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# United States Patent [19]

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Chen et al.

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[54] **SPIN-ON-GLASS PLANARIZATION BY A NEW STAGNANT COATING METHOD**

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[57] **ABSTRACT**

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[51] Int. Cl.<sup>6</sup> ..... **H01L 21/473**

An improved process to form a planar spin-on-glass layer on a semiconductor body. The process comprises forming a first dielectric layer over a conductive layer. Next, a spin-on-glass (SOG) layer is formed on the first dielectric layer. The SOG layer can be formed of a silicate or a siloxane, each having different process parameters. The SOG solute is dispensed on a stationary wafer. Then two spin cycles are applied to the wafer: a first low speed cycle is applied while the solute is being dispensed on to the wafer and a second high speed cycle. The stationary SOG dispensing and the first low speed cycle allow the solute to more readily fill in tight valleys between metal line. Moreover, the speed and timing of the low speed spin/dispensing allow the proper amount of solvent to evaporate thus increasing the SOG viscosity which improves the planarization for a given thickness of SOG. This process significantly increases the ability of the SOG to fill between closely spaced lines and form a smooth planar layer.

[52] U.S. Cl. .... **437/231**

[58] Field of Search ..... **437/231**

[56] **References Cited**

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**22 Claims, 1 Drawing Sheet**

