Press Release

ams color sensor for mobile devices improves accuracy and offers new light source detection capability

TCS3490 intelligent color sensor's accurate measurement of color temperature and ambient light intensity enables sophisticated display color management control for smartphones, tablets, notebooks and digital still cameras

Unterpremstaetten, Austria (9 February, 2015), ams AG (SIX: AMS), a leading provider of high performance analog ICs and sensors, today released the TCS3490, a color sensor for portable devices which is ideally suited for light source detection when operating under a wide range of light sources.

Providing accurate color and light intensity measurements, the TCS3490 enables designers of portable devices such as smartphones and tablets to implement more sophisticated display management and brightness control.

This integrated five-channel color sensor has extremely accurate measurements of the Correlated Color Temperature (CCT) of light. As sensors continue to proliferate in today's mobile electronics market, manufacturers of mobile devices such as smartphones, tablets and laptops can use these measurements to dynamically adapt the display's color palette to provide the user with a superior viewing experience.

In addition to the traditional red, green and blue (RGB) color sensor channels, included is a dedicated infra-red (IR) measurement channel for the reliable detection of the IR signature of ambient light sources. This enables stand-alone cameras and smartphones to adjust the color temperature of the flash to produce better photographs in both indoor and outdoor environments. Color measurements are affected by changes in the IR content of the light, so a passband clear (C) channel photo-diode is included to provide a direct measurement reference for mathematically subtracting unwanted residual IR energy. An integrated IR blocking filter over the RGBC photo-diodes minimizes IR spectral component effects, and this also helps to improve color accuracy measurements.

The fifth IR channel is sensitive to IR light in the spectrum 700nm – 1,100nm. Since every light source has its own spectral fingerprint, with known proportions of ultra-violet (UV), RGB and IR light, a system can identify the light source in the user's vicinity by measuring the IR-to-C and Red-to-C channel ratios and applying a detection algorithm to the measurements. In smartphone camera applications and digital still cameras, this ability to reliably detect the light source enables the white-balancing settings in a camera's or smartphone's flash to be optimized, resulting in improved picture quality.

By measuring the CCT and brightness (lux) of ambient light in a system, consumer electronics devices can automatically adjust the color tones of the display for the best viewing experience under varying lighting conditions and behind attenuating dark inked glass or spectrally distorting materials. By adjusting the display's color tones and hues, the device can make images appear more vivid, more natural or more calm under any changing lighting conditions.

Four independent Analog-to-Digital Converters (ADCs), one for each of the RGB channels and the fourth shared between the Clear and IR channels, enable simultaneous sampling of all four channels, thus eliminating CCT and lux measurement errors in fast-changing lighting conditions. The TCS3490 sensor's photodiodes have a radial structure to create a uniform and optimized response irrespective of the angle of the incident light, especially when placed under a circular aperture. A level-shifter style interrupt pin enables the sensor to alert the applications processor when pre-set light and color measurement thresholds are crossed, eliminating the need for continuous I^2C bus polling, and thus reducing overall system power consumption and extending battery life.

'The consumer electronics touchscreen display is a key competitive battleground, and manufacturers can win by differentiating their brand with a more intelligent display management capability. The TCS3490 five-channel color sensor enables manufacturers to make their display's colors look more vibrant and engaging, as well as easier on a user's eyes in both indoor and outdoor lighting conditions. That's because its CCT measurements very closely match what the human eye perceives as color and brightness,' said David Moon, Senior Product Marketing Manager at the Advance Optical Solutions division of ams.

Price & availability:

The color sensor TCS3490 is available in a 2.0mm x 2.4mm Dual Flat No-Lead package and is shipping in production volumes today. It is priced at $1.40 for 1,000 pieces.

A demonstration board for the TCS3490 is available online from ams. For further information on the TCS3490 and to request samples, please visit www.ams.com/Color-Sensor/TCS3490.

About ams

ams is a global leader in the design and manufacture of advanced sensor solutions and analog ICs. Our mission is to shape the world with sensor solutions by providing a seamless interface between humans and technology. ams' high-performance analog products drive applications requiring extreme precision, dynamic range, sensitivity, and ultra-low power consumption. Products include sensors, sensor interfaces, power management and wireless ICs for consumer, communications, industrial, medical, and automotive markets.

With headquarters in Austria, ams employs over 1,700 people globally and serves more than 8,000 customers worldwide. ams is listed on the SIX Swiss stock exchange (ticker symbol: AMS). More information about ams can be found at www.ams.com.

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