



Addressing the Resurgence of 200 mm and ≤ 28 nm, 300 mm Capacity Demand Through Technical Innovation and Improvements in Capital Efficiency
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A wide range of applications in consumer electronics, automotive electronics, and cellular communications are increasingly dependent on devices such as sensors (MEMS, CIS and IR Sensors), advanced power semiconductors (MOSFETs and IGBTs), MCUs, and Bipolar-CMOS-DMOS (BCD) power management ICs.

The proliferation of these specialty technologies is, in turn, driving the demand for advanced yet cost-effective fabrication capability to enable the next generation of devices. This is resulting in a resurgence of 200 mm processing and an increased demand for 300 mm capacity at ≥ 28 nm. To satisfy this demand, manufacturers and foundries require semiconductor processing solutions that enhance their fab productivity and capital efficiency while offering advanced technical capability.

Lam Research has been working to extend the effectiveness of our established products through technology enhancements and productivity upgrades to our deposition, etch, and clean technologies to ensure we meet the needs of our customers. In many instances, these developments draw on features introduced to address process challenges in advanced 300 mm CMOS applications. They include application specific process solutions such as critical trench etch and thin wafer processing of IGBTs, deep reactive ion etching of high aspect ratio trenches for MEMS and SJ-MOSFET fabrication, a full range of process steps for manufacturing of advanced BCD ICs, including deep trench isolation and thick metal processing, and enabling solutions for the fabrication of wide-band gap semiconductor devices based upon SiC and GaN.

In parallel, through a process of continuing innovation, we are consistently expanding our suite of smart manufacturing tools that improve Equipment Intelligence™ and allow these process solutions to be deployed with improved operational efficiency and productivity.

In this presentation, we will review both these technical and productivity solutions and provide examples of how their parallel implementation can provide the most effective platform for the fabrication of specialty technologies on 200 mm and 300 mm wafers at ≤ 28 nm.