

PIC16F72X Microcontrollers

The Perfect Balance of Cost and Functionality

Summary

Building upon Microchip's leadership in 8-bit microcontrollers, the PIC16F72X Family (PIC16F707/727/726/724/723A/722A/721/720) is a versatile, general-purpose product line that enhances the usability and features of any end-product while keeping costs low. The PIC16F72X Family provides a general purpose approach to bringing a higher level of intelligence and reliability into various applications including; interactive toys or consumer products such as electric tooth brushes and blenders. With flexible product options and low cost, PIC16F72X devices allow for increased application functionality while minimizing BOM costs.

The PIC16F72X Family has an operating voltage range of 1.8V to 5.5V, with the low-power PIC16LF72X variants offering lower standby and other power consumption specifications from 1.8V to 3.6V. It features a 16 MHz internal oscillator; up to 14 Analog-to-Digital Converter (ADC) channels; communication interfaces (SPI, I²C™, USART) and up to two Capture/Compare/PWM (CCP) modules; plus the mTouch™ Capacitive Sensing Module peripherals (28-40-pin MCUs only). These highly integrated devices are well-suited for a wide range of general-purpose applications in the appliance, industrial, consumer electronic and many other markets. All variations feature a Timer1 Gate that runs from the internal 16 MHz oscillator, providing ease in conditional event counting and measurements. With up to 14 ADC channels, up to two CCP modules and communication peripherals, these PIC® microcontrollers increase design flexibility with the ability to interface with external devices such as environmental sensors, as well as provide additional system control and monitoring.

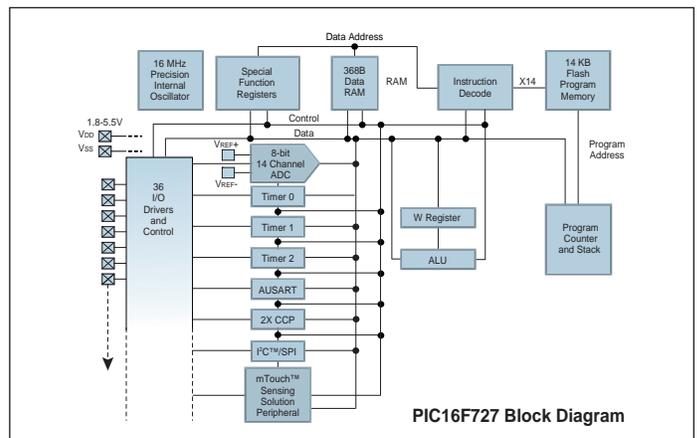
The addition of the integrated mTouch Capacitive Sensing Module (28-40-pin MCUs only) allows customers to further distinguish their products. The mTouch Sensing Solution peripheral makes it easy to add proximity sensing or capacitive touch-sensing user interfaces in place of mechanical buttons or switches. Additionally, the mTouch peripheral can operate while the device is in "Sleep mode" with a total power consumption of <10 µA, bringing further power savings to the user. When designing applications such as: cell phones, home appliances or thermostats – mTouch technology provides an inexpensive, reliable and aesthetically pleasing interface.

The 20-pin PIC16F720/721 adds the self read-write feature to its program Flash memory. Self read-write Flash serves as a low cost alternative to the Data EE; and is very useful when applications require remote updates, or an application needs to store system data or look-up tables.



Features

- Price points that bring intelligence and control to cost-sensitive applications
- Low power 1.8V operation up to 5.5V
- Full analog operation throughout entire supply voltage range
- nanoWatt XLP Technology (LF variants only)
- 16 MHz internal oscillator
- Integrated mTouch Capacitive Sensing Modules (28-40-pin MCUs only)
- Up to 14 ch. 8-bit ADC channels
- I²C, SPI, USART
- Up to two Capture Compare PWM modules
- Up to four 8-bit Timer (TMR0/TMR2)
- Up to two 16-bit Timer (TMR1)
- Watchdog Timer (WDT)
- Enhanced Power-On/Off-Reset
- Brown-Out Reset (BOR)
- In Circuit Serial Programming™ (ICSP™)



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Additional Information

- PIC16F/LF727/726/724 Data Sheet, DS41341
- PIC16F/LF722A/723A Data Sheet, DS41417
- PIC16F/LF720/721 Data Sheet, DS41430
- PIC16F/LF707 Data Sheet, DS41418
- Introduction to Capacitive Sensing, AN1101
- Layout & Physical Design Guidelines for Capacitive Sensing, AN1102
- Using the Capacitive Sensing Module of the PIC16F72X, AN1171

- Low Power Capacitive Sensing with the Capacitive Sensing Module, TB3014
- mTouch Sensing Solution User's Guide, DS41328
- 8-bit PIC Microcontroller Solutions Brochure, DS39630
- Corporate Focus Product Selector Guide, DS01308
- Quick Guide to Microchip Development Tools Brochure, DS51894

Sample/Purchasing Information

- On-line Sampling: sample.microchip.com
- On-line Purchasing: www.microchipdirect.com

PIC16F72X PIC® Microcontrollers

Device	Pins	Flash (Words/Bytes)	Self Read/Write Flash	RAM (Bytes)	8-bit ADC	Timers 8-bit/16-bit	CCP	Communication	Capacitive Sensing Modules	Operating Voltage	Package Options
PIC16F720 PIC16LF720	20	2K/3.5K	Yes	128	12	2/1	1	UART, I ² C™, SPI	Software	1.8V-5.5V 1.8V-3.6V	PDIP, SOIC, SSOP, 4x4 QFN
PIC16F721 PIC16LF721	20	4K/7K	Yes	256	12	2/1	1	UART, I ² C, SPI	Software	1.8V-5.5V 1.8V-3.6V	PDIP, SOIC, SSOP, 4x4 QFN
PIC16F722A PIC16LF722A	28	2K/3.5K	-	128	11	2/1	2	UART, I ² C, SPI	1	1.8V-5.5V 1.8V-3.6V	SPDIP, SOIC, SSOP, 6x6 QFN, 4x4 UQFN
PIC16F723A PIC16LF723A	28	4K/7K	-	192	11	2/1	2	UART, I ² C, SPI	1	1.8V-5.5V 1.8V-3.6V	SPDIP, SOIC, SSOP, 6x6 QFN, 4x4 UQFN
PIC16F726 PIC16LF726	28	8K/14K	-	368	11	2/1	2	UART, I ² C, SPI	1	1.8V-5.5V 1.8V-3.6V	SPDIP, SOIC, SSOP, 6x6 QFN, 4x4 UQFN
PIC16F724 PIC16LF724	40/44	4K/7K	-	192	14	2/1	2	UART, I ² C, SPI	1	1.8V-5.5V 1.8V-3.6V	PDIP, TQFP, 8x8 QFN, 5x5 UQFN
PIC16F727 PIC16LF727	40/44	8K/14K	-	368	14	2/1	2	UART, I ² C, SPI	1	1.8V-5.5V 1.8V-3.6V	PDIP, TQFP, 8x8 QFN, 5x5 UQFN
PIC16F707 PIC16LF707	40/44	8K/14K	-	363	14	4/2	2	UART, I ² C, SPI	2	1.8V-5.5V 1.8V-3.6V	PDIP, TQFP, 8x8 QFN, 5x5 UQFN

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)
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



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