



Lattice Semiconductor Delivers New Machine Learning and Sensor-to-Cloud Security Solutions for Intelligence at the Edge

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iCE40 UltraPlus™ Reference Designs Support LoRa Communication, ECC Security, Signal Aggregation, Machine Learning & Graphics Acceleration

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- iCE40 UltraPlus accelerates innovation in smartphones, wearables, drones, 360 cameras, human-machine interfaces (HMI), industrial automation and IoT security
- New reference designs offer additional resources for customers to develop differentiated, innovative products, while meeting fast time-to-market requirements
- Reference designs take advantage of iCE40 UltraPlus' power efficient parallel processing for sensor stitching and repetitive number crunching

PORTLAND, Ore.--(BUSINESS WIRE)--Jun. 27, 2017-- [Lattice Semiconductor Corporation](#) (NASDAQ:LSCC), the leading provider of customizable smart connectivity solutions, today announced the availability of new reference designs based on its [iCE40 UltraPlus](#) FPGA devices to address emerging market requirements and to enable an expedited product development cycle. Expanding one of the industry's most energy-efficient and programmable mobile influenced solutions, Lattice's new reference designs for the iCE40 UltraPlus support LoRa communication, elliptic curve cryptography (ECC) security, signal aggregation, machine learning and graphics acceleration.

With these new reference designs, customers are equipped with additional resources to accelerate the development of differentiated and innovative products. The iCE40 UltraPlus is a highly energy-efficient computing solution for sensor stitching and repetitive number crunching, making it ideal for offloading power hungry application processors in battery-powered devices. Lattice's small form factor, low cost and low power FPGAs offer enhanced memory and more DSPs to improve system performance and extend battery life.

Built upon existing IP and paired with the new reference designs, the iCE40 UltraPlus anchors a complete solution for enabling sensor-to-Cloud security and acceleration at the Edge. It is essential for performing functions such as data capturing, aggregation, encryption, processing and transmission. Key applications for the new iCE40 UltraPlus FPGA reference designs include:

- [Machine Learning / On-device Artificial Intelligence](#) – Employs trained neural network algorithms for always-on, low power human face detection using a low resolution image sensor
- [Graphics Acceleration](#) – Supports always on graphics such as clocks in mobile and wearable device displays at ultra-low power, while the application processor is dormant
- [ECC Security](#) – Encrypts sensor data before transmission to the Cloud or setup an authenticated communications protocol between two systems
- [LoRa](#) – Controls a LoRa compatible radio to send processed sensor data miles away

"The new iCE40 UltraPlus solutions underscore our commitment to continuously provide our customers with updated resources for designing solutions for new markets quickly," said C.H. Chee, senior director of marketing at Lattice Semiconductor. "With improved DSP performance, flexible I/Os and increased memory for buffering, the iCE40 UltraPlus brings added intelligence to smartphones and IoT Edge products, and security to the Cloud."

The iCE40 UltraPlus is the latest addition to the iCE40 Ultra family, delivering eight times more memory (1.1 Mbit RAM), twice the digital signal processors (8x DSPs), and improved I/Os over previous generations. For more information about iCE40 UltraPlus IP solutions and reference designs, please visit <http://www.latticesemi.com/en/Products/FPGAandCPLD/iCE40Ultra.aspx>.

Partner Quotes

"IoT Edge devices demand energy efficient, always-on sensor functionality, and Lattice's low power and high performance FPGAs have demonstrated that they can meet the connectivity and processing needed for these advanced applications," said Terry Moore, CEO at MCCI. "By using the iCE40 UltraPlus with our LoRa design stack, we can support various anomaly detection techniques for always-on security in battery powered applications."

"To meet mobile product requirements of always-on sensor functionality, while conserving power consumption, we looked for the smallest, lowest power and lowest cost FPGA device to complement our designs," said Ulli Mueller, vice president, sales and marketing at Think Silicon. "By integrating the iCE40 UltraPlus FPGA with our NEMA|dc display processor technology, we enable graphic acceleration for always-on displays in wearables and other mobile and embedded display devices."

"FPGAs are ideal for AI and Machine Learning applications at the Edge due to their parallel processing architecture," said Guy Lemieux, CEO at VectorBlox. "Our binarized neural network implemented in Lattice's iCE40 UltraPlus FPGA supports face detection in always-on cameras for smart homes, security, and other mobile devices."

About Lattice Semiconductor

Lattice Semiconductor (NASDAQ:LSCC) provides smart connectivity solutions powered by our low power FPGA, video ASSP, 60 GHz millimeter wave, and IP products to the consumer, communications, industrial, computing, and automotive markets worldwide. Our unwavering commitment to our customers enables them to accelerate their innovation, creating an ever better and more connected world.

For more information about Lattice please visit <http://www.latticesemi.com>. You can also follow us via [LinkedIn](#), [Twitter](#), [Facebook](#), [YouTube](#) or [RSS](#).

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