





## Touchscreens implement haptic feedback

Adding haptic feedback has two major benefits for manufacturers. First, it can improve the user experience. Even everyday products are now being built with touch displays and interfaces. They're cheaper to construct than control panels with buttons or switches, and designers can make context-specific user interfaces simply by changing the graphical layout on the screen.

Second, haptics can also improve the performance of operators. Using vibrations to transmit information through the control system allows the user to concentrate on the task at hand. This can range from simpler input confirmations, safety alarms, or even positioning information. Medical applications that use a haptic confirmation when data has been entered has been proven to help reduce patient miss dosing in hospitals.

A simple example of these benefits can be found in tablet PCs. When typing on a touchscreen virtual keyboard, a simple short 'button press' effect lets the user know the keystroke has been recognised and differentiates from a 'long press' effect. This haptic feedback enables the user to type quicker with fewer mistakes, whilst making the process less frustrating and more like typing on a real keyboard.

## The Difference Between Haptic Feedback And Vibration Alerting

This is often an area of confusion, especially because there are no strict guidelines as to what separates the two. In truth, they are both very similar. Here at Precision Microdrives, we define the [difference between haptics and vibration alerting](#) by the complexity of the vibration pattern.

Although they both use vibrations to communicate with the user, the key difference is that haptic feedback devices often use a variety of advanced waveforms to convey information to the user. Vibration alerting products are less complicated and are generally designed to produce a strong enough vibration to alert the user of an event.



## Haptics can improve existing feedback

Imagine a reversing car's parking sensor whereupon coming within 50 cm of an object the steering wheel begins to vibrate. This is an example of vibration alerting as it notifies the user

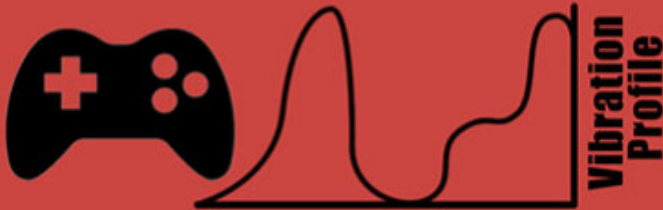
of an event with a simple vibration pattern. In reality, the driver would prefer to know how far they are from the object. With haptic feedback, we can transmit this information to the driver by varying the vibration strength or frequency over a range of distances. This also removes the high pitched beeping found on current sensors and ensures the driver can use the parking sensor if they are in a loud environment or hard of hearing.

Here's a useful infographic to help highlight the key differences between the two technologies:

# Haptic Feedback

VS

# Vibration Alerting



Vibration Profile



Advanced vibration patterns to convey information, simulate clicks & button presses with predefined haptic waveforms.

Simple vibration patterns to notify users of an event. Strong vibrations to catch operator's attention.



Conveys Information



Discrete



Enhanced Experience



Simple & Inexpensive



Discrete



Effective Alert

- Telecommunications
- Auto Dashboards
- Capacitive Touch
- Touchscreens
- Control Sticks
- Videogames



- Scanners and Detectors
- Safety Equipment
- Electronic Tools
- Pagers
- Meters
- GPS



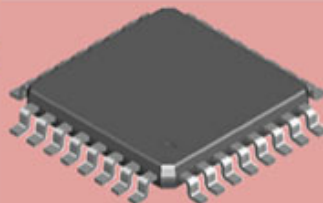
LRA / ERM

\$1.50



Haptics Driver

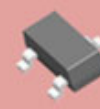
\$2.20



Host Microcontroller

Budgetary pricing for 10k pcs

**Low Cost**



Motor IC / MOSFET

\$0.20 ~ \$0.70



ERM / LRA

\$1.25

**\$3.70**

**\$1.45 ~ \$1.95**

## Haptic Feedback vs Vibration Alerting

### How Can I Experience Haptic Feedback?

Experiencing basic haptic feedback is fairly easy. As we mentioned above, it is present in a variety of real-world applications and products. Most will easily understand simple haptics from using their smartphone, although this is just scratching the surface.

If you're interested in experimenting with advanced haptic feedback, but don't want to build the detailed circuitry, then our [Haptic Feedback Evaluation Kit](#) is the perfect solution. A list of all of its features can be found here, and you can order it online through our product catalogue.

By simulating both a handheld product and a mounted capacitive touch surface in one kit, you can evaluate haptic feedback and easily share your findings with colleagues and managers. It is an easy first step to improving your product with haptics.

Alternatively, if you are ready to (or more interested in) building your own system, you can [read our "Adding and Improving Haptic Feedback" page](#) for circuit and design details on what is required for an effective haptic feedback solution. For further reading, see how we created [our evaluation kit here](#).