System and Method for Contact Module Processing

ABSTRACT OF THE DISCLOSURE

System and method for improving the process performance of a contact module. A preferred embodiment comprises improving the process performance of a contact module by reducing surface variations of an interlayer dielectric. The interlayer dielectric comprises a plurality of layers, a first layer (for example, a contact etch stop layer 610) protects devices on a substrate from subsequent etching operations, while a second layer (for example, a first dielectric layer 620) covers the first layer. A third layer (for example, a second dielectric layer 630) fills gaps that may be due to the topography of the devices. A fourth layer (for example, a third dielectric layer 640), brings the interlayer dielectric layer to a desired thickness and is formed using a process that yields a very flat surface completes the interlayer dielectric. Using multiple layers permit the elimination of variations (filling gaps and leveling bumps) without resorting to chemical-mechanical polishing.

FIG. 7