## ABSTRACT

PROCESS IMPROVEMENTS IN SELF-ALIGNED POLYSILICON MOSFET TECHNOLOGY USING SILICON OXYNITRIDE

Silicon enriched silicon oxynitride is used in applications both as an independent etch stop and as a cap layer and sidewall component over polysilicon gate electrodes in order to prevent insulator thinning and shorts caused by a mis-aligned contact mask. In one embodiment a silicon enriched silicon oxynitride layer is placed over a polysilicon gate with conventional sidewalls and insulative cap. In another embodiment the insulative cap and the sidewalls are formed of a silicon enriched silicon oxinitride. Etching of contact openings in the subsequently deposited insulative layer is suppressed by the silicon enriched silicon oxynitride if it is engaged because of a mis-aligned contact mask. In another embodiment a polysilicon stack edge of a memory device is protected by a conformal silicon oxynitride layer during etching of a self-aligned-source (SAS) region. These embodiments are accomplished with minimal and virtually negligible increase in process complexity or cost.

(FIGURE 3 IS SUGGESTED FOR PUBLICATION)