

# Touch and Input Sensing for Wearable Devices

## Microchip 1-2-3D Innovative Electronics Solutions

### Summary

The rapidly growing and innovative wearable device market takes advantage of today's advanced electronics to offer consumers everyday accessories that are worn for functional as well as aesthetic reasons. Phones and other consumer products are being introduced with companion wearable devices such as wrist bands, smart watches, smart glasses, headphones, earpieces, fitness equipment, jewelry, medical devices and more. Innovators and engineers developing wearable products are facing unique design challenges which include extremely small spaces, ultra-tight power budgets and use cases that require the latest in UI technologies. Microchip's full range of 1-2-3D electronics solutions will help you successfully bring your wearable design to market.

### The Future of Wearable User Interfaces

Imagine a wristband detecting a wave of your hand—or even more complex gestures—and sending commands to your phone, computer or car based on these gestures.

Change the content of your wearable screen with a tap, flick or a wave. Adjust the timer for your workout or elegantly control the flow of your presentation with simple, intuitive gestures.

Microchip's innovative and patented touch and input sensing technologies provide this and much more.

- ON/OFF body or grip detection to save power
- Grip detection to sense a device in the hand of the user
- Sealed touch buttons that allow use under water
- Tap and scroll displays to navigate menus
- Accept/reject phone calls with a wave of a hand



### Industry's Lowest Power

Wearable devices depend on intelligent power management to maximize battery life while maintaining a stylish, modern look for functionality. Microchip's 1-2-3D electronics solutions utilize industry-leading low power solutions enabling optimum performance for a wide variety of use cases.

Example power numbers:

- Proximity/body detection at 5  $\mu$ W
- Touch input for < 2  $\mu$ W
- 2D touch pad with < 30  $\mu$ W active standby and < 300  $\mu$ W active scan
- Patented 3D gesture sensing with auto sleep and auto wake

### Smallest Packages

All of Microchip's 1-2-3D electronics solutions offer small package sizes for minimal footprint and thickness, which is an ideal combination for wearable products.

- 2 × 3 × 0.5 mm for proximity, grip and touch sensing
- 4 × 4 × 0.5 mm for 2D sensing
- 5 × 5 × 0.9 mm for 3D sensing with even smaller die and chip scale packaging options



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## Access to Algorithms

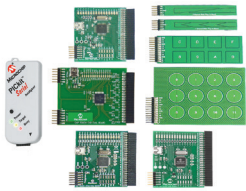
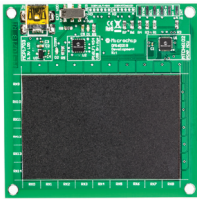
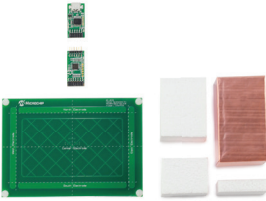
The mTouch® technology algorithms for proximity, buttons, sliders and touch pads are open firmware based solutions that can be ported to the Microchip PIC® microcontroller families of more than 500 products.

You get complete access to these algorithms to integrate them into your system. This enables you to differentiate your products from the competition, easily maintain them over their product life cycles and adapt them to new and different use cases with field upgrades.

It also allows easy integration of additional functions into a single microcontroller to further reduce size and cost.

## Getting Started

Microchip offers turnkey products and development kits to get you started with our low-power 1-2-3D touch and input sensing electronics solutions

| Development Tools from Microchip                                                                         |                                                                                                                                                                                                          |                                                                        |
|----------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|
| Part Number                                                                                              | Description                                                                                                                                                                                              | Website                                                                |
| <b>1D Touch/Proximity Sensing</b>                                                                        |                                                                                                                                                                                                          |                                                                        |
| DM183026-2<br>          | Enhanced mTouch® Capacitive Touch Evaluation Kit:<br>Provides a simple platform for developing a variety of capacitive touch sense applications using PIC16F, PIC18F, PIC24F and PIC32 microcontrollers. | <a href="http://www.microchip.com/mtouch">www.microchip.com/mtouch</a> |
| <b>2D X-Y Touchpads and Screens</b>                                                                      |                                                                                                                                                                                                          |                                                                        |
| DM160219<br>           | MTCH6102 Development Kit:<br>Introduces and demonstrates the possibilities to create rich, low-power, PCap-based user interfaces, with full X-Y coordinate output and gesture recognition.               | <a href="http://www.microchip.com/mtouch">www.microchip.com/mtouch</a> |
| <b>3D Gesture Sensing</b>                                                                                |                                                                                                                                                                                                          |                                                                        |
| DM160218/DM160226<br> | MGC3130 Hillstar Development Kit:<br>MGC3030 Woodstar Development Kit:<br>A complete solution for exploring Microchip's low-cost, high-performance 3D tracking and freespace hand gesture recognition.   | <a href="http://www.microchip.com/gestic">www.microchip.com/gestic</a> |



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

Microchip Technology Inc. • 2355 W. Chandler Blvd. • Chandler, AZ 85224-6199

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