New iCE40 UltraPlus™ Devices from Lattice Semiconductor Accelerate Customer Innovation in Smartphones and IoT Edge Devices

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World's Smallest FPGAs with Enhanced Memory and DSPs Improve System Performance, Reduce System Cost, Power Consumption and Time-to-Market, While Enabling Always On, Distributed Processing

- Energy-efficient parallel processing to enable always-on monitoring and accelerated computation
- Flexible I/Os simplify board-level design, which reduces system cost and time-to-market
- Smart IoT-edge memory with up to 1 Mbit of embedded memory for sensor data buffering

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PORTLAND, Ore.--(BUSINESS WIRE)--Dec. 12, 2016-- Lattice Semiconductor Corporation (NASDAQ:LSCC), the leading provider of customizable smart connectivity solutions, today announced its new iCE40 UltraPlus™ FPGA devices, one of the industry's most energy-efficient & programmable mobile heterogeneous computing (MHC) solutions. This latest addition to the iCE40 Ultra family delivers eight times more memory (1.1 Mbit RAM), twice the digital signal processors (8x DSPs), and improved I/Os over previous generations. Available in multiple package sizes, the programmable nature of the iCE40 UltraPlus device is ideal for smartphones, wearables, drones, 360 cameras, human-machine interfaces (HMIs) and industrial automation, as well as security and surveillance products.

This Smart News Release features multimedia. View the full release here: http://www.businesswire.com/news/home/20161212005097/en/

New iCE40 UltraPlus™ devices from Lattice Semiconductor accelerate customer innovation in Smartphones and IoT edge devices. (Photo: Business Wire)

Enabling a new way to interact with electronic devices, the iCE40 UltraPlus device is well suited for voice recognition, gesture recognition, image recognition, haptics, graphics acceleration, signal aggregation, I^3C bridging and more. This brings added intelligence to smartphones and IoT edge products, such as wearables and home audio assisted devices, to be always on, always listening and ready to instantly process commands locally without going to the cloud.

The MHC paradigm is concentrated around a highly energy-efficient method for computing algorithms quickly and locally using dissimilar processors to offload power hungry application processors (APs) in battery-powered devices. More DSPs offer the ability to compute higher-quality algorithms, while increased memory allows data to be buffered for longer low-power states. The flexible I/Os enable a more distributed heterogeneous processing architecture. This combination provides flexibility to enable OEMs and the Maker market to quickly deliver key innovations, such as always on sensor buffers and acoustic beam forming.

Imagine interacting with your mobile product, but without ever touching it. The iCE40 UltraPlus device will enable the responsiveness required to deliver this functionality. Applications include, but are not limited to:

- Always-on sensor buffer & distributed processing for mobile devices at sub-1 mW power consumption
  - Always-on sensor functionality while the AP is in sleep mode

- - Enables functions such as gesture detection, facial recognition, audio enhancement, audio beam forming, phrase detection, double tap, shake-to-wake and pedestrian dead reckoning (PDR)
- Frame buffer and graphics acceleration for wearables and white goods
  - Always-on display while AP is in sleep mode
  - Interface bridge from MCU to display
  - Multi-layer graphics acceleration for improved system power consumption
- Microphone array beamforming for battery-powered mobile devices
  - Superior audio quality using multiple mics for background noise reduction as well as audio equalization
- Aggregating various GPIOs, SPI, UART, I^2C, I^3C signals and more over a single PCB trace eliminates routing contention issues to reduce system cost and simplify designs

"Distributed processing demands are increasing in mobile applications and Lattice's iCE40 UltraPlus is optimized to address these requirements. As the newest addition to our successful iCE40 Ultra™ product family, the iCE40 UltraPlus FPGAs expand its market reach to system designers who require FPGA functionality with improved DSP compute power, more I/Os and increased memory for buffering," said C.H. Chee, senior director of marketing, mobile & consumer division at Lattice Semiconductor. "Our solution will reduce design complexity, system power consumption and time-to-market, while enhancing responsiveness of tomorrow's mobile devices."

Key features of the iCE40 UltraPlus product include:

- Integrated 1.1 Mb SRAM, 8 DSP blocks, up to 5K LUTs and Non-Volatile Configuration Memory (NVCM) for instant-on applications
- MIPI-I^3C support for low-resolution, always-on camera applications
- Sub 100 micro watt of standby power consumption
- Compact form factor with package sizes starting as low as 2.15 x 2.55 mm for space-constrained consumer markets
- QFN package suitable for addressing industrial market needs
- Ideal for critical low-latency acceleration functions

The iCE40 UltraPlus product evaluation samples and boards are now available. To learn more, please visit: http://www.latticesemi.com/iCE40UltraFamily.

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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