

ABSTRACT

A semiconductor device including high-integrated memory cells and a method for fabricating the semiconductor device are provided.

- 5 The method for fabricating a semiconductor device includes forming an alternating stack of sacrificial pad sheets and inter-pad dielectric layers, which are stacked vertically spaced apart from each other over a substrate; forming preliminary contact holes penetrating the alternating stack; forming sacrificial plugs filling the preliminary contact
- 10 holes; performing post-treatment processes on the sacrificial plugs and forming sacrificial plug patterns having different heights and sacrificial recesses having different depths; forming contact liner layers on sidewalls of the sacrificial recesses; removing the sacrificial plug patterns and forming contact holes; forming contact plugs filling the
- 15 contact holes; removing the sacrificial pad sheets and forming pad openings; and forming each pad of a plurality of pads in a different one of the pad openings.

FIG. 4C