

ABSTRACT

A method of fabricating a semiconductor memory device includes etching a substrate that forms a trench that crosses active regions of the substrate, forming a gate insulating layer on bottom and side surfaces of the trench, forming a first gate electrode on the gate insulating layer that fills a lower portion of the trench, oxidizing a top surface of the first gate electrode where a preliminary barrier layer is formed, nitrifying the preliminary barrier layer where a barrier layer is formed, and forming a second gate electrode on the barrier layer that fills an upper portion of the trench.

FIG. 2A