

PIC10F32X Microcontrollers

The Original 6-pin Microcontroller Just Got Better

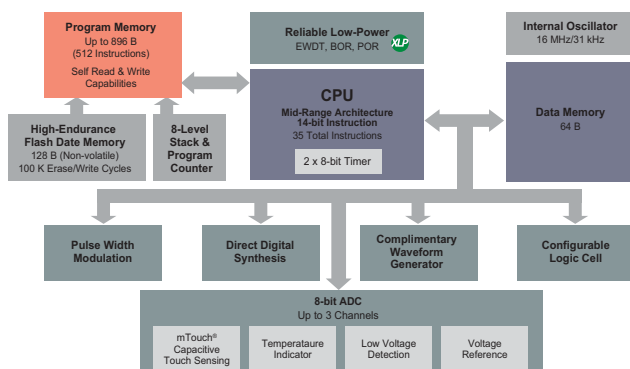
Summary

The first 6-pin microcontroller in the world—the original baseline architecture PIC10F2XX family—made its debut in 2004 and included six members: PIC10F200, PIC10F202, PIC10F204, PIC10F206, PIC10F220 and PIC10F222. These devices are now some of the most widely accepted MCUs in the industry. A significant factor in the success of the PIC10F family has been its ability to enable unique and non-traditional uses such as ASIC/PCB fixes and intelligent analog control. Its economical pricing also makes disposable intelligent applications possible, such as pregnancy testers and packing sensors. While the baseline PIC10F2XX family has achieved incredible worldwide acceptance, customers have frequently requested additional features such as pulse-width modulation (PWM), non-volatile data storage and interrupts.

Based upon Microchip's Mid-Range architecture, the PIC10F320/322 is the next generation of the PIC10F family. It provides an increased feature set with improved performance. The new PIC10F members include hardware interrupts, an eight-level hardware stack, two PWMs, an emulated data EE, a low-power 16 MHz internal oscillator, an 8-bit Analog-to-Digital Converter (ADC), and several new and unique features.

- **Configurable Logic Cell (CLC)** – Provides four inputs for combinational and sequential logic that is under software control. This can be used for conditional signaling, signal combining or general purpose logic such as Boolean functions and flip flops.
- **Complementary Waveform Generator (CWG)** – Provides a complement waveform to various inputs sources including the PWM, CLC or NCO. It has independent rising and falling dead band control, with auto-shutdown capability that provides improved switching efficiencies for applications such as synchronous power supplies and motor control.
- **Numerically Controlled Oscillator (NCO)** – Provides oscillator capabilities with up to 20-bit frequency resolution and true linear frequency control targeted towards applications within lighting and power supplies.
- **Integrated Temperature Indicator** – For low-cost temperature measurements.

PIC10F32X Block Diagram



All PIC10F members are ideal for a wide variety of applications that can benefit from the additional intelligence that an 8-bit PIC® microcontroller provides.

Key Features

- **Mid-Range Architecture** – Paired with the low-power 16 MHz internal oscillator, performance is increased while power usage is minimized.
- **High-Endurance Flash (HEF)**
 - 128 B Non-volatile data storage
 - 100 K Erase/write cycles
- **Industry-Leading Low Power** – The 'LF' variants offer the lowest possible power consumption and achieve world-leading battery life.
- **eXtreme Low Power (XLP) technology**
- **Smallest Form Factors** – Multiple package options available including 2 x 3 DFN and SOT-23.
- **Migration** – Simple migration to and from products such as the PIC10F2XX family.
- **Special Capabilities**
 - **Low Voltage Detect (LVD)** – Provides real-time battery voltage measurements and early warning low-voltage detection.
 - **Operation Down to 0.35V** – Utilize the MCP1624 to power any application from a single battery cell.

Target Applications

Bring intelligence to almost any application:

- **Disposable:** pregnancy testers, glucose meters, dialysis monitors, drug testers and fireworks
- **Logic Control:** passive discrete logic functions such as delays, smart gates, signal conditioning, simple state machines, encoders/decoders
- **Mechatronics:** smart switches, mode selectors, remote I/Os, timers, LED flashers
- **Electronic Glue:** bug fixes for ASICs or PCBs, signal inversion, timing delays, feature upgrades, late changes



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Additional Information

- PIC10F32X Data Sheet, DS40001585
- I²C™ Bootloader for the PIC16F1XXX, AN1302
- mTouch® Sensing Solution User's Guide, DS40001328
- 8-bit PIC Microcontroller Solutions Brochure, DS30009630
- Using the Integrated Temperature Indicator, AN1333
- Low-Voltage Boost Regulator – MCP1624/3 Data Sheet, DS40001420

- Focus Product Selector Guide, DS00001308
- Quick Guide to Microchip Development Tools Brochure, DS50001894

Sample Information

- Online sampling: www.sample.microchip.com

PIC10F32X Microcontrollers													
Device	Flash (Word/Bytes)	HEF (B)	Data RAM (Bytes)	8-bit ADC	PWM	Temperature Indicator	Complementary Waveform Generator	Numerically Controlled Oscillator	Configurable Logic Cell	Operating Voltage (V)	Pins	Packages	XLP
PIC10F320	448	128	64	3	2	Integrated	✓	✓	✓	2.3–5.5V	6	PDIP, 2 × 3 DFN, SOT-23	✓
PIC10F322	896	128	64	3	2	Integrated	✓	✓	✓	2.3–5.5V	6	PDIP, 2 × 3 DFN, SOT-23	✓
PIC10LF320	448	128	64	3	2	Integrated	✓	✓	✓	2.3–5.5V	6	PDIP, 2 × 3 DFN, SOT-23	✓
PIC10LF322	896	128	64	3	2	Integrated	✓	✓	✓	2.3–5.5V	6	PDIP, 2 × 3 DFN, SOT-23	✓

Development Tools From Microchip		
Part Number	Development Tool	Description
DM164131	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
AC163020	PIC10F Programmer Adapter (SOT-23)	Provides PIC10F socket support for both the SOT-23 and DIP-8 packages. It allows interfacing to Microchip's low-cost family of programmers including PICKIT 1/2/3 and MPLAB ICD 2/3.
AC163020-2	PIC10F Programmer Adapter (2 × 3 DFN)	Provides PIC10F socket support for both the SOT-23 and DIP-8 packages. It allows interfacing to Microchip's low-cost family of programmers including PICKIT 1/2/3 and MPLAB ICD 2/3.
DM164137	Curiosity Development Board	This development board is a cost-effective, fully integrated 8-bit development platform targeted at first-time users, Makers and those seeking a feature-rich rapid prototyping board.



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

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