Azoteq

World Leader in Capacitive Proximity Sensing

Touchpads for Smart TV and Set Top Box Remote Controls

With the rising demand of interconnectivity, Smart TVs and Set-top boxes are becoming more and more like personal computers. New technologies are being incorporated into remote controls to access different programs or applications. Some technologies that are being incorporated are:

- Gyroscopes and Accelerometers – Move a remote control to move an onscreen pointer
- Voice Control – Access different apps by speaking
- Touch Control – Use a finger to move an onscreen pointer

Touchpads are the most intuitive to use due to the wide adoption of touchscreens and touchpads in smart phone and laptops.

Azoteq offers a unique feature to provide tactile feedback on a touchpad. Snap domes can be placed on top of the touchpad without affecting the touchpad operation. The domes provide tactile feedback to navigate and select items.

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Azoteq enables next generation user interfaces for users to interact naturally with products through capacitive proximity and touch

Azoteq Adds SEMPOST to Expanding Distribution Network

Azoteq announced on July 28th, 2014 that SEMPOST, a division of Insem, has been appointed to represent and distribute Azoteq products in South Korea. Azoteq is represented in all the major US markets and central Europe and has coverage in all the key Asian markets.

"Azoteq is excited to start this new co-operation with Sempost, as they have an energetic sales force backed by an experienced R&D department. This is an excellent sales model for our products," said Jean Viljoen, Azoteq's Marketing Manager for Europe & Asia. "The synergy between their Sales and R&D functions is invaluable to us. They can identify and conceptualize new applications in products and markets that do not even exist today. This is the perfect vehicle to bring Azoteq's innovation to the mass consumer market."

"It is a privilege to represent the official distribution network in Korea," said Cebon Lee, INSEM CEO. "The Azoteq products are magnificent; we are all excited to offer this outstanding product alongside support from our dedicated technical team."

Full Press Release Available Here.

SEMPOST
A DIVISION OF INSEM

Azoteq's New Distributer in South Korea

About SEMPOST

INSEM
IN SEMiconductor Inc.

SEMPOST, a division of INSEM (http://www.insem.co.kr/ http://www.sempost.co.kr)

INSEM is also an official agent for ST MICROTELECTRONICS and SEGGER. INSEM provides customized-programmed MCUs and supports manufacturers and developers based on strategic alliances with the world's leading semiconductor companies. The INSEM organization includes an experienced FAE team that has been supporting various solutions and services for more than 10 years.

Azoteq Drivers for the Android Platform

Azoteq Android Drivers

To help designers that are working with mobile devices using an Android platform, Azoteq has recently developed Android example drivers.

The example drivers are for two different applications: one for the IQS5xx family to be used in touchscreen applications; and the other is for SAR applications in 3G/4G tablets, using Azoteq's IQS253 and IQS263 I²C devices. These drivers were compiled for Android Jellybean 4.0.3 and are based on Linux drivers that are cross-compiled for Android.

The ProxSense® devices use I²C to communicate with the master. In order to use the I²C bus on Android, the driver needs to be registered in the Android kernel, along with the I²C address for the specific IC.

For Android to register a touch event, an interrupt needs to be sent. Thus, an Interrupt Request is registered in the driver, so that Android can execute the specified function.

IQS5xx Touchscreen Drivers

When writing a touchscreen driver, it is important that the touchscreen maintains a high priority within the system. Otherwise, the screen will not function properly. The driver also should not overload the system, as this will slow down other processes.

In mobile applications, battery life is of the utmost importance, therefor the IQS5xx touchscreen driver cannot talk to the system continuously. To conserve on power, the IQS5xx operates in event mode, eliminating the need for Android to service the driver if the user isn't operating the touchscreen. To reduce battery impact further, Android drivers use "Early Suspend/Late Resume" methods to notify the drivers of its intent to shut down or switch the screen on. Using this feature, the IQS5xx can be put to sleep whenever the screen is switched off.

Specific Absorption Rate (SAR) Drivers

The SAR drivers are used to determine whether a user is using the device. SAR regulations do not allow for mobile devices to broadcast at full strength when a person is near the 3G/4G antenna.

To stay within accordance to SAR regulations and to save power, the IQS2xx is put into event mode and lets Android know if an event occurs.

When a Proximity or Touch event occurs, the driver goes into a state where a timer determines whether a certain amount of time elapsed in which it needs to reseed the filters on the IQS2xx. For a Proximity event this timeout time is shorter, because the tablet could be on a table and is not in the hands of a user. Alternatively, if a touch event is seen, the timeout is longer because it is likely that the user is using the tablet. If, however, the chip Reseeds and the Proximity or Touch is still active, the timers are reset again. The touch state is determined when the device starts.

The Goal of Azoteq Drivers

The goal of creating Android drivers is to help designers incorporate their Azoteq ICs with their applications faster and easier, whether it's for touchscreen or SAR applications.

For more information, email info@azoteq.com

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Azoteq has four touchpad ICs that can help designers with touchscreen/touchpad applications. The ICs are:

- IQS550: 15 x 10 channel touchpad controller with a resolution of 3584 x 2304
- IQS572: 9 x 8 channel touchpad controller with a resolution of 2048 x 1792
- IQS525: 6 x 4 channel touchpad controller with a resolution of 1280 x 768
- IQS360: 4 x 3 channel touch and proximity controller with touchpad and keypad capability, and with a resolution of 768 x 512

Applications

With Azoteq's technology, designers can create a touchpad on a non-uniform curved surface (Application note located here). Designers can also use the touchpad for a full QWERTY keyboard on a remote control with highlighted touched keys.

To assist designers in creating their touchpads, Azoteq provides design guidelines (located here) as well as technical support from our engineers.

Advantages

Azoteq's technology has many advantages. Some examples of this are:

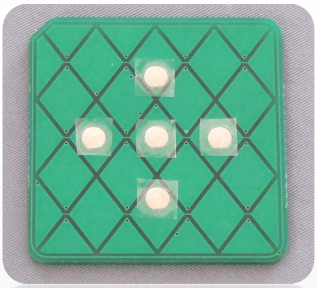
Azoteq's touchpad controllers can implement discreet buttons and sliders in conjunction to the touchpad.

In Low Power Mode, these ICs draw < 10 µA.

Azoteq's ProxSense® range offers the most sensitive capacitive-sensing solutions with the highest signal-to-noise ratio (> 1 000:1) in the market today.

Competitive pricing for the ICs at 1k pricing are as follows:

- IQS550: $1.21
- IQS572: $1.00
- IQS525: $0.84
- IQS360: $0.43



IQS525-TP43

This over the counter module allows you to have a full touchpad along with directional buttons.

Touchpad Design Guidelines

To support designers creating touchpad and touchscreen applications, Azoteq has put together an application note on touchpad design guidelines.

The document discusses general touchpad design guidelines and best practices for designing efficient touchpad implementations. When these simple principles are understood and applied, a versatile trackpad can be designed.

Key design choices that must be considered when designing a touchpad:

- Size
- Performance: Resolution + Minimum pinch distance
- Overlay Structure and Composition
- PCB Layout
- Mechanical Housing

Full Application Note is available here!

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