Advanced 300mm Cu/CVD LK (k=2.2) Multilevel Damascene Integration for 90/65nm Generation BEOL Interconnect Technologies

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9ML Cu/CVD LK (k=2.2) damascene integration on 300mm wafers for 90/65nm generation BEOL interconnect technology has been successfully demonstrated. To minimize line-line capacitance, no cap for CMP or middle ES for metal trench etching were used in the IMD stacking. Integration challenges in the Cu/LK (k=2.2) damascene building were overcome by novel approaches in IMD processing, CMP and patterning. Excellent physical, electrical, reliability, and packaging results from the Cu/LK (k=2.2) BEOL interconnects were thus achieved.