

SELECTIVE OXIDE TRIMMING TO IMPROVE METAL T-GATE TRANSISTOR

Abstract

A process to form a FET using a replacement gate. An example feature is that the PMOS sacrificial gate is made narrower than the NMOS sacrificial gate. The PMOS gate is implanted preferably with Ge to increase the amount of poly sacrificial gate that is oxidized to form PMOS spacers. The spacers are used as masks for the LDD Implant. The space between the PLLD regions is preferably larger than the space between the NLDD regions because of the wider PMOS spacers. The wider spacer between the PMOS regions improves device performance by improving the short channel effects for PMOS. In addition, the oxidization of the sacrificial gates allows trimming of sacrificial gates. In a second embodiment, two metal gates with different work functions are formed.

FIGURE. 23