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(54) **INTEGRATED CAPACITORS FABRICATED WITH CONDUCTIVE METAL OXIDES**

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(52) **U.S. Cl.** **257/295; 257/301; 257/303**

(58) **Field of Search** 438/3, 253-256, 438/396-399; 257/303, 301, 295

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(57) **ABSTRACT**

A capacitor for a memory device is formed with a conductive oxide for a bottom electrode. The conductive oxide (RuO_x) is deposited under low temperatures as an amorphous film. As a result, the film is conformally deposited over a three dimensional, folding structure. Furthermore, a subsequent polishing step is easily performed on the amorphous film, increasing wafer throughput. After deposition and polishing, the film is crystallized in a non-oxidizing ambient.

5 Claims, 7 Drawing Sheets

