



A series of engineering insights  
by Analog Devices.

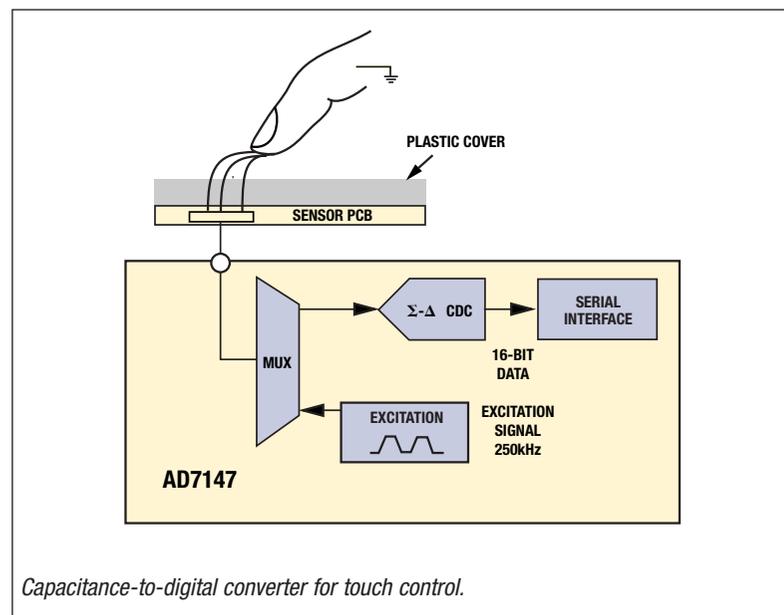
# Providing an Edge in Capacitive Sensor Applications

The number of capacitance-based sensor designs in industrial, automotive, medical, and consumer applications is rising rapidly. Designers are continuously searching for new ways to use capacitive sensor technology to give their products an edge in a crowded marketplace. The trend is already in evidence where simple devices offering low to medium sensitivity are no longer sufficient to supply the demands of embedded sensor applications. Thick molding compounds, noisy environments, reliability concerns, and long interconnect distances from the sensor to the IC are just some of the new challenges facing capacitance sensor applications.

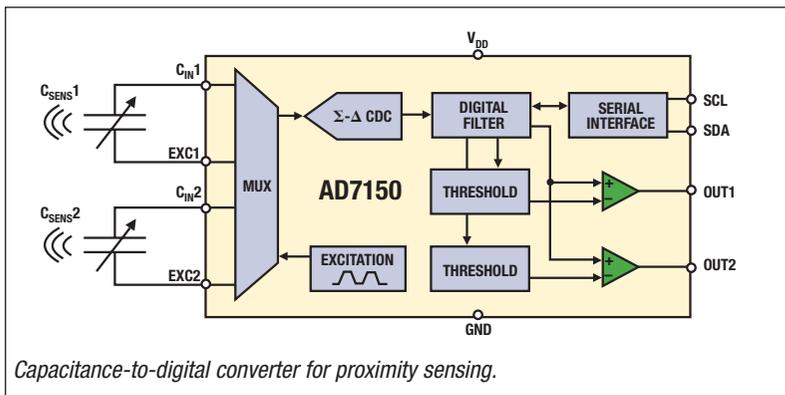
## Robust Solution for Harsh Environments

Leveraging ADI's established capacitance technology, Analog Devices' AD7150 capacitance-to-digital converter delivers a robust signal processing solution for proximity sensing. This device offers automotive qualification, electromagnetic compatibility, adaptive environmental calibration, low power consumption, and a fast response time. Due to the AD7150's superior high sensitivity, capacitance sensors can be embedded deep inside thick molding compounds and still successfully perform the sensing function without compromising specifications. With a current consumption of 100  $\mu$ A and a response time of 10 ms for both channels, the AD7150 enables low power, high speed capacitance sensor systems.

single-electrode library. The active shield feature eliminates capacitance-to-ground pickup on board and provides shielding from other noise sources in the applications. This feature is unique to the Analog Devices solution and allows the sensor to be located remotely from the IC, without any compromise in the sensor response.



Capacitance-to-digital converter for touch control.



Capacitance-to-digital converter for proximity sensing.

## Noise Resilient, Space Saving

Answering the call for high resolution navigation, space optimization, and noise resilience in consumer devices, the AD7147 is the latest device in Analog Devices' CapTouch™ portfolio. This device raises performance for touch interfaces, boasting a three-fold improvement in sensor response over its predecessors and simplifying sensor design with a new

Implementing capacitance sensors requires a shift in focus from digital solutions to analog solutions. Capacitance-to-digital converters eliminate barriers to the advancement of portable and battery powered products by providing highly robust, sensitive solutions for use in a wide range of applications.

For more than 40 years, Analog Devices has solved “hard to do” problems in precision analog signal processing. Converting capacitance sensor signals is no exception. Visit [www.analog.com/LI-CDC](http://www.analog.com/LI-CDC) for more information on Analog Devices' capacitance sensing solutions. ▣

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