PIC18F13K50/PIC18F14K50 Microcontrollers

Low Cost USB for Any Embedded Application

USB Maturity

As USB reaches universal acceptance in the Personal Computing market, it is rapidly becoming a widely accepted communications interface for embedded applications. With the advent of inexpensive USB microcontrollers, the availability of free software enabling fast development, and the vast installed base of USB-connected consumer devices, the interface has become an attractive alternative to the venerable RS-232 port. Microchip now offers two microcontrollers that set the standard for affordability and integration in the embedded USB market.

The PIC18F13K50 and PIC18F14K50 are the lowest cost USB microcontrollers from Microchip, and offer many features not normally found on inexpensive 8-bit microcontrollers. The 20-pin microcontrollers are available with 8 or 16 Kbytes of Program Flash memory, up to 768 bytes of RAM and 256 bytes of EEPROM for internal data storage. Both microcontrollers offer a wide range of legacy serial connectivity; including EUSART, I²C™ and SPI interfaces. Multiple PWM channels and a 10-bit ADC complete the powerful feature set. With packaging as small as 5mm x 5mm, PIC18F13K50 and PIC18F14K50 are excellent options for portable applications such as data loggers, USB dongles and serial protocol translators

Extraordinary Capability

Flexible Modes of Operation – From battery power to 5.5 Volts, the PIC18F1XK50 family thrives in most any environment. With multiple power managed modes, these efficient microcontrollers can easily be configured to make use of any power source.

Program Memory "Self Write" Capability – Allows easy field firmware updates via USB Boot loader software or ICSP™ interface.

Multiple Clocking Options – With 2 internal oscillators and various external clock modes, the PIC18F1XK50 microcontrollers support speeds from 31 KHz up to 48 MHz*.

mTouch™ Sensing Solutions Compatibility – Both microcontrollers natively support up to 3 capacitive touch buttons, with the possibility for expansion using external components.

Features

- High Performance PIC18 Core
  - Optimized for use with C compilers
- Full Speed Universal Serial Bus Interface
  - USB 2.0 compliant
- Dual Oscillators with Clock Switching and Internal PLL
  - Software Selectable 31 KHz-16 MHz internal oscillator
  - Internal 4x PLL for speeds up to 48 MHz
  - 32 KHz Low Power oscillator for use with Timer 1
- Serial Communications Interfaces
  - UART/SCI connectivity via EUSART module
  - Master Mode SPI and I²C with Address Mask option
- Enhanced Capture/Compare/PWM Module with PWM Steering
- Advanced Analog Peripherals
  - Enhanced analog comparator module, featuring two comparators with Set/Reset latch mode
  - Up to nine 10-bit ADC channels
  - Internal reference voltage for comparators and ADC
- Four Power-Managed Operating modes
- Software Controllable Brown-Out Reset
- Up to 15 General Purpose I/O pins

*Although the products can be internally clocked to 48 MHz, an external crystal must be used to ensure proper operation while the USB functionality is enabled.

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USB Development – The Quick and Easy Way

As with the entire Microchip USB microcontroller family, the PIC18F14K50 and 13K50 are supported by a full complement of free software and inexpensive hardware development tools.

Microchip provides a free USB firmware stack and class drivers that enable users to utilize the powerful interface without having to write their own code. The firmware also includes a series of application examples that cover the most common types of USB communication.

To make your development experience even easier, Microchip now offers a Low Pin Count USB Development Kit with PICkit 2 (DV164127) or a Low Pin Count USB Development Kit without PICkit 2 (DV164126) to help take your project from evaluation to prototype stage quickly and efficiently. The development kits contain a self-guided "Getting Started" course, as well as a detailed series of labs covering applications ranging from simple keyboards to data loggers and USB to RS-232 converters.

PIC18F14K50 and PIC18F13K50 Microcontrollers

Part Number	Program Flash (bytes)	Data EEPROM (bytes)	RAM (bytes)	I/O Pins	A/D	Comparators	USB	Serial Comms	Timers 8/16 bit	Operating Voltage	Packages
PIC18F13K50	8K	256	512	15	9	2 w/Set-Reset Latch	Full Speed 2.0 Compliant	EUSART I²C/SPI	2/1	2.2-5.5V	20P, 20SS, 20SO, 20MQ
PIC18LF13K50	8K	256	512	15	9	2 w/Set-Reset Latch	Full Speed 2.0 Compliant	EUSART I²C/SPI	2/1	1.8-3.6V	20P, 20SS, 20SO, 20MQ
PIC18F14K50	16K	256	768	15	9	2 w/Set-Reset Latch	Full Speed 2.0 Compliant	EUSART I²C/SPI	2/1	2.2-5.5V	20P, 20SS, 20SO, 20MQ
PIC18LF14K50	16K	256	768	15	9	2 w/Set-Reset Latch	Full Speed 2.0 Compliant	EUSART I²C/SPI	2/1	1.8-3.6V	20P, 20SS, 20SO, 20MQ

Package Key: P = PDIP, SS = SSOP, SO = SOIC, MQ = 5 mm x 5 mm QFN

Development Tools from Microchip

Part Number	Development Tool	Description
SW007002	MPLAB® IDE – includes: MPASM™ Assembler, MPLINK™ Linker/MPLIB™ Librarian and MPLAB Simulator Software	Integrated Development Environment (download free of charge at www.microchip.com)
SW006011	MPLAB C Compiler for PIC18 MCUs	C Compiler for PIC18CXXX MCUs
SW006012	MPLAB C Compiler for PIC24 MCUs and dsPIC® DSCs	C Compiler for dsPIC30F MCUs
SW006015	MPLAB C Compiler for PIC32 MCUs	C Compiler for PIC32 MCUs
DV164120	PICkit™ 2 Starter Kit	Starter Kit
DV007004	MPLAB PM3 Universal Device Programmer	Full-featured Modular Device Programmer
DM240001	Explorer 16 Development Board	Modular Development System for 16-bit MCUs
DV244005	MPLAB REAL ICE™ Probe Kit	High-speed Emulator for Flash DSC and MCU devices
DM320001	PIC32 Starter Kit	Starter Kit for High Performance PIC32 MCU family
DM240011	MPLAB Starter Kit for PIC24F	Starter Kit for PIC24F MCU family
DM330011	MPLAB Starter Kit for dsPIC DSC	Starter Kit for dsPIC DSC devices

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www.microchip.com/PIC18F1XK50

Visit our web site for additional product information and to locate your local sales office.

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