onsemi Debuts Advanced Depth Sensor for Industrial Applications

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Hyperlux™ ID iToF family increases distance of depth measurements up to 30 meters to improve productivity and safety in industrial environments

SCOTTSDALE, Ariz.--(BUSINESS WIRE)--Mar. 11, 2025-- **What's New:** Today onsemi released the Hyperlux™ ID family, the industry's first real-time, indirect time-of-flight (iToF) sensor that offers high precision long distance measurements and 3D imaging of fast-moving objects. By using onsemi's new proprietary global shutter pixel architecture and on-board storage, the Hyperlux ID family can capture an entire scene and simultaneously process depth measurement in real-time. This innovative approach addresses the limitations of standard iToF sensors and enables depth sensing up to 30 meters or four times further than standard iToF sensors, all within a smaller form factor. Additionally, the sensor family is capable of producing both monochrome (black and white) images and depth information at the same time. By combining these two outputs, the sensor can provide a comprehensive view of the environment without requiring separate sensors for visual and depth data.

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onsemi Hyperlux™ ID is the industry's first real-time, indirect time-of-flight (iToF) sensor that offers high precision long distance measurements and 3D imaging of fast-moving objects. (Graphic: Business Wire)

As a result, the Hyperlux ID family enables a simplified design, the farthest depth sensing in the industry, operation under dynamic scene conditions and the ability to capture fast-moving objects, which was not possible before.

Why It Matters: As automation and robotics become pervasive in industrial markets, the ability to obtain highly accurate depth information quickly and efficiently is becoming critical to improve productivity and safety in these complex environments. However, up until this point, iToF sensors have been limited in their use due to minimal range, poor performance in harsh light and an inability to calculate depth on moving objects.

With the ability to provide precision measurements of moving objects and high-resolution images, the Hyperlux ID family can help reduce errors and downtime and optimize processes in manufacturing systems to lower operational costs. Additionally, it can enhance facial recognition, gesture detection and 3D video conferencing in commercial applications.

The Hyperlux ID family is ideally suited for a broad range of industrial environments such as:

- **Automation and Robotics:** Object detection for better navigation and collision avoidance to improve safety on factory floors.
- **Manufacturing and Quality Control:** Measure the volume and shape of objects, detect defects, and ensure products meet quality standards.
- **Logistics and Material Handling:** Measure the positions, sizes and content ratios of pallets and cargo to optimize storage and transportation processes.
- **Agriculture and Farming:** Assist in monitoring crop growth and health by measuring plant height, detecting diseases, and optimizing irrigation and fertilization processes.
- **Access Control Systems:** Highly detailed and accurate facial recognition for payment terminals, home and commercial entry systems and more.

How It Works: The Hyperlux ID sensor family combines global shutter architecture and indirect time-of-flight (iToF) technology to deliver precise and rapid depth sensing. Using iToF technology, it senses depth by measuring the phase shift of the reflected light emitted from one or multiple VCSELs (Vertical-Cavity Surface-Emitting Lasers). The proprietary pixel architecture enables the sensors to capture and store four different phases of light simultaneously in one exposure, instantly capturing the entire scene and enhancing depth measurement accuracy. Additionally, the global shutter technology aligns all sensor pixels with the VCSEL to significantly reduce ambient infrared noise from other lighting sources. The integration of onboard depth processing also allows for real-time results without needing costly external memory and a high-performance processor.

"Hyperlux ID not only offers higher resolution and better ambient light suppression than any other iToF sensor available on the market but also impressed us with its integrated processing, which calculates depth, confidence and intensity maps at high speeds. This makes it particularly suitable for capturing moving objects," said Alexander Lewinsky, Managing Director, IDS Imaging Development Systems. "We were able to very quickly develop and expand our range of 3D cameras with a cost-efficient time-of-flight camera for indoor and outdoor applications for large-volume projects thanks to the close cooperation with onsemi."

The Hyperlux ID family includes 1.2MP global shutter 3.5µm BSI pixel sensors. The AF0130 model also features onboard processing to simplify integration and reduce system costs. For customers who prefer to integrate their own depth algorithms, the AF0131 allows this capability for added flexibility.

More Information:

- Product Page

- Data Sheet

About onsemi

onsemi (Nasdaq: ON) is driving disruptive innovations to help build a better future. With a focus on automotive and industrial end-markets, the company is accelerating change in megatrends such as vehicle electrification and safety, sustainable energy grids, industrial automation, and 5G and cloud infrastructure. **onsemi** offers a highly differentiated and innovative product portfolio, delivering intelligent power and sensing technologies that solve the world's most complex challenges and leads the way to creating a safer, cleaner and smarter world. **onsemi** is recognized as a Fortune 500® company and included in the Nasdaq-100 Index® and S&P 500® index. Learn more about **onsemi** at www.onsemi.com.

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