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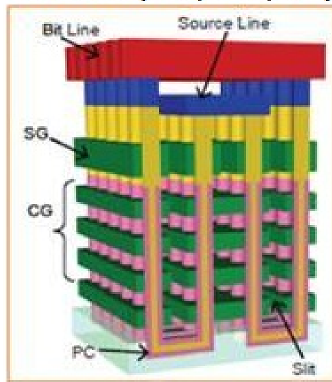
February 13, 2015

News & Updates:
Techcet at SEMICON on 3D and FinFET Devices on Driver Material and Growth

February 4th-6th, 2015: SEMICON Korea

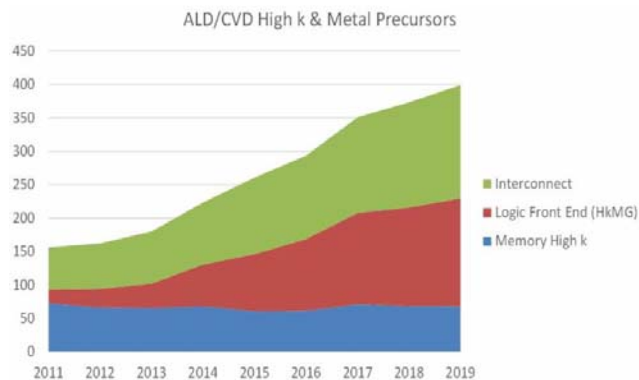


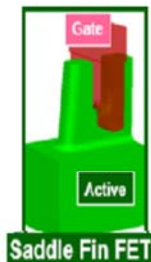
SEMICON Korea Market Briefing

Last week, Techcet presented at the SEMICON Korea market briefing where the future of process materials and the impact of trends and opportunities of 3-D materials was discussed. For 2014, front end process materials total $17 billion, $7.7 billion solely from silicon wafers.

3D Devices Continue to Grow

Revenues will continue to grow, driven by manufacturing of 3D devices, in particular photoresists/ancillaries, CMP consumables, ALD/CVD metals, and low temperature dielectrics. We see increased growth for memory, DRAM as well as NAND. NAND memory is going from 1x-1z design rules, thought to be 14nm or smaller, to 3D. The first 3D designs are actually based on larger than 30 nm design rules. Despite these larger geometries, the number of layers that are required will make etching, cleaning, and deposition more challenging. High aspect ratio vias and and FINFET structures used in RAM are expected to require lower temperature dielectric materials, more selective etching gases, and better residue removal cleaning chemistries. RAM devices, now at just under 28 nm, are incorporating FINFET structures, and 22 nm MPU devices are already incorporating FINFETs and moving toward 12 nm.





DRAM 26-16nm HκMG + Si Fin

All of the 3D device types will generate increased volumes and revenues for ALD/CVD metal and metal-oxide precursors, as well as low temperature dielectrics, photoresists, and ancillaries.

For example, ALD metal and metal oxide precursors are expected to grow 80% over the next 4-5 years to 400 million by 2019. ALD precursors will not only be used in the interconnect area, but also for the gate and high-aspect ratio vias that exist in all 3D device types.

For more information on materials supply chains, materials markets, and associated technical trends, email info@techcet.com or call (480)392-8336.

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