# Maxim's Digital Ambient-Light Sensors Cut Power Consumption by Over 100x

BARCELONA, Spain, (GLOBE NEWSWIRE) -- At Mobile World Congress 2011, Maxim Integrated Products is introducing the MAX44007/MAX44009, digital ambient-light sensor (ALS) ICs with a unique adaptive-gain block.

Designed using the company's proprietary BiCMOS technology, these ICs integrate two optical sensors, an ADC, and digital functionality into a tiny 2mm x 2mm x 0.6mm package. This integration saves valuable board space while delivering the industry's highest performance.

The MAX44007/MAX44009 consume 100x less power than the nearest competitive product, significantly extending battery life. They offer a unique interrupt function that constantly measures the amount of light and reports to the microcontroller when the measurement passes the threshold. This functionality extends power savings by reducing the frequency of I2C communications.

The MAX44007/MAX44009 are well suited for applications such as tablet and notebook PCs, smartphones, TVs, digital lighting-management systems, and light-intensity monitoring applications.

In light-sensing systems any variance along the path that the light travels results in different measurements. These variances are caused by where the sensor is placed on the board, the distance tolerance between the top of the sensor and the glass surface, the transmission characteristics of the glass covering the sensor, and many others. If the part-to-part variation of the sensor is also added to this equation, the reading error can be as much as 50%. This causes false triggers and eventually poor yield at production.

With the all-in-one integrated solution provided by the MAX44007/MAX44009, the maximum total gain error is as little as 15%. In addition to this very precise light measurement, the digital communication of Maxim's light sensors is immune to parasitics on the communication interface. Both these features provide robust and reliable light measurement to obtain good yield at production.

Replicating the optical response of the human eye with electronic components is difficult. Traditional light sensors measure the amount of light in an environment regardless of wavelength. These designs are unduly influenced by ultraviolet and infrared light, which are not perceptible by the human eye. This leads to inaccurate ambient-light readings and, therefore, widely varying brightness adjustments. This problem is exacerbated by the fact that light sources can have different spectra; for instance, incandescent light has more infrared content than fluorescent light.

Maxim's BiCMOS technology enables the integration of two photodiodes along with

an optical filter to reject ultraviolet and infrared light. This allows the MAX44007/MAX44009 to replicate the optical response of the human eye and accurately measure visible light in a variety of environmental settings. Advanced algorithms correct for any spectra variations between light sources, ensuring an extremely accurate lux response.

Handheld devices frequently employ tinted or black glass on top of the sensor. This causes many challenges for the light sensor, since black glass shifts the response to various light sources, all of which have different light emission spectra. Measurement errors typically result when these different spectra are combined with the spectrum profile of the glass.

The MAX44007 provides access to two different optical sensors: a visible-plus-infrared photodiode and an infrared photodiode. Once the designer knows the response of the black glass, it can be factored into the light sensor's measurement for superior accuracy and sensitivity (down to 0.025 lux).

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