ABSTRACT

SEMICONDUCTOR DEVICE AND FABRICATION METHOD

A method and apparatus for manufacturing a semiconductor device is provides a substrate having a first region and a second region. A sacrificial first gate is formed in the first region. Source/drain are formed in the first region. A second region gate dielectric is formed in the second region. A second region gate is formed on the second region gate dielectric. A second region source/drain is formed in the second region. A sacrificial layer is formed over the sacrificial first gate, the source/drain, the first region, and the second region. The sacrificial first gate is exposed. A gate space is formed by removing the sacrificial first gate. A first region gate dielectric is formed in the gate space. A first region gate is formed on the first region gate dielectric. The sacrificial layer is removed.

Figure 7