Chartered Begins Customer Prototyping in 300mm Fab

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Fab 7 On Track for 0.13-micron, 90nm Foundry, and 90nm SOI Production in 2005

Chartered Semiconductor Manufacturing, one of the world's top dedicated semiconductor foundries, has begun prototyping customer products at its first 300-millimeter (mm) facility, Fab 7, at multiple advanced technology nodes. The 300mm pilot production activities currently run on Chartered's 0.13-micron process, the 90-nanometer (nm) cross-foundry platform jointly developed by Chartered and IBM, and the 90nm silicon-on-insulator (SOI) process tuned to IBM's high-performance product needs.

The recent activity reinforces Chartered's position at the forefront of advanced technology delivery and manufacturing execution. It marks Chartered's seamless crossover to 0.13-micron 300mm manufacturing, following the achievement of volume production on 200mm wafers that began more than two years ago. More significantly, the pilot run at 90 nm is built on the successful technology transfer of the jointly developed Chartered-IBM process from IBM's 300mm facility in East Fishkill, New York to Fab 7 – an achievement that brings the companies closer toward realizing their vision of establishing the industry's first process-exact, cross-foundry platform that gives customers dual-source manufacturing flexibility. In line with volume production plans in mid-2005, Chartered's Fab 7 has also begun pilot runs of 90nm SOI products for IBM.

To date, Chartered's Fab 7 has demonstrated functional silicon results from its 0.13-micron, 90nm and 90nm SOI processes that out-perform or are on par with industry benchmarks. The initial defect density metrics from Chartered's 300mm pilot lines are meeting or exceeding customers' expectations.

With a focus on further defect density improvements and achieving faster yield ramp, teams from Chartered have started working with manufacturing process control experts at AMD to integrate portions of AMD's fab automation technologies and deploy portions of its industry-leading manufacturing methodologies at Fab 7. Unique in the industry, these technologies, methodologies and skill sets are known collectively as AMD Automated Precision Manufacturing (APM). Through its alliance with AMD, Chartered aims to automate complex decisions involved in wafer fabrication processes and bring maximum efficiency and dependability to Fab 7's advanced process control infrastructure.

Additionally, Chartered is implementing PDF Solutions' Characterization Vehicle Infrastructure across Fab 7's processes to optimize design rule to process margin sensitivity.

"With our initial success in the start-up of Fab 7, Chartered is demonstrating a new level of performance in manufacturing and technology implementation," said Kay Chai "KC" Ang, senior vice president of fab operations at Chartered. "Our customers' growing confidence and more rapid adoption based on our performance underscore Chartered's strengthening position of manufacturing excellence for advanced technologies. We are pleased with the very close collaboration among Chartered and its partners, making these achievements possible."

The Chartered-IBM 90nm cross-foundry platform offers a triple-gate oxide option and is an all-copper interconnect process that features up to

nine levels of metallization and low-k dielectric. The process is capable of supporting multiple Vt design for power and performance optimization and for input/output voltages at 3.3 volts, 2.5 volts, 1.8 volts, 1.5 volts and 1.2 volts. Products that are well suited to the Chartered-IBM 90nm process include graphic chips, digital consumer products, storage and networking products, gaming products and high-performance processor products. To help customers and design partners validate their designs, intellectual property and prototypes on the 90nm process, Chartered also runs quarterly multi-project wafer shuttles at competitive cycle times.