Next-Generation Si114x Infrared and Ambient Light Sensors for Touchless Gesturing Applications

Silicon Laboratories Inc. today announced its next-generation infrared (IR) and ambient light sensors for human interface (HI) applications. The new Si114x family, the latest addition to Silicon Labs' QuickSense™ HI portfolio, features the industry's most sensitive, power-efficient and longest range proximity sensors. Available in a 2 mm x 2 mm package, the Si114x sensors enable sophisticated proximity sensing and touchless interfaces for handsets, eReaders, netbooks, tablets, personal media players, toys, office equipment, industrial controls, security systems, point-of-sale stations and many other products.

A proximity sensor's detection range and sensitivity is determined by the system's signal-to-noise ratio (SNR); the higher the SNR, the longer the range. Numerous variables contribute to a system's SNR including ambient noise/light compensation, photo-diode sensitivity, filtering and analog-to-digital converter (ADC) architecture. While competing solutions may address one or two of these variables, the patent-pending Si114x architecture addresses all of these parameters to minimize noise and maximize performance. The Si114x family's combined architectural optimizations result in very high system SNR, enabling the Si114x proximity sensors to achieve the industry's longest range, highest sensitivity and fastest data acquisition speed.

The Si114x family's industry-leading sensitivity gives developers the flexibility to locate IR sensors behind semi-opaque product overlays. The robust IR sensing architecture also operates in direct sunlight and includes an ambient light sensor capable of sensing light levels up to 128 kilolux. In addition, the Si114x family's advanced architecture enables proximity measurements in only 25 microseconds, minimizing the on-time of power-hungry infrared LEDs and resulting in the industry's lowest system power consumption - up to 20 times lower than competitive solutions.

The Si114x family includes sensor options with up to three infrared LED drivers, giving developers the freedom to implement one-dimensional HI systems with a detection range of more than 50 cm or multi-dimensional systems capable of

gesture sensing with ranges of up to 15 cm.

The Si1142 and Si1143 devices, with two and three infrared LED drivers respectively, enable advanced motion and gesture sensing. With its two integrated LED drivers, the Si1142 supports z- and x-axis motion sensing for touchless slider interfaces. The Si1143, which supports three LED drivers, enables innovative 3D motion sensing for the ultimate in multi-dimensional touchless control.

When coupled with the intelligent control of a Silicon Labs capacitive touch-sense microcontroller (MCU) such as an F700, F800 or F99x MCU, the Si114x sensors can enable a wide range of motion and gesture detection and expected-object distance correction applications. The Si114x devices' sensing modes provide valuable information to the MCU to determine the background light type, such as sunlight, fluorescent or incandescent. This information is useful in many applications to improve IR proximity sensing, optimize infrared sensing power, enhance backlight dimming functions in a display, and control other devices within the system.

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