

Touch Technology from Microchip

Touch sensing has become an alternative to traditional push button switch user interfaces, because it requires no mechanical movement, and it enables a completely sealed and modern-looking design.

mTouch™ Sensing Solution and Methodology

Microchip's mTouch Sensing Solutions provide an easy method for designers to add touch sensing to applications utilizing PIC® microcontrollers without the cost of fee-based licensing and royalty agreements. This reduces total system cost compared with current solutions. Microchip offers both capacitive and inductive touch sensing options.

nanoWatt XLP™ Technology

Microchip's nanoWatt Technology allows users to manage all of the components of power in a system, including static, active and average power consumption. Benefits of nanoWatt XLP Technology include:

- Sleep currents down to 20 nA
- Brown-out Reset down to 45 nA
- Watch-dog Timer down to 400 nA
- Real-time Clock/Calendar down to 500 nA

Capacitive Touch or Inductive Touch

By offering Capacitive and Inductive Sensing solutions, Microchip gives designers more flexibility to choose the right touch technology for their application. The table below can help you decide between Capacitive and Inductive Touch based on your application requirements.

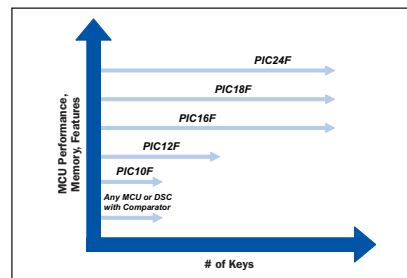
	Capacitive Touch	Inductive Touch
Keys	★★★	★★★
Slider	★★★	★
Power Consumption	★★★	★
Plastic Front Panel	★★★	★★★
Glass Front Panel	★★★	★
Metal Front Panel		★★★
Waterproof	★	★★★
Outdoor	★	★★★
Gloves	★	★★★
Braille Friendly		★★★
Continuous Touch	★★★	★★★
Soft/Hard Touch		★★★

★ Good ★★ Better ★★★ Best



Capacitive Touch Sensing

The introduction of the user's finger approaching or touching the sensor, just a copper pad on the PCB, creates a change in capacitance which is detected by the system.



Microchip's Capacitive mTouch Solution offers a number of PIC MCUs to suit the demands of any application from the small and cost-effective 6-pin PIC10F to the peripheral rich 8-bit and 16-bit microcontroller families.

Inductive Touch Sensing

When the user presses the key or front panel, it deflects slightly. This deflection, on the order of microns, is inductively detected. The main advantages are:

- The front panel can be metal or plastic
- The keys are unaffected by water droplets or liquids
- It can sense through thick gloves
- It is Braille friendly
- It can differentiate a soft touch from a hard touch

Inductive touch technology is available to customers free of charge under a license agreement permitting use and implementation of the technology on any PIC microcontroller or dsPIC® digital signal controller.

MCU Requirements for Inductive Touch Sensing

Microchip enables designers to integrate inductive touch-sensing functionality with their existing application code in a single standard 8-, 16- or 32-bit PIC MCU or 16-bit dsPIC DSC, thus reducing total system costs. The only peripherals needed are a PWM and an A/D converter.



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FREE Source Code and Diagnostic Software

Microchip provides free source code and libraries at the on-line mTouch Sensing Solution Design Center to enable touch sensing applications using PIC microcontrollers. The free mTouch Diagnostic Tool is a Windows® based tool which provides an easy-to-use graphical user interface that gives engineers a platform to analyze application critical information in “real-time” as it relates to touch sensing behavior.

Capacitive Touch Sensing Development Systems

PIC10F Capacitive Touch Board (AC103003)



Demonstrates the simple implementation of a single capacitive touch key or proximity sensor using a PIC10F204/6 MCU.

PICDEM™ Touch Sense 1 Development Kit (DM164125)



Demonstrates touch sensing technology using keys and slides and the 8-bit PIC16F microcontroller with comparator S/R latch module.

PICDEM™ Touch Sense 2 Development Kit (DM164128)



Demonstrates touch sensing technology using the 16-bit PIC24F family with Charge Time Measurement Unit (CTMU).

PIC24F Starter Kit (DM240011)



Contains everything needed to begin exploring the high performance and versatility of the 16-bit PIC24F MCU family.

mTouch™ Capacitive Touch Evaluation Kit (DM183026)



Includes two main boards: one populated with a PIC16F72X 8-bit MCU and the other with a PIC24F256GB110 16-bit MCU; and four daughter boards for developing keys, sliders and a matrix.

Touch Sensing Resources

Visit the mTouch Design Center to access these resources and more at: www.microchip.com/mtouch.

Webinars

- Introduction to mTouch™ Capacitive Touch Sensing
- Capacitive mTouch™ Sensing Solutions: Design Guidelines
- Overview of Charge Time Measurement Unit (CTMU)

Application Notes – Capacitive

- AN1101 Introduction to Capacitive Sensing
- AN1102 Layout and Physical Design Guidelines for Capacitive Sensing
- AN1103 Software Handling for Capacitive Sensing
- AN1104 Capacitive Multi-Button Configurations
- AN1171 Using the Capacitive Sensing Module on the PIC16F72X
- AN1202 Capacitive Sensing with a PIC10F MCU
- AN1250 Microchip CTMU for Capacitive Touch Applications
- AN1254 Capacitive Touch Algorithm Simulation
- AN1268 mTouch Capacitive Sensing Using Period Method Inductive Touch

Application Notes – Inductive

- AN1237 Inductive Touch Hardware Design
- AN1239 Inductive Touch Sensor Design
- AN1241 Inductive Touch Software Design

Manuals

- DS39724 CTMU Reference Manual
- DS41328 mTouch™ Users Guide

Technical Brief

- TB 3014 Low-Power Capacitive Sensing with the Capacitive Sensing Module



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www.microchip.com/mtouch

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

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