Press Release

ams high-sensitivity optical sensor eliminates flicker artifacts to deliver vibrant and distortion-free smartphone camera images and videos

The new TCS3408 enables smartphone camera image systems to accurately measure and eliminate ambient light flicker in all lighting conditions

Premstaetten, Austria (October 28, 2019) -- ams (SIX: AMS), a leading worldwide supplier of high performance sensor solutions, today introduces a sensor solution that enables smartphone world-facing cameras with rolling shutter image sensors to eliminate unwanted image artifacts – such as banding – that are caused by the flickering of artificial light sources.

With the wide-spread usage of LED lighting, photography increasingly suffers from what is known as flicker from the lighting source. The higher accuracy and sensitivity of the new TCS3408 color sensor, which measures the color and brightness of ambient light as well as detecting photometric flicker, enables a phone's camera-enhancement imaging system to eliminate flawed artifacts caused by artificial lighting environments. It delivers the industry's highest level of on-chip ambient-light flicker sensitivity, which is three times greater than the prior generation TCS3707.

David Moon, Senior Product Marketing Manager in the Integrated Optical Sensors business line at ams, says: "The increasing pixel count of today's high-resolution smartphone cameras enables image capture with extraordinary detail and clarity, however pictures and videos can often be ruined with unsightly banding distortion effects from flickering light sources. Smartphones can now capture vibrant, detailed and artifact-free images in all lighting conditions, thanks to the TCS3408 high-sensitivity flicker sensor."

Color sensing for the real world

Mobile phone cameras today typically use basic three-channel Red/Green/Blue (RGB) sensors to approximate color balancing in the image enhancement system, and have no means of measuring flicker detection. The TCS3408, with on-chip flicker detection, provides an accurate measurement of color and brightness thanks to five concurrent-reading ambient light sensing channels – a wideband and a clear reference channel in addition to the RGB channels. The TCS3408 also provides an option to store a sequence of flicker measurements in its internal memory to allow the smartphone's camera's video processor to detect higher-order flicker frequencies up to 2kHz.These flicker frequencies are typically found in modern Pulse-Width Modulated (PWM) LED lighting systems now available and becoming increasingly popular in virtually all lighting environments.

How the TCS3408 reduces flicker artifacts

When visible light modulations from flickering lights are captured while a camera's rolling shutter is in operation, the resulting effect is an image or video with distorted banding artifacts. The TCS3408 device incorporates a flicker detection engine that detects the presence or absence of 50Hz or

60Hz flicker typically generated from incandescent or fluorescent lights. When flicker is detected, it is captured and reported through internal status registers of the device and the digital I^2C interface enables fast reporting of output information with external processing. Knowing that flicker is present, the camera's video processor synchronizes the shutter with the "on" portion of the relative ambient light output in a scene. With this additional information from the TCS3408, the video processor can eliminate the distorting banding artifacts and produce images that truly represent the image seen by the user.

ams optical sensing expertise

The TCS3408 is the latest in a line of intelligent optical sensors from ams for use in mobile phones for display color and brightness management to enhance a cameras image enhancement. It offers ultra-high color and 10X ALS sensitivity and half the operating power consumption versus competition. The development of color sensors with on-chip flicker detection capability for the detection of modern light source flicker are the key reasons why smartphone manufacturers trust ams for delivering the industry's best performing optical sensing solutions to help them differentiate their products.

The TCS3408 is available now in production volumes. Unit pricing is $1.25 in an order quantity of 1,000 units.

An evaluation module for the TCS3408 color sensor is available. For more technical information or for sample requests, go to https://ams.com/tcs3408.

About ams

ams is a global leader in the design and manufacture of advanced sensor solutions. Our mission is to shape the world with sensor solutions by providing a seamless interface between humans and technology.

ams' high-performance sensor solutions drive applications requiring small form factor, low power, highest sensitivity and multi-sensor integration. Products include sensor solutions, sensor ICs, interfaces and related software for consumer, communications, industrial, medical, and automotive markets.

With headquarters in Austria, ams employs about 9,000 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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