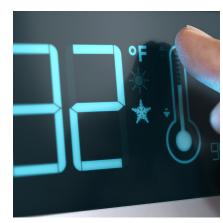# CAPACITIVE SWITCH DESIGN

Capacitive switches are the behind-the-scenes systems that give modern user interfaces their cutting-edge esthetics. Because they deliver longer life spans and better endurance in harsh environments due to their lack of mechanical components, capacitive switches are often preferred over other types. An early innovator of capacitive switch design and production, Molex is an industry-leader in this technology and offers top-performing solutions.

OUR COLLABORATIVE APPROACH

Molex has experience with a broad range of markets and end products, such as consumer device icons that use proximity sensing to illuminate, medical devices with backlit touch-slider controls, industrial equipment with scroll wheels and advanced home appliances with all these capabilities. We assign an experienced lead engineer to work collaboratively with the customer to define specifications and successfully achieve even the most ambitious capacitive goals.

Whether customers require a whole system design or the production of an optimally performing circuit, Molex applies expertise to deliver innovative solutions. Because each capacitive switch project is unique, the Molex engineer first assesses the customer requirements — the number of touch keys, function of each key, lighting needs and electromagnetic interference (EMI) requirements are just some of the considerations. The engineer follows up information gathering with analysis and detailed recommendations. Design and production are then implemented, as needed.

Selection of the appropriate microchip

Full electrical layout design & production

Firmware & software programming

Prototyping & testing

Fine tuning

Mass production

molex

With full design and development centers in both the US and China, Molex provides capacitive switch capabilities on a global level. Regardless of project scope — from system design to circuit production — Molex leverages in-depth experience to produce robust switches. The goal of our holistic approach is to ensure the best possible performance of the entire switch.

Wide-ranging capacitive experience. Molex can implement different types of capacitive sensing, including mutual or self-capacitive, proximity, sliders, wheels and gesture — whatever works best to meet your end product's specifications.

Comprehensive recommendations. We design graphics, backlighting, substrate materials and inks — innovative solutions that work best with each unique project.

Signal integrity. Molex engineers employ strategies with circuitry designs and shielding to minimize electrostatic discharge (ESD) and EMI and ensure signal integrity.

Firmware. We develop our own firmware and have extensive experience in a wide range of protocols, such as I2C, USB SPI, UART and CAN bus.

Chip sets. Our engineering team has experience with a variety of microchip vendors, such as Cypress, TI, Microchip and Atmel. We provide chip selection based on the needs of your system, as well as full system design and layout. And Molex engineers customize the entire electrical architecture to work optimally within the customer's system.

Functional performance. Our engineers take the extra steps, such as tuning each key individually, that ensure end users experience a top-performing capacitive switch.

APPLICATIONS

Automotive
Safety and driver assist
Comfort and infotainment
Body electronics

Home Appliances
Major appliances
Smart connected appliances

Medical
Monitoring
Diagnostic
Therapeutic

Connected Home
Smart appliances
Home automation
Energy and utilities

Commercial Vehicles
Comfort and infotainment

Medical Diagnostic and Monitoring

Smart and Connected Appliances

Wide-ranging Capacitive Experience

The Molex Advantage

Through our collaborative process, Molex engineers use their expertise to implement every technical advantage available to deliver a capacitive switch capable of optimal performance. Contact us to learn more about how Molex can meet your capacitive switch requirements, while optimizing performance and exceeding your expectations.

www.molex.com/en-us/products/printed-electronics/user-interface