COMPOSITE SILICON-METAL NITRIDE BARRIER TO PREVENT FORMATION OF METAL FLUORIDES IN COPPER DAMASCENE

ABSTRACT

A method of forming amorphous silicon spacers followed by the forming of metal nitride over the spacers in a copper damascene structure -single, dual, or multi-structure-is disclosed in order to prevent the formation of fluorides in copper. In this embodiment, metal nitride reacts with amorphous silicon to form a ternary metal silicon nitride having an excellent property of adhering to copper while at the same time for forming an excellent barrier to diffusion of copper.

Fig. 3F