Presse Press

Regensburg, June 8th, 2020

Take photos like a pro – Osram presents its first intelligent 3D sensing emitter module

VCSEL device for Time-of-Flight (ToF) applications establishes new product category in Osram's photonics portfolio

Pictures have become a vital part of social media. In the search for the perfect picture, more and more apps offer filters or editing features to enhance images. Despite all the innovations of smartphone cameras, there are still effects that can only be achieved by professional cameras with sophisticated and often high-priced lenses. Osram's first intelligent emitter module for 3D sensing allows smartphones to take high-quality images and videos with staggered depth of field. In portrait shots the person's face remains in focus, while the background becomes blurred. Besides optimizing image content, the module can also be used for 3D object recognition or augmented reality apps.

Smartphones, tablets and other mobile devices have more and more functionalities. The required components need to fit into ever smaller spaces. A central task for manufacturers has been to find the right emitters, photodiodes and VCSEL driver chips (ICs), then calibrate them and finally install them in the end device. With the VCSEL-based module Bidos PLPVDC 940_P_L01 for Time-of-Flight-(ToF) applications, Osram now eliminates a large part of these tasks for manufacturers.

The module features a black package, a 3-Watt infrared VCSEL with a wavelength of 940 nanometers (nm), a matching optical system, an integrated intelligent microcontroller for driving the VCSEL and a photodiode. Together, the individual components have a footprint of 3.6 mm x 5.46 mm. The outstanding efficiency of Osram's own VCSEL technology ensures low power consumption, and therefore, facilitates not only energy management,

but also the integration of the component into the end device. The high optical power enables the acquisition of depth information by ToF technology at a distance of up to seven meters. In addition to optimizing image content, customers can also use the depth information for other functions in the smartphone, including 3D object recognition and augmented reality applications like games and interior design.

"Our customers benefit from the ideally matched components and can install our module in their respective end devices with minimal integration effort," explains Benedikt von Lindeiner, Product Manager for Sensing at Osram Opto Semiconductors. "Our first intelligent emitter module for 3D sensing not only enables breathtaking optical effects for smartphones photography – it also opens the door to a wide range of 3D-based applications for future smartphone generations."

For the developers at Osram, eye safety was also extremely important. Therefore, special safety mechanisms are integrated in the module. If the photodiode registers a change in the incidence of light – for example, if the optics are damaged after a fall – the current supply to the VCSEL is interrupted.

Additional Technical Data – Bidos PLPVDC 940_P_L01:

Switching Time (VCSEL)	0,5 Nanoseconds
Slope Efficiency	0,95 Watts / Ampere
Field of View	64° x 51°

Please visit our website for further information on our sensing solutions.

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Osram is expanding its photonics portfolio for 3D sensing applications with the Bidos PLPVDC 940_P_L01 emitter module.
Picture: Osram

Using the emitter module for 3D sensing, smartphone cameras can easily capture professional images with little depth of field (so-called "bokeh effect").
Picture: Osram

ABOUT OSRAM
OSRAM, based in Munich, is a leading global high-tech company with a history dating back more than 110 years. Primarily focused on semiconductor -based technologies, our products are used in highly diverse applications ranging from virtual reality to autonomous driving and from smartphones to smart and connected lighting solutions in buildings and cities. OSRAM uses the endless possibilities of light to improve the quality of life for individuals and communities. OSRAM's innovations enable people all over the world not only to see better, but also to communicate, travel, work and live better. OSRAM has approximately 23,500 employees worldwide as of end of fiscal 2019 (September 30) and generated revenue of about 3.5 billion euros from continuing activities. The company is listed on the stock exchanges in Frankfurt and Munich (ISIN: DE000LED4000; WKN: LED 400; trading symbol: OSR). Additional information can be found at www.osram.com.