Technical White Paper

Touch the Revolution with the Most Noise Immune Capacitive Touch Microcontroller

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Within any given day I touch at least 40 buttons— not including my work keyboard— to get myself to and from the office. So it got me thinking, what if all these buttons—the ones used to start my car and turn my coffee on—were capacitive touch and proximity sensing? Is it possible to replace all the buttons in my life?

There would be challenges. Capacitive sensing needs to work reliably with different mechanical designs. Some of these challenges would be:

- False detections with noise triggers and false touch detections
- Industrial designs are driving the need for more advanced interfaces
- “Always-on” capacitive touch technology drains power
- Limited application designs due to sensitivity and resolution
- Spend months designing and optimizing capacitive touch solutions

CapTIvate™ Technology Training Series Part 1: Touch the Revolution

But what if there was a solution that answered all those challenges? What if our world could get rid of those sticky buttons? Well that future is a lot closer than anyone may think. We can finally touch the revolution with MSP430™ microcontrollers with CapTIvate™ technology.

- It is the only IEC61000—4-6 certified touch solution for noise immunity. Making it the most noise immune capacitive touch microcontroller.IEC61000-4-6 is an EMC standards certification that tests for noise immunity

from conducted disturbances and/or radio-frequency fields. A reference design based on CapTIvate technology is able to pass these standards at levels up to 10 Vrms.

- MSP microcontroller with CapTIvate Technology supports metal touch, 3D gesture, glove friendly designs and offers the most configurable buttons, sliders, wheels and proximity solutions. Providing versatility to developers design needs.
- It is the world's lowest-power FRAM capacitive touch microcontroller. With power as low as 0.9 uA/ button, CapTIvate technology is 90 percent lower power than any other solution.
- With 10-bit resolution, CapTIvate technology offers the industry's highest resolution sliders and wheels. With just 4 IOs, engineers can develop a 30 cm slider with 1/250th cm resolution.
- CapTIvate Design Center allows you to set-up your design in five minutes or less and tune sensors in real-time. Providing simplified and streamlined design solutions.

So we know it is possible to replace all the buttons, but what would the benefits be, besides no longer having sticky buttons?

- Sleek industrial designs with seamless blending of glass, plastic or metal surfaces
- Support for Human Machine Interface different shapes and sizes
- Easy to clean surfaces— no more sticky buttons
- Proximity gesturing—with the wave of my hand a command is read and then acted on

Visit the links below to learn more about MSP microcontrollers with CapTIvate technology and start designing your next capacitive touch solution today.

- Learn more about MSP430 MCUs with CapTIvate technology
- Buy the CapTIvate MCU Development Kit
- Sample MSP MCUs with CapTIvate technology

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