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Intel Driving Data-Centric World with New 10nm Intel Agilex FPGA Family

SAN FRANCISCO--(BUSINESS WIRE)-- **What's New:** Intel announced today a brand-new product family, the Intel® Agilex™ FPGA. This new family of field programmable gate arrays (FPGA) will provide customized solutions to address the unique data-centric business challenges across embedded, network and data center markets.

This press release features multimedia. View the full release here: https://www.businesswire.com/news/home/20190402005049/en/

Intel Corporation in April 2019 introduces the Intel Agilex FPGA. The family of field programmable gate arrays addresses the data-centric business challenges across embedded, network and data center markets. (Credit: Intel Corporation)

"The race to solve data-centric problems requires agile and flexible solutions that can move, store and process data efficiently. Intel Agilex FPGAs deliver customized connectivity and acceleration while delivering much needed improvements in performance and power[1,2] for diverse workloads."
-- Dan McNamara, Intel senior vice president, Programmable Solutions Group

Why It's Important: Customers need solutions that can aggregate and process increasing amounts of data traffic to enable transformative applications in emerging, data-driven industries like edge computing, networking and cloud. Whether it's through edge analytics for low-latency processing, virtualized network functions to improve performance, or data center acceleration for greater efficiency, Intel Agilex FPGAs are built to deliver customized solutions for applications from the edge to the cloud. Advances in artificial intelligence (AI) analytics at the edge, network and the cloud are compelling hardware systems to cope with evolving standards, support varying AI workloads, and integrate multiple functions. Intel Agilex FPGAs provide the flexibility and agility required to meet these challenges and deliver gains in performance and power[1,2].

How It's Unique: The Intel Agilex family combines FPGA fabric built on Intel's 10nm process with innovative heterogeneous 3D SiP technology. This provides the capability to integrate analog, memory, custom computing, custom I/O, and Intel eASIC device tiles into a single package with the FPGA fabric. Intel delivers a custom logic continuum with reusable IPs through a migration path from FPGA to structured ASIC. One API provides a software-friendly heterogeneous programming environment, enabling software developers to easily access the benefits of FPGA for acceleration.

The Intel Agilex FPGA provides new capabilities to help accelerate the solutions of tomorrow. These innovations include:

Compute Express Link: Industry's first FPGA to support Compute Express Link, a cache and memory coherent interconnect to future Intel® Xeon® Scalable processors.
2nd-Generation HyperFlex Architecture: Up to 40 percent higher performance, or up to 40 percent lower total power[2] compared with Intel® Stratix® 10 FPGAs[1].
DSP Innovation: Only FPGA supporting hardened BFLOAT16 and up to 40 teraflops of digital signal processor (DSP) performance (FP16).[3]
Peripheral component interconnect express (PCIe) Gen 5: Higher bandwidth compared with PCIe Gen 4.
Transceiver Data Rates: Support up to 112 Gbps data rates.
Advanced memory support: DDR5, HBM, Intel® Optane™ DC persistent memory support.

More Context: Intel Agilex on Intel.com **|** Intel Agilex (White Paper) | Introducing Intel Agilex FPGAs for the New Era of Data-Centric Compute (Dan McNamara Blog) | Programmable Solutions Group News | Data-Centric Innovation at Intel

The Small Print:

Results have been estimated or simulated using internal Intel analysis, architecture simulation, and modeling, and provided to you for informational purposes. Any differences in your system hardware, software or configuration may affect your actual performance.

For more complete information visit www.intel.com/benchmarks. Intel does not control or audit third-party benchmark data or the websites referenced in this document. You should visit the referenced website and confirm whether referenced data are accurate.

Cost reduction scenarios described are intended as examples of how a given Intel-based product, in the specified circumstances and configurations, may affect future costs and provide cost savings. Circumstances will vary. Intel does not guarantee any costs or cost reduction.

Further details on Intel Agilex performance, power, and software support numbers:

[1] Up to 40 percent higher performance compared to Intel Stratix 10 FPGAs

Derived from benchmarking an example design suite comparing maximum clock speed (Fmax) achieved in Intel Stratix 10 devices with the Fmax achieved in Intel Agilex devices, using Intel Quartus Prime Software. On average, designs running in the fastest speed grade of Intel Agilex FPGAs achieve a 40 percent improvement in Fmax compared to the same

designs running in the most popular speed grade of Stratix 10 devices (-2 speed grade), tested February 2019.

[2]Up to 40 percent lower total power compared to Intel Stratix 10 FPGAs

Derived from benchmarking an example design suite comparing total power estimates of each design running in Intel Stratix 10 FPGAs compared to the total power consumed by the same design running in Intel Agilex FPGAs. Power estimates of Intel Stratix 10 FPGA designs are obtained from Intel Stratix 10 Early Power Estimator; power estimates for Intel Agilex FPGA designs are obtained using internal Intel analysis and architecture simulation and modeling, tested February 2019.

[3]Up to 40 TFLOPs of DSP Performance (FP16 Configuration)

Each Intel Agilex DSP block can perform two FP16 floating-point operations (FLOPs) per clock cycle. Total FLOPs for FP16 configuration is derived by multiplying 2x the maximum number of DSP blocks to be offered in a single Intel Agilex FPGA by the maximum clock frequency that will be specified for that block.

About Intel

Intel (NASDAQ: INTC), a leader in the semiconductor industry, is shaping the data-centric future with computing and communications technology that is the foundation of the world's innovations. The company's engineering expertise is helping address the world's greatest challenges as well as helping secure, power and connect billions of devices and the infrastructure of the smart, connected world – from the cloud to the network to the edge and everything in between. Find more information about Intel at newsroom.intel.com and intel.com.

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