

Media Alert

ON Semiconductor launches World's First Automotive Qualified SiPM Array Product for LiDAR Applications

PHOENIX, Ariz. – March 1, 2020 – ON Semiconductor (Nasdaq: [ON](#)), driving energy efficient innovations, today announced the new RDM-Series [silicon photomultiplier \(SiPM\)](#) array that extends the LiDAR sensor capabilities to its broad portfolio of intelligent sensing solutions. The [ArrayRDM-0112A20-QFN](#) is the first automotive qualified SiPM product in the market, ready for the growing demands in [LiDAR](#) applications for the automotive industry and beyond.

The [ArrayRDM-0112A20-QFN](#) is a monolithic 1×12 array of SiPM pixels based on the company's market-leading RDM process, which enables high sensitivity to near-infrared (NIR) light to achieve industry-leading 18.5% photon detection efficiency (PDE)⁽¹⁾ at 905 nanometers (nm). The high internal gain of the SiPM allows sensitivity down to the single-photon level, a feature that in combination with the high PDE, enables the detection of the faintest return signals. This results in the ability to range to greater distances even with low reflective targets.

[SiPM technology](#) has gained momentum in recent years and has become the sensor of choice for broad-market depth sensing applications due to its unique feature set. SiPMs have the ability to deliver the highest signal-to-noise performance for long distance ranging in bright sunlight conditions. Additional benefits including lower supply biases and lower sensitivity to temperature changes make it an ideal upgrade for systems that use legacy avalanche photodiodes (APDs). SiPMs are produced in a high-volume CMOS process, allowing for the lowest detector cost and therefore enabling broad-market [LiDAR](#) solutions.

Using laser light to measure the distance of an object has spanned the fields of automotive, consumer and industrial applications. In automotive, [LiDAR](#) can be employed to improve safety and driver assistance systems (ADAS), aiding features such as lane keeping and traffic jam assist by complementing and providing redundancy with other sensing modalities. LiDAR is becoming commonly used for fully autonomous driving use cases, such as robotic transportation, to safely navigate the environment in real time. Benefiting from the high PDE of [ArrayRDM-0112A20-QFN](#), LiDAR systems supporting these functions have been proven to range over 300 meters in distance. More distance gives more time for the vehicle to respond to unexpected obstacles.

“The high-resolution depth data provided by LiDAR enables instantaneous and accurate object identification in challenging low light conditions. As the first automotive qualified SiPM, the [ArrayRDM-0112A20-QFN](#) will enable long range, cost-effective LiDAR solutions for the next level of safety and autonomy,” commented Wade Appelman, senior director, Automotive Sensing Division at ON Semiconductor. “We are continuously enhancing our sensor portfolio by offering diverse and complementary sensing modalities that pave the way to higher levels of [ADAS and autonomous driving](#).”

“At Yole Développement (Yole), we see LiDAR as a critical component on the route to full autonomy in automotive, with functionality required to reach level 2+ and above. Producing sensors that pass

automotive qualification, and with a sufficient level of performance, will be a key enabler to the mass adoption of LiDAR for automotive applications, which, based on current trends, is expected to show a +144% CAGR between 2019 and 2025⁽²⁾,” explained Pierrick Boulay, Technology & Market Analyst at Yole.

The [ArrayRDM-0112A20-QFN](#) is AEC-Q102 qualified and developed in accordance with IATF 16949. For more information regarding our [LiDAR](#) solutions, please contact a local sales office.

Additional resources:

- [ArrayRDM-0112A20-QFN Product Page](#)
 - [Evaluation Board for the ArrayRDM-0112A20-QFN](#)
 - [A Brief Introduction to Silicon Photomultiplier \(SiPM\) Sensors White Paper](#)
1. Max PDE at typical operating voltage and 21°C. PDE increases to >25% at 905 nm at elevated temperature.
 2. Source: LiDAR for Automotive and Industrial Applications 2020 report, Yole Développement (Yole), 2020

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About ON Semiconductor

ON Semiconductor (Nasdaq: [ON](#)) is driving energy efficient innovations, empowering customers to reduce global energy use. The company is a leading supplier of semiconductor-based solutions, offering a comprehensive portfolio of energy efficient, power management, analog, sensors, logic, timing, connectivity, discrete, SoC and custom devices. The company’s products help engineers solve their unique design challenges in [automotive, communications, computing, consumer, industrial, medical, aerospace and defense applications](#). ON Semiconductor operates a responsive, reliable, world-class supply chain and quality program, a robust compliance and ethics program, and a network of manufacturing facilities, sales offices and design centers in key markets throughout North America, Europe and the Asia Pacific regions. For more information, visit <http://www.onsemi.com>.

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