

TiN/HfO₂/TiN Capacitor Technology Applicable to 70nm Generation DRAMs

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We have developed a cylindrical TiN/HfO₂/TiN (TIT) capacitor for 70nm DRAMs application. TIT capacitors with HfO₂ films deposited by ALD(Atomic Layer Deposition) using Hf(NEtMe)₄ precursor and O₂ plasma as a reactant is shown to be applicable to DRAM device below 70nm design rule for the first time. It shows the thermal budget endurance against back-end process of DRAM device as well as the very low enough Toxeq of about 13 Å to provide the sufficient cell capacitance.