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ABSTRACT

A manufacturing method of a semiconductor device includes the following steps. A first recess and a second recess are formed in a first region and a second region of a semiconductor substrate, respectively. A bottom surface of the first recess is lower than a bottom surface of the second recess in a vertical direction. A first gate oxide layer and a second gate oxide layer are formed concurrently. At least a portion of the first gate oxide layer is formed in the first recess, and at least a portion of the second gate oxide layer is formed in the second recess. A removing process is performed for removing a part of the second gate oxide layer. A thickness of the second gate oxide layer is less than a thickness of the first gate oxide layer after the removing process.

