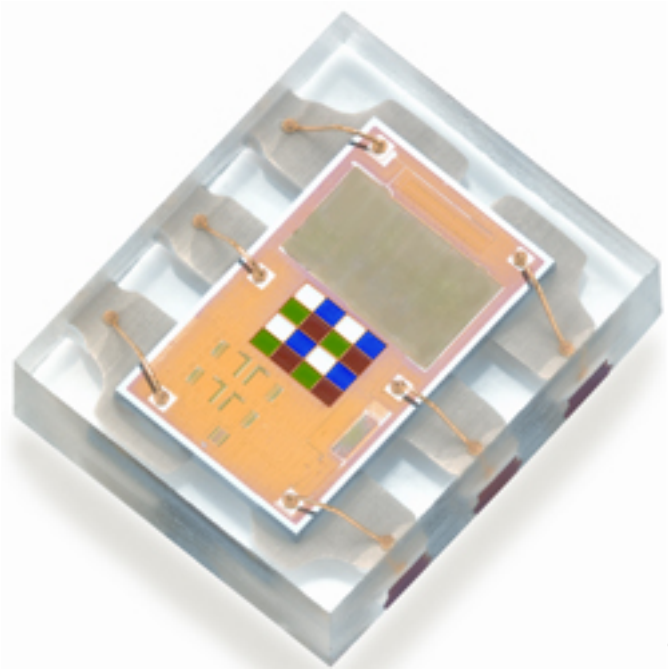
Digital Color Sensors Include On-Chip IR Filtering and Proximity Sensing



TAOS announced it has extended its leadership product portfolio with the industry's first color sensors with an on-chip infrared (IR) blocking filter and proximity sensor.

TAOS is announcing the TCS3x71 and TCS3x72 Series of Digital Color RGB and Proximity Sensors which provide color measurement, and when coupled with IR LED, proximity detection within a wide range of lighting conditions and through a variety of attenuating materials. The TCS3x72 Series is the industry's first color sensor with an IR blocking filter integrated directly on-chip and localized only to the color sensor photodiodes. High accuracy color sensing requires eliminating errors due to the IR spectral component in light sources. As a result of advanced semiconductor process techniques and TAOS' optoelectronics innovation, the on-chip IR blocking filter minimizes these effects and eliminates requirements for external IR filtering. In addition, the on-chip IR blocking filter enables the devices to perform ambient light sensing (ALS). ALS devices are commonly used in display-based devices such as smartphones, tablets, HDTVs, notebooks/desktop PCs and monitors to enable automatic backlight brightness control based on lighting conditions for optimum viewing and energy conservation.

The ability to sense color precisely and reliably is crucial in many applications across a variety of industries. The TCS3x71 and TCS3x72 Series provides cost-effective and low-power solutions for color measurement, discrimination and determination in a wide variety of applications such as color adjustment in printers, industrial process quality controls, portable medical diagnostic systems, paper and product handling, toys and games. For color sensing in closed environments with no IR light sources, the TCS3x71 Series applications include closed-loop color

temperature feedback control in solid-state lighting (SSL) and LED RGB backlit displays.

TCS3771 and TCS3772 family of devices are the industry's first color sensors with an integrated proximity sensor. Proximity detection is ideally suited for touchscreen smartphones to automatically turn off the touchscreen when the phone senses it is close to the user's head during a call. Proximity detection has a wide variety of applications for user or object presence detect in display-based products (notebook and desktop computers, tablets, TVs, monitors, etc.), industrial process controls, consumer electronics and home appliances. An emerging application for proximity detection is sensing a finger to create a 'virtual button" as a replacement for a mechanical or capacitive touch switch, with improved reliability, industrial design and space requirements.

"With the introduction of the world's first color sensor with on-chip IR blocking filter and proximity detection, TAOS extends its industry leadership in light sensing technology and underscores its position as the industry pioneer," said Darrell Benke, senior marketing manager, TAOS. "Our new technology offers color sensors that improve accuracy by minimizing IR light source errors while measuring light intensity and color as the human eye sees it without the need for an external filter. The TCS3x71 and TCS3x72 Series provides increased integration and color sensing accuracy unmatched in the industry."

The combined color and proximity sensing in the TCS3771 and TCS3772 family of devices has applications in OLED-based smartphones for determining the color temperature of the ambient light to provide the optimum display picture quality and to provide touchscreen control. These devices can also be used to create smarter products, such as household appliances, which sense color and user presence. TVs and other display-based products can benefit from all three capabilities in these devices: ambient light sensing for automatic backlight control; proximity detection as a virtual button or viewer detection; and external color temperature sensing to adjust the gamma table used to display content for optimum picture quality.

The TCS3x71 and TCS3x72 Series is pin and register compatible enabling simple design options and minimizing software development. TAOS provides software which optimizes the TCS3x72 Series ALS accuracy and enables light color temperature sensing. In addition, to accelerate time-to-market and reduce design-in effort, TAOS provides evaluation modules (EVMs) and software driver support.

For more information about integrated light sensing solutions from TAOS, please visit www.taosinc.com [1].

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[1] http://www.taosinc.com