

PIC16F151X/152X Microcontrollers

High Integration, Enhanced Performance Devices with nanoWatt XLP

Summary

In today's competitive environment it can be challenging to design highly efficient systems while keeping the power consumption and cost under control. The PIC16F15XX microcontrollers are designed to achieve this, while promoting a high level of integration within the microcontroller itself. The PIC16F15XX family consists of microcontrollers in 28, 40/44 and 64 pin-count, and are based on the latest and high performance Enhanced Mid-Range Core. The combination of the highly efficient architecture, fast performance, peripheral integration and low cost makes this family suitable for various cost sensitive general-purpose applications.

The eight members of PIC16F15XX family offer up to 28 KB of Flash program memory, up to 1.5 KB of RAM, up to 30 input channels for 10-bit ADC, up to 2 SPI/I²C™, up to 2 EUSART, new temperature indicator module, up to 10 CCP modules, and multiple other peripherals and features. These MCUs are designed to enable a wide variety of applications, while saving on board space and design costs. The low power "LF" options for these products are also available; these will allow operation from 1.8V to 3.6V. These LF options are highly suitable for battery-powered applications, because of their excellent power performance.

Key Features

- **Enhanced Mid-Range Architecture**
Offers higher performance, C-friendly code development, efficient code execution, automatic context savings on interrupts, higher memory and RAM support, among other enhancements.
- **mTouch™ Support**
Up to 30 touch channels to implement capacitive touch keys and sliders.
- **10-bit ADC with Hardware Capacitive Voltage Divider (HCVD) Support**
HCVD provides automated capacitive touch sampling, thereby reducing code size and decreasing CPU usage. (Only available in PIC16F1512/3 devices.)
- **Communication Peripherals**
Up to 2 SPI/I²C and up to 2 EUSARTs, provide designers the flexibility to implement multiple embedded communications networks.
- **Motor and Lighting Control**
Up to 10 Capture Compare and PWM peripherals can be utilized to implement a variety of motor control and lighting applications. In PWM mode, there are up to five different time bases to choose from, which allows for independent PWM control.
- **eXtreme Low Power (XLP) Performance**
With low standby currents and low active currents, these MCUs enable energy efficient designs.



Why PIC16F15XX?

- **Ease of Design** – With hundreds of code examples and application libraries, designing with these parts could not be any simpler.
- **Easy Migration** – These MCUs are pin compatible with other Microchip 8-bit MCUs, which means drop-in compatibility on your existing board. C-optimized architecture enables worry free migration, even from other 8-bit architectures.
- **Various Applications in a Variety of Market Segments** – A wide array of peripherals enable many applications in consumer electronics, automotive, medical, home appliance and other markets.
- **Low Cost** – This MCU family is designed to enable highly efficient designs while promoting cost savings.

Development Made Easy

The PIC16F15XX family provides a low-cost development experience from code creation, to integration into the end application.

- **Develop your Code** – MPLAB® IDE with integrated HI-TECH C® compiler allows designers to develop code and simulate their application with zero initial investment.
- **Program and Debug** – The PIC16F15XX family supports In-Circuit Debug functionality without the use of an additional header. Connect the PICKit™ 3 Debugger or MPLAB ICD 3 In-Circuit Debugger to get started.



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Additional Information

- PIC16(L)F1512/3 Data Sheet, DS41624
- PIC16(L)F1516/7/8/9 Data Sheet, DS41452
- PIC16(L)F1526/7 Data Sheet, DS41458
- PIC1XF1XXX Software Migration, DS41375
- 8-bit PIC® Microcontroller Solution Brochure, DS39630
- Corporate Focus Product Selector Guide, DS01308
- Quick Guide to Microchip Development Tools Brochure, DS51894

Sample Information

On-line Sampling: sample.microchip.com

PIC16F15XX Microcontrollers

Device	I/O	Flash (KB)	Data RAM (Bytes)	CCP	EUSART	MSSP (SPI/I ² C™)	10-bit ADC ch	Timers (8-bit/16-bit)	Operating Voltage	Pins	Packages
PIC16F1512 PIC16LF1512	25	3.5	128	2	1	1/1	17	2/1	2.3V-5.5V 1.8V-3.6V	28	SPDIP, SOIC, SSOP, 4x4 UQFN
PIC16F1513 PIC16LF1513	25	7	256	2	1	1/1	17	2/1	2.3V-5.5V 1.8V-3.6V	28	SPDIP, SOIC, SSOP, 4x4 UQFN
PIC16F1516 PIC16LF1516	25	14	512	2	1	1/1	17	2/1	2.3V-5.5V 1.8V-3.6V	28	SPDIP, SOIC, SSOP, 4x4 UQFN
PIC16F1518 PIC16LF1518	25	28	1024	2	1	1/1	17	2/1	2.3V-5.5V 1.8V-3.6V	28	SPDIP, SOIC, SSOP, 4x4 UQFN
PIC16F1517 PIC16LF1517	36	14	512	2	1	1/1	28	2/1	2.3V-5.5V 1.8V-3.6V	40/44	PDIP, 10x10 TQFP, 5x5 UQFN
PIC16F1519 PIC16LF1519	36	28	1024	2	1	1/1	28	2/1	2.3V-5.5V 1.8V-3.6V	40/44	PDIP, 10x10 TQFP, 5x5 UQFN
PIC16F1526 PIC16LF1526	54	14	768	10	2	2/2	30	6/3	2.3V-5.5V 1.8V-3.6V	64	10x10 TQFP, 9x9 QFN
PIC16F1527 PIC16LF1527	54	28	1536	10	2	2/2	30	6/3	2.3V-5.5V 1.8V-3.6V	64	10x10 TQFP, 9x9 QFN

Development Tools from Microchip

Part Number	Development Tool	Description
DV164131	PICkit™ 3 Debug Express	In-Circuit Debugger/Programmer uses in-circuit debugging logic incorporated into each chip with Flash memory to provide a low-cost hardware debugger and programmer.
DV164035	MPLAB® ICD 3 In-Circuit Debugger	Cost effective high-speed hardware debugger/programmer for Flash Digital Signal Controller (DSC) and microcontroller (MCU) devices.
DM164130-1	F1 Evaluation Platform www.microchip.com/F1Eval	Demonstration/development tool for Enhanced Mid-Range PIC® MCUs (PIC12F1XXX/PIC16F1XXX), provides a platform for general purpose development and includes demos focused on low power, LCD and motor control.
DM164130-5	F1 + Low Voltage Evaluation Platform	Demonstration/development tool for Enhanced Mid-Range PIC® MCUs (PIC12F1XXX/PIC16F1XXX), provides a platform for general purpose and low voltage development, and includes demos focused on low voltage, low power, LCD and motor control.
DV164132	F1 Evaluation Kit	Demonstration/development tool for Enhanced Mid-Range PIC® MCUs (PIC12F1XXX/PIC16F1XXX) and includes the PICkit™ 3 for quick programming and development. This kit provides a platform for general purpose development and includes demos focusing on low power, LCD and motor control.
DM163022	PICDEM™ 2 Plus Demonstration Board	A simple board that demonstrates the capabilities of the 18-, 28- and 40-pin PIC16XXX and PIC18XXX devices. It can be used stand-alone with a programmed part, with an in-circuit emulator or in-circuit debugger.
DV007004	MPLAB® PM3 Universal Device Programmer	Operates with a PC or as a stand-alone unit, and programs Microchip's entire line of PIC® MCUs as well as the latest dsPIC30F DSC devices.
DM164120-3	PICkit™ 28-pin Demo Board	This small demo board comes populated with Microchip's PIC16F886 28-pin MCU and includes a generous prototyping area. Also includes two bare boards for those interested in customizing their development.



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

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