



GLOBALFOUNDRIES Extends FDX™ Roadmap with 12nm FD-SOI Technology

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12FDX™ delivers full-node scaling, ultra-low power, and performance on demand

Santa Clara, Calif., September 8, 2016—GLOBALFOUNDRIES today unveiled a new 12nm FD-SOI semiconductor technology, extending its leadership position by offering the industry's first multi-node FD-SOI roadmap. Building on the success of its 22FDX® offering, the company's next-generation 12FDX™ platform is designed to enable the intelligent systems of tomorrow across a range of applications, from mobile computing and 5G connectivity to artificial intelligence and autonomous vehicles.

As the world becomes more and more integrated through billions of connected devices, many emerging applications demand a new approach to semiconductor innovation. The chips that make these applications possible are evolving into mini-systems, with increased integration of intelligent components including wireless connectivity, non-volatile memory, and power management—all while driving ultra-low power consumption. GF's new 12FDX technology is specifically architected to deliver these unprecedented levels of system integration, design flexibility, and power scaling.

12FDX sets a new standard for system integration, providing an optimized platform for combining radio frequency (RF), analog, embedded memory, and advanced logic onto a single chip. The technology also provides the industry's widest range of dynamic voltage scaling and unmatched design flexibility via software-controlled transistors—capable of delivering peak performance when and where it is needed, while balancing static and dynamic power for the ultimate in energy efficiency.

"Some applications require the unsurpassed performance of FinFET transistors, but the vast majority of connected devices need high levels of integration and more flexibility for performance and power consumption, at costs FinFET cannot achieve," said GF CEO Sanjay Jha. "Our 22FDX and 12FDX technologies fill a gap in the industry's roadmap by providing an alternative path for the next generation of connected intelligent systems. And with our FDX platforms, the cost of design is significantly lower, reopening the door for advanced node migration and spurring increased innovation across the ecosystem."

GF's new 12FDX technology is built on a 12nm fully-depleted silicon-on-insulator (FD-SOI) platform, enabling the performance of 10nm FinFET with better power consumption and lower cost than 16nm FinFET. The platform offers a full node of scaling benefit, delivering a 15 percent performance boost over today's FinFET technologies and as much as 50 percent lower power consumption.

"Chip manufacturing is no longer one-shrink-fits-all. While FinFET is the technology of choice for the highest-performance products, the industry roadmap is less clear for many cost-sensitive mobile and IoT products, which require the lowest possible power while still delivering adequate clock speeds," said Linley Gwennap, founder and principal analyst of the Linley Group. "GF's 22FDX and 12FDX technologies are well positioned to fill this gap by offering an alternative migration path for advanced node designs, particularly those seeking to reduce power without increasing die cost. Today, GF is the only purveyor of FD-SOI at 22nm and below, giving it a clear differentiation."

"When 22FDX first came out from GF, I saw some game-changing features. The real-time tradeoffs in power and performance could not be ignored by those needing to differentiate their designs," said G. Dan Hutcheson, chairman and CEO of VLSI Research. "Now with its new 12FDX offering, GF is showing a clear commitment to delivering a roadmap for this technology -- especially for IoT and Automotive, which are the most disruptive forces in the market today. GF's FD-SOI technologies will be a critical enabler of this disruption."

"FD-SOI technology can provide real-time trade-offs in power, performance and cost for those needing to differentiate their designs," said Handel Jones, founder and CEO, IBS, Inc. "GF's new 12FDX offering delivers the industry's first FD-SOI roadmap that brings the lowest cost migration path for advanced node design, enabling tomorrow's connected systems for Intelligent Clients, 5G, AR/VR, Automotive markets."

GF Fab 1 in Dresden, Germany is currently putting the conditions in place to enable the site's 12FDX development activities and subsequent manufacturing. Customer product tape-outs are expected to begin in the first half of 2019.

"We are excited about the GF 12FDX offering and the value it can provide to customers in China," said Dr. Xi Wang, Director General, Academician of Chinese Academy of Sciences, Shanghai Institute of Microsystem and Information Technology. "Extending the FD-SOI roadmap will enable customers in markets such as mobile, IoT, and automotive to leverage the power efficiency and performance benefits of the FDX technologies to create competitive products."

"NXP's next generation of i.MX multimedia applications processors are leveraging the benefits of FD-SOI to achieve both leadership in power efficiency and scaling performance-on-demand for automotive, industrial and consumer applications," said Ron Martino, vice president, i.MX applications processor product line at NXP Semiconductors. "GF's 12FDX technology is a great addition to the industry because it provides a next generation node for FD-SOI that will further extend planar device capability to

deliver lower risk, wider dynamic range, and compelling cost-performance for smart, connected and secure systems of tomorrow.”

“At INVECAS, our charter is to provide unrivaled IP solutions, ASIC and Design Services, and software and system-level expertise to GF customers, thereby ensuring they get the most out of the technology and lowering the barrier of design complexity and schedule,” said Dasaradha Gude, CEO of INVECAS. “Building on the work we have already accomplished for 22FDX, we look forward to extending our strategic relationship to support GF’s new 12FDX technology, which will provide customers with a roadmap for their innovative FD-SOI designs.”

“As one of the first movers of design for FD-SOI, VeriSilicon leverages its Silicon Platform as a Service (SiPaaS) together with experience in delivering best-in-class IPs and design services for SoCs,” said Wayne Dai, president and CEO of VeriSilicon. “The unique benefits of FD-SOI technologies enable us to differentiate in the automotive, IoT, mobility, and consumer market segments. We look forward to extending our collaboration with GF on their 12FDX offering and providing high-quality, low-power and cost-effective solutions to our customers for the China market.”

“12FDX development will deliver another breakthrough in power, performance, and intelligent scaling as 12nm is best for double patterning and delivers best system performance and power at the lowest process complexity,” said Marie Semeria, CEO of Leti, an institute of CEA Tech. “We are pleased to see the results of the collaboration between the Leti teams and GF in the U.S. and Germany extending the roadmap for FD-SOI technology, which will become the best platform for full system on chip integration of connected devices.”

“We are very pleased to see a strong momentum and a very solid adoption from fabless customers in 22FDX offering. Now this new 12FDX offering will further expand FD-SOI market adoption,” said Paul Boudre, Soitec CEO. “At Soitec, we are fully prepared to support GF with high volumes, high quality FD-SOI substrates from 22nm to 12nm. This is an amazing opportunity for our industry just in time to support a big wave of new mobile and connected applications.”

About GF

GF is the world’s first full-service semiconductor foundry with a truly global footprint. Launched in March 2009, the company has quickly achieved scale as one of the largest foundries in the world, providing a unique combination of advanced technology and manufacturing to more than 250 customers. With operations in Singapore, Germany and the United States, GF is the only foundry that offers the flexibility and security of manufacturing centers spanning three continents. The company’s 300mm fabs and 200mm fabs provide the full range of process technologies from mainstream to the leading edge. This global manufacturing footprint is supported by major facilities for research, development and design enablement located near hubs of semiconductor activity in the United States, Europe and Asia. GF is owned by Mubadala Development Company. For more information, visit <http://www.globalfoundries.com>.

Contacts:

Jason Gorss

GF

(518) 698-7765

jason.gorss@globalfoundries.com