ABSTRACT

A METHOD OF FORMING SALICIDED POLY TO METAL CAPACITOR

A new method is provided for the creation of a salicided polysilicon capacitor. A salicided layer of polysilicon is created as the lower plate of a salicided polysilicon capacitor over the surface of a field isolation region. A layer of silicon nitride is deposited over the field oxide isolation region including the surface of the salicided polysilicon layer. A layer of TEOS is deposited over the surface of the layer of silicon nitride, a layer if titanium nitride is deposited over the surface of the layer of TEOS. The layer of TiN is etched after which the layer of TEOS is etched. The etch of the layer of TEOS is an overetch whereby TEOS is symmetrically removed from underneath the etched layer of TiN, leaving remnants of TEOS in place underneath the etched layer of TiN while at the same time creating air gaps underneath the etched layer of TiN. A layer of silane based oxide is deposited over the surface of the field oxide isolation region including the surface of the etched layer of TiN, thus enclosing the air gaps that have been created underneath the etched layer of TiN. The latter layer of silane based oxide is patterned and etched, forming the upper plate of the salicided polysilicon capacitor. The TEOS remnants remaining in place underneath the etched layer of TiN is part of the dielectric layer of the capacitor.

FIGURE 5



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