

ABSTRACT

A semiconductor device includes first semiconductor patterns vertically stacked on a substrate and vertically spaced apart from each other, and a first gate electrode on the first semiconductor patterns. The first gate electrode comprises a first work function metal pattern on a top surface, a bottom surface, and sidewalls of respective ones of the first semiconductor patterns, a barrier pattern on the first work function metal pattern, and a first electrode pattern on the barrier pattern. The first gate electrode has a first part between adjacent ones of the first semiconductor patterns. The barrier pattern comprises a silicon-containing metal nitride layer. The barrier pattern and the first electrode pattern are spaced apart from the first part.

FIG. 2A