Vishay IHPT® Haptic Actuator Frequently Asked Questions

Question: What Technology Does the Vishay IHPT® use and how Does it Compare to Other Technologies in the Market?

Answer: the Vishay IHPT uses magnetic solenoid technology. This technology provides the highest force level compared to Piezo Electric, Linear Resonance, Linear Wideband, and Eccentric Rotating mass in a compact package. It also has the capability of being driven with 8 V_{DC} to 16 V_{DC} eliminating the high voltage supply needed for piezo devices or AC voltages needed for other technologies.

Question: What Kind of Force Levels are Available in the Vishay IHPT Products?

Answer: the IHPT1411 is capable of up to 80 N (newtons) of force. This device can provide enough force to provide haptic experiences to display panels with a mass of up to 1 kg. Vishay has three additional devices planned to provide forces up to 30 N, 40 N, and 120 N.

Question: Does Vishay Offer Software Support to Drive the IHPT Devices?

Answer: no, but Vishay does offer some guidelines for implementing a variety of haptic experiences using off the shelf driver IC's. These guidelines and tips on achieving HD performance can be found at www.vishay.com/doc?34670. Vishay has also partnered with Hapticlabs to proved a "No Code" solution to creating driver software for haptic experiences: www.hapticlabs.io.

Question: What is Needed to Implement Haptic Experiences Using the IHPT With my Device?

Answer:

- The IHPT itself
- 8 V_{DC} to 16 V_{DC} power supply capable of providing several amps of current
- Driver circuit - off the shelf IC or simple MOSFET switching circuit
- Touch input sensing (optical, capacitive or other)
- Algorithms to feed the driver circuit to actuate the IHPT
- Fixed mechanical attachment point close to the touch panel
- Touch panel attachment point
- Spring or elastomeric cushions to return touch panel to its original location

Question: How is the IHPT Mounted in my Device?

Answer: the IHPT has mounting holes with clearance for an M3 bolt to attach the "U" portion of the IHPT to a fixed location and the "I" portion of the IHPT to the moveable part of the customer's device. The customer is responsible for providing a return mechanism for the panel after the IHPT is deenergized.

Question: Can the Force Level be Adjusted in the IHPT?

Answer: yes, it can be adjusted up to maximum force level by varying the combination of:

- Gap between the stationary "U" core and moveable "I" core
- Amplitude of driving pulse
- Length of driving pulse

Question: What Kind of Effects Can the IHPT Provide?

Answer: the IHPT can provide HD (high definition) haptic effects with a frequency range of up about 500 Hz.

Question: Is the IHPT a Cost Effect Method of Providing Haptic Effects?

Answer: yes, the IHPT provides the highest force level available along with HD haptic capability. Because it can be driven at 8 V_{DC} to 16 V_{DC} with off the shelf drive IC's, the IHPT can be implemented in haptic applications for a significantly lower cost that other technologies.

Question: How Much Movement or Displacement Can the IHPT® Provide?

Answer: the IHPT series can provide up to 1 mm of displacement.

Question: Does Vishay Offer a Turnkey Mechanical Solution to Easily Integrate Into a Device?

Answer: yes, Vishay will offer the IHPC1411 carrier that includes two sets of springs, mounting locations, and the ability for the user to adjust the U/I gap. Refer to the Vishay website for further updates (www.vishay.com/ppg?34656).

Question: Is This Product Qualified for Automotive Applications?

Answer: yes, Vishay offers both automotive grade and commercial grade versions of the IHPT. Both are tested to over one million cycles of operation. The automotive grade product is designated by the "A" in the last digit of the part number. The automotive grade IHPT has been qualified to AEC-Q200 standards.

Question: Can the Vishay IHPT be Customized to my Needs?

Answer: yes, Vishay can customize force level, drive voltage, size, lead length, termination method (i.e. specified connector) and mechanical or mounting considerations. Depending on the level of customization, an NRE may be needed. For more information contact magnetics@vishay.com.

Question: A Company Called Immersion Owns the IP Rights to Haptics. Is a License Needed to use the IHPT?

Answer: Vishay has an exclusive agreement with Immersion that allows customers that purchase the Vishay IHPT a pass through license to use the IHPT with direct licensing with Immersion. This greatly simplifies IP management for the customer. Some restrictions apply as to field of use. Please refer to www.vishay.com/doc?34602.

Question: What if my Company is Already Licensed With Immersion?

Answer: a customer previously licensed with Immersion can still purchase the same IHPT devices from Vishay under a different part number. Please contact us at magnetics@vishay.com for more details.