SYSTEM AND METHOD FOR INTEGRATION OF HfO_2 AND RTCVD POLY-SILICON

ABSTRACT

A method for improving electrical characteristics in metal oxide semiconductor (MOS) devices by using a loading treatment prior to depositing poly-silicon upon a high-k material is provided. A high dielectric constant (high-k) material, such as HfO2, is deposited onto a substrate using atomic layer deposition or a similar process. The loading treatment may be performed within the same process environment of the poly-silicon formation or may be performed within an individual process environment. The loading treatment and poly-silicon deposition processes may occur sequentially and improve the capacitance-gate voltage response of the MOS device constructed with the high-k material. Other layers may then be added onto the high-k layer to complete the MOS device. Other processes, such as a diluted oxygen anneal, may also be used.

(FIG. 1A)