit, 1-8 bit, 1-WDT	Yes	Yes	80L TQFP
PIC18F6680	65536	3328	Flash	1024	52	12	USART/ MI^{2}C/MSPI/ ECAN	5	Yes	2	3-16 bit, 1-8 bit, 1-WDT	Yes	Yes	64L TQFP, 68 PLCC
PIC18F8680	65536	3328	Flash	1024	68	16	USART/ MI^{2}C/MSPI/ ECAN	5	Yes	2	3-16 bit, 1-8 bit, 1-WDT	Yes	Yes	80L TQFP

*** 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 - 6, 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

MICROCHIP

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