

Microcontroller Solutions

Proximity Sensor Software Solution

Overview

Freescale's proximity sensor software enables more than 300 microcontrollers (MCUs) in Freescale's Controller Continuum portfolio to detect the presence of objects without relying on physical contact. This software solution transforms any standard MCU into a proximity capacitive touch sensor controller with the ability to manage multiple configurations of touch pads, sliders, rotary positions and mechanical keys, all while maintaining its standard MCU control functionality.

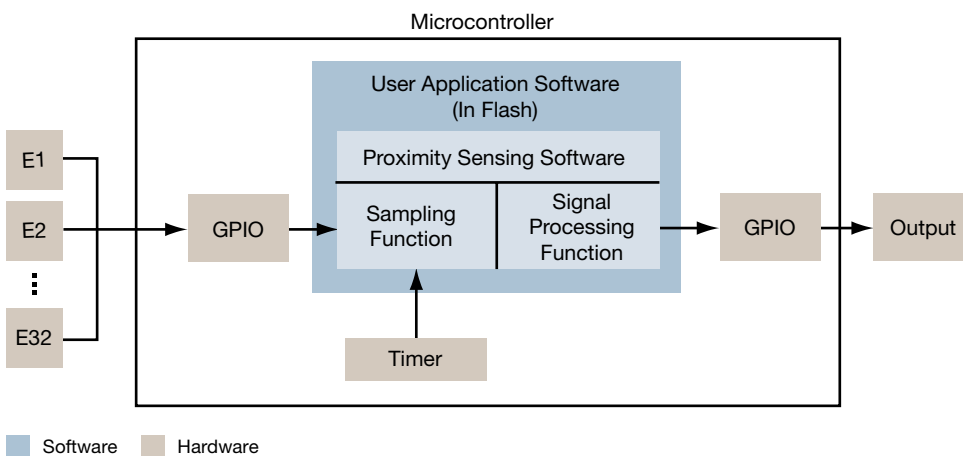
Proximity sensors with simple linear or rotational sliders, rotary wheels and touch pads offer significant advantages for more intuitive user interfaces. They are more convenient to use without moving parts and provide increased reliability. Using proximity sensors allows the designer greater freedom, while reducing overall system cost. The consumer can now enjoy a more appealing, intuitive interface with a more contemporary look.

Target applications for this cutting edge technology include consumer electronics, appliances, and industrial and health care devices.

Target Applications

- Appliance Applications:
 - Dishwashers
 - Washing machines
 - Dryers
 - Refrigerators
- Consumer Electronics:
 - Handheld devices
 - Toys
- Health Care:
 - Home health monitors
- General Industrial Applications:
 - Motor control
 - Building control
 - HVAC building and control systems

Proximity Sensor Software Block Diagram



Product Selector Guide

Part Number	Sounder	Rotary	Slider	Touch Pad	Key Feature	Price
Proximity Sensor Software Solution	Yes	Yes	Yes	Yes	Adds touch sensing to more than 300 MCUs	Complimentary**
MPR083	Yes	Yes	—	—	Eight position rotary	\$1.07*
MPR084	Yes	—	—	Yes	Eight independent touch pads	\$1.07*

Documentation

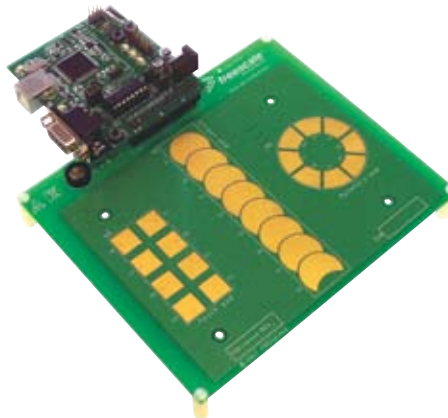
Document Number	Document Type	Title	Summary
PROXQRUG	User Manual	Proximity Sensor Software User Manual	Provides detailed information on the Proximity Sensor Software Solution
KITMPR083EVMUG	User Manual	MPR083 User Manual	Provides detailed information on the MPR083 Proximity Sensor Controller
KITMPR084EVMUG	User Manual	MPR084 User Manual	Provides detailed information on the MPR084 Proximity Sensor Controller
AN8580	Application Note	Proximity Sensor Technology Overview	Explains in-depth how capacitive proximity sensor technology works
AN3579	Application Note	Porting the Proximity Sensor Software to Compatible MCUs	Explains in-depth the proximity sensor software and how to port it to additional MCUs
AN3583	Application Note	Using Low Power Mode on the MPR083 and MPR084	Explains the features and benefits of the low power mode on the MPR083 and MPR084 Sensor Controllers
PROXIMITYWP	White Paper	Proximity Capacitive Sensor Technology for Touch Sensing Applications	Provides an overview regarding the proximity sensor capability as well as an exploration of the end applications

Cost Effective Development Tools

KITPROXIMITYEVM

A full featured development kit containing a plug-in proximity sensor module allowing the evaluation of rotary, touch pad and slider proximity sensor technologies. All kits come standard with a DVD that includes an image of the Proximity Sensor Software and documentation to get your design up and running quickly and easily.

The KITPROXIMITYEVM does not ship with a MCU development kit. For more information on MCU development kits, please refer to the Freescale Development Tool Selector Guide (SG1011).



Features

- Codebase support the whole Freescale RS08, S08, V1 ColdFire®, portfolio
- Source code built on CodeWarrior™ Suite
- Multiple electrode configurations
- 8 Electrodes implemented in the codebase (capability to increase to as many as 32 electrodes)
- Analog or digital (I²C) interface
- Rotary wheel, linear sliders and touch pad options
- Allow the use and configuration of any available GPIO pin as an electrode input
- Programmable sampling period
- Adjustable touch threshold setting
- Simple averaging function as basic low pass filter
- Buzzer sound feedback on electrode touch
- Voltage operation range of 1.8V–5.0V
- Temperature ranges from -40°C to +110°C
- Various package options

Benefits

- Enables any Freescale MCU for proximity and touch sensing capability on your projects
- Mechanical button and switch replacement on a wide variety of applications
- Provides more intuitive user interfaces
- Increases reliability without moving parts
- Allows greater design freedom
- Provides a more contemporary look
- Reduces overall system cost

*Prices indicated are MSRP

**Subject to license agreement

Learn More:

For current information about Freescale products and documentation, please visit www.freescale.com/proximity.