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ABSTRACT

OPTIMIZED SiCN CAPPING LAYER

A back-end-of-line (BEOL) interconnect structure and a method of forming an interconnect structure. The interconnect structure comprises a conductor (115), such as copper, embedded in a dielectric layer (112), and a low-k dielectric capping layer (116), which acts as a diffusion barrier, on the conductor. A method of forming the BEOL interconnect structure is disclosed, where the capping layer (116) is deposited using plasma-enhanced chemical vapor deposition (PECVD) and is comprised of Si, C, H, and N. The interconnect structure provides improved oxygen diffusion resistance and improved barrier qualities allowing for a reduction in film thickness.

Fig. 2.