GLOBALFOUNDRIES and Arm Demonstrate High-Density 3D Stack Test Chip for High Performance Compute Applications

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Arm's interconnect technology on GF's 12LP process enables high performance and low latency, while increasing bandwidth for high core designs in AI, Cloud Computing and Mobile SoCs

Santa Clara, Calif. and Cambridge, UK, August 7, 2019 – GLOBALFOUNDRIES, the world's leading specialty foundry, today announced that it has taped-out an Arm®-based 3D high-density test chip that will enable a new level of system performance and power efficiency for computing applications such as AI/ML and high-end consumer mobile and wireless solutions. The new chip was fabricated using GF's 12nm Leading-Performance (12LP) FinFET process and features Arm's mesh interconnect technology in 3D that allows data to take a more direct path to other cores, minimizing latency while increasing data transfer rates as demanded by data centers, edge computing and high-end consumer applications.

The delivery of this chip demonstrates the fast progress that Arm and GF are making in researching and developing differentiated solutions that enable improvements in device density and performance for scalable high-performance computing. Moreover, the companies validated a 3D Design-for-Test (DFT) methodology, using GF's hybrid wafer-to-wafer bonding that can enable up to 1 million 3D connections per mm2, extending the ability to scale 12nm designs long into the future.

"Arm's interconnect technology in 3D enables the semiconductor industry to augment Moore's Law to address a greater diversity of computing applications," said Eric Hennenhoefer, vice president, Arm Research. "GF's expertise in fabrication and advanced packaging capabilities, combined with Arm technology, gives our mutual partners additional differentiation to venture into new paradigms for next generation, high-performance computing."

"In the era of big data and cognitive computing, advanced packaging is playing a much larger role than it has in the past. The use of AI and the need for power-efficient, high-throughput interconnect is driving the growth of accelerators through advanced packaging," said John Pellerin, chief technologist, platforms at GF. "We are delighted to be working with innovative partners such as Arm to deliver advanced packaging solutions which further enable integrating various node technologies optimized for logic scaling, memory bandwidth and RF performance in a small form factor. This work will allow us to uncover new insights in advanced packaging that will enable our mutual clients to create complete, differentiated solutions more efficiently."

GF's business model has transformed to enable its clients to develop new market and application-focused solutions specifically designed to meet the requirements of today's demanding markets. GF's 3D face-to-face (F2F) packaging solution not only provides designers a path to heterogeneous logic and logic/memory integration, but can be manufactured using an optimum production node that enables lower latency, higher bandwidth and smaller feature sizes. This approach, along with engaging early with partners such as Arm, gives clients maximum choice and flexibility, while delivering cost savings and faster time-to-volume for their next-generation products.

For more information, go to globalfoundries.com.

About GLOBALFOUNDRIES

GLOBALFOUNDRIES (GF) is the world's leading specialty foundry. We deliver differentiated feature-rich solutions that enable our clients to develop innovative products for high-growth market segments. GF provides a broad range of platforms and features with a unique mix of design, development and fabrication services. With an at-scale manufacturing footprint spanning the U.S., Europe and Asia, GF has the flexibility and agility to meet the dynamic needs of clients across the globe. GF is owned by Mubadala Investment Company. For more information, visit globalfoundries.com.

About Arm

Arm technology is at the heart of a computing and connectivity revolution that is transforming the way people live and businesses operate. Our advanced, energy-efficient processor designs have enabled intelligent computing in more than 145 billion chips and our technologies now securely power products from the sensor to the smartphone and the supercomputer. In combination with our IoT device, connectivity and data management platform, we are also enabling customers with powerful and actionable business insights that are generating new value from their connected devices and data. Together with 1,000+ technology partners we are at the forefront of designing, securing and managing all areas of compute from the chip to the cloud.

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