ABSTRACT

The present disclosure provides serial-gate transistors and nonvolatile memory devices including serial-gate transistors. In some embodiments, a nonvolatile memory device includes a plurality of memory blocks, a plurality of pass transistor blocks, and a plurality of gates sequentially arranged in a horizontal direction in a gate region above a semiconductor substrate. Each of the plurality of pass transistor blocks includes a plurality of serial-gate transistors configured to transfer a plurality of driving signals to a corresponding memory block of the plurality of memory blocks. Each of the plurality of serial-gate transistors includes a first source-drain region, a gate region, and a second source-drain region that are sequentially arranged in a horizontal direction at a semiconductor substrate. The plurality of gates are electrically decoupled from each other. A plurality of block selection signals respectively applied to the plurality of gates are controlled independently of each other.

FIG. 1