



Tower Semiconductor Announces Breakthrough LiDAR Technology for Advanced Driver-Assistance Systems

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Utilizing Tower's advanced SiPho technology platform, innovation provides a compact solid-state electronically scanning LiDAR solution with superb performance

Newport Beach, CA, September 13, 2021 - Tower Semiconductor (NASDAQ/TASE: TSEM), the leading foundry for high-value analog semiconductor solutions, today announced a breakthrough development of LiDAR IC technology designed for advanced driver-assistance systems (ADAS) and ultimately self-driving cars. The new, innovative IC designed by researchers from the Ming Hsieh Department of Electrical and Computer Engineering at the USC Viterbi School of Engineering was led by SungWon Chung and manufactured using Tower Semiconductor's industry-leading open foundry Silicon Photonics platform. It employs optical phased arrays – hundreds of compact optical antennas -- along with amplitude and phase modulators on a silicon chip for accurate 3D imaging of the surrounding environment without the need for any moving parts. Additionally, the field of view, resolution, scanning pattern, and scanning speed are all programmable, meaning that cars outfitted with this system can respond much better to real-world scenarios.

Tower Semiconductor's PH18 Silicon Photonics platform offers a rich set of optical components including ultra-high bandwidth modulators, and photodetectors, serving the demand in data center and infrastructure optical communication markets. This platform also offers high-performance elements necessary for high-precision LiDAR applications, such as low-loss silicon nitride waveguides capable of handling larger optical powers.

The LiDAR IC, operating at a human-eye friendly 1550nm wavelength uses continuous wave frequency modulation (FMCW) making it more resilient to environmental brightness and interferences from other LiDARs in a congested driving environment.

"We are proud to collaborate on this innovative and fundamental breakthrough LiDAR technology which is a step towards making safe autonomous vehicles and robots a reality. Tower believes that only through such pathbreaking scientific research today we can enable engineering solutions for tomorrow," said Dr. Ed Preisler, Director of RF & HPA Technology Development, Tower Semiconductor.

The research for this was documented in the 2021 IEEE International Solid-State Circuits Conference Digest of Technical Papers.

In addition to the mutual work done with Tower Semiconductor, this research at USC was partially supported by Toyota Central R & D Corporation (TCRDL), Samsung Advanced Institute of Technology (SAIT) and the USC Pratt and Whitney Institute for Collaborative Engineering (PWICE at USC).

About Tower Semiconductor

Tower Semiconductor Ltd. (NASDAQ: TSEM, TASE: TSEM), the leading foundry of high-value analog semiconductor solutions, provides technology and manufacturing platforms for integrated circuits (ICs) in growing markets such as consumer, industrial, automotive, mobile, infrastructure, medical and aerospace and defense. Tower Semiconductor focuses on creating a positive and sustainable impact on the world through long term partnerships and its advanced and innovative analog technology offering, comprised of a broad range of customizable process platforms such as SiGe, BiCMOS, mixed-signal/CMOS, RF CMOS, CMOS image sensor, non-imaging sensors, integrated power management (BCD and 700V), and MEMS. Tower Semiconductor also provides world-class design enablement for a quick and accurate design cycle as well as process transfer services including development, transfer, and optimization, to IDMs and fabless companies. To provide multi-fab sourcing and extended capacity for its customers, Tower Semiconductor operates two manufacturing facilities in Israel (150mm and 200mm), one in Italy (300mm), two in the U.S. (200mm), and three facilities in Japan (two 200mm and one 300mm) through TPSCo. For more information, please visit: www.towersemi.com.

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Attachment

- [Tower USC LiDAR Press Release Final](#)



Source: Tower Semiconductor