EFFECTIVE RETARDATION OF FLUORINE RADICAL ATTACK ON METAL LINES VIA USE OF SILICON RICH OXIDE SPACERS

ABSTRACT

A process for forming metal structures, encapsulated in silicon rich oxide, (SRO), shapes and layers, needed to protect the metal structures from the corrosive effects of fluorine radicals, present in low k, fluorinated silica glass, (FSG), which in turn is formed in the spaces between metal structures, has been developed. The process features initial formation of the metal structures, capped with an overlying SRO shape. This is followed by the formation of SRO spacers on the sides of the SRO capped, metal structures. Another thin, conformal SRO layer is then deposited to insure encapsulation of the metal structures, however still leaving adequate space between the SRO encapsulated metal structures for the low k FSG layer, needed to limit capacitance and improve device performance.

Figure 5