PIC32 Industrial Microcontroller
MCUPIC32-USB

RoHS COMPLIANT

USB 2.0 · RS232 · UART · I2C · SPI · 1000ksps · DIO

CPU:
32-bit PIC32MX

Performance:
1.56 DMIPS/MHz
@ 80MHz

Memory:
32KB SRAM
512KB Flash

10-bit ADC @1000ksps

Single-cycle Multiply

High-performance Divide

4-Ch Hardware DMA

User LEDs

User toggle switches

Form Factor:
2.5" x 2.5"
(63.5mm x 63.5mm)

Operating Temp:
-40°C to +85°C

Operating Humidity:
5% to 95%
non-condensing

Storage Temp:
-55°C to +85°C

MADE IN USA

The MCUPIC32-USB is a 32-bit microcontroller board ideal for low power applications which require a reliable, high-performance MCU.

Powered by Microchip's PIC32MX microcontroller, the module offers designers a host of features including a 10-bit ADC @ 1000ksps, Digital I/O, UART, RS232, I^2C, SPI, Timers / Counters, 8 general purpose LEDs, 8 general purpose toggle switches, USB 2.0 Full Speed (functional as a Host or Client), and much more. The M4K 5-stage pipeline architecture also features a prefetch cache module to speed execution from flash, and a single-cycle multiply and high-performance divide module. Furthermore, the module can be configured to receive power through the USB connector or an external system power source via a terminal block.

Using the free MPLAB IDE and vast resources of software libraries and example software available, developers can bring their projects to life with ease and a quick time to market.

The module's small size and low power usage (requiring only 80mA for 1.56 DMIPS/MHz performance) also makes the MCUPIC32-USB an excellent candidate for mobile applications and those requiring low power.

The MCUPIC32-USB can be purchased Module only, or as a Development kit which includes a complete Cable Set, and ICD3 Programmer / Debugger.

Software Support

Software Libraries:
 USB
 File System
 Encryption
 and much more!

Example Software:
 C/C++ MCU Code
 Windows App for USB comm.

Development Tools

Microchip MCPAB IDE
C30 Compiler
ICD3 Programmer / Debugger

Electrical @25°C:

Supply Voltage...................................+5V DC

Typical Operating Current................. 80mA

Max Operating Current.................... 175mA

Idle Current.. 28mA

** Low Power Operating mode
and sleep modes available

Memory:

CPU SRAM.. 32 KB

CPU Flash (Program Memory)......... 512 KB

▸ 10,000 erase/write endurance (min)

▸ 20 year data retention (min)

▸ Selectable write protection boundary

▸ Self-programmable via software

▸ Prefetch cache to speed up execution

CPU Boot Flash 12KB

External EEPROM.......................... 256 Kbits

▸ 64-byte page

▸ 1,000,000 erase/write endurance

▸ >200 year data retention

▸ Self-Timed Erase and Write Cycles

CPU:

▸ 32-bit MIPS32 M4K architecture

▸ 5-stage RISC pipeline

▸ Up to 1.56 DMIPS/MHz (Dhrystone 2.1)
performance @ 80MHz

▸ Single-Cycle Multiplier & High-perfomance
Divider

▸ Internal 32kHz Crystal for low power mode

▸ Switch between clock sources in Real-Time

▸ Idle, Sleep and Doze modes with Fast
Wake-Up and Two-Speed Start-Up

▸ Fail-Safe Clock Monitor: detects clock failure
and switches to internal clock

▸ Power-on Reset (POR)

▸ Power-up Timer (PWRT)

▸ Oscillator Start-up Timer (OST)

▸ Watchdog Timer (WDT)

▸ Brown-out Reset (BOR)

Peripherals:

▸ Up to 4-ch hardware DMA

▸ Automatic data size detection

▸ Five 16-bit Timers/Counters

▸ Two 16-bit pairs combine to create
two 32-bit timers

▸ Five 16-bit Capture Inputs

▸ Five 16-bit Compare/PWM Outputs

▸ Digital I/O (High-Speed up to 80Mhz)

▸ 5.5V Tolerant Inputs

▸ Configurable Open-Drain Outputs

▸ High-Current Sink/Source (18mA)

▸ 8-bit/16-bit Parallel Master/Slave Port

▸ Up to 16 address pins

▸ Hardware Real-Time Clock/Calendar (RTCC)

▸ Provides cloock, calendar, alarms

▸ Cyclic Redundancy Check Generator (CRC)

▸ Up to five External Interrupt Sources

Communication Protocols:

▸ Up to two 3-Wire/4-Wire SPI modules

▸ 4 Frame Modes

▸ User selectable 8/16/32bit data width

▸ Up to two I^2C modules

▸ Multi-Master or slave modes

▸ 7-bit/10-bit addressing modes

▸ Up to two UART modules

▸ Supports RS-485, RS232, LIN/J2602
protocols and hardware IrDA.

▸ Auto-wakeup and Baud-Rate Detect

▸ 4-level FIFO buffer

▸ Dual RS232

▸ UART ports connected to RS232
transceiver

▸ Hardware flow-control via RTS & CTS

▸ ±15kV ESD Protected

▸ USB 2.0 On-The-Go Compliant

▸ Dual-Role: can be Host or Client

▸ Full-Speed (12MB/s)

▸ Dedicated DMA

Analog Features:

▸ 10-bit, up to 16 channel ADC @ 1000ksps

▸ ADC available in sleep mode

▸ Two Analog Comparators

Programming/Debugging:

▸ 2-wire ICSP interface

▸ Unintrusive hardware based instruction trace

LEDs & Switches:

Power (Green)... D1

Eight User LEDs (Yellow).................... D2-D9

Eight User Toggle Switches................. SW1

Jumpers:

Power Select... W1

USB Config.. W2

I^2C Pullup Enable................................... W3

External Connectors:

USB 2.0 Full Speed.................................... J1

Reset.. J2

50-pin I/O connector........................... J3/J5

Dual RS232 (±15kV ESD Protected)........ J4

ICSP Programming Header...................... J6

Power TB1

Cable Set (optional)

USB Cable (3ft)...(1)

Dual RS232 Cable.....................................(1)

DB9 Female to DB9 Female (5ft)........... (1)

50-Pin Twisted-Pair Cable (1ft) .... (2)

Development Kit includes MCU Module, Cable Set, two 50-pin breakout boards with screw terminals, and ICD3.
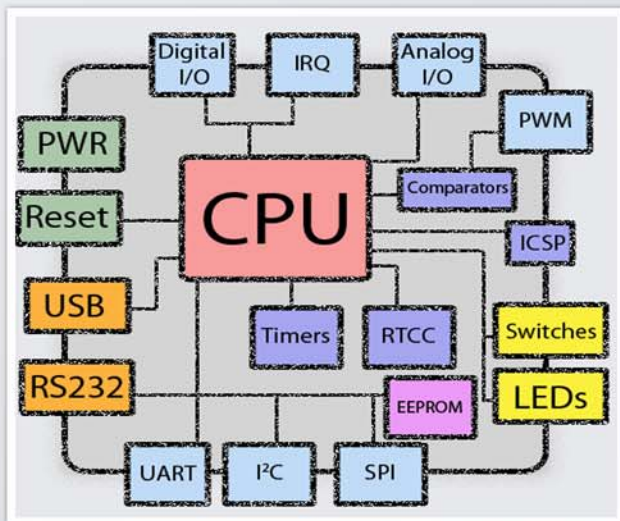
Ordering Information

MCUPIC32-USB .... PIC32 Industrial MCU Module

MCUPIC32-USB-CS.. Cable Set

MCUPIC32-USB-DK .... Development Kit

**Stand-offs, Nuts, and Screws are provided with all boards

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