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(54) Title: SEMICONDUCTOR DEVICE MANUFACTURING METHOD

(54) 发明名称: 半导体器件的制造方法

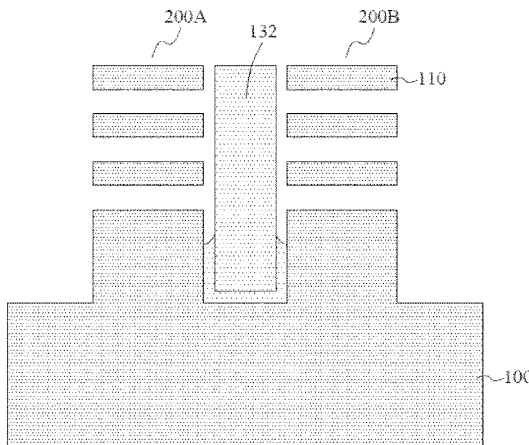


图 8

(57) Abstract: The present application relates to the technical field of semiconductors, and particularly discloses a semiconductor device manufacturing method, comprising: forming, on a substrate, a first stack structure and a second stack structure which are spaced from each other, wherein the first stack structure and the second stack structure each comprise first semiconductor layers and second semiconductor layers which are alternately stacked; providing an isolation wall and sacrificial layers between the first stack structure and the second stack structure, wherein the sacrificial layers are located on two sides of the isolation wall so as to respectively isolate the partition wall from the first stack structure and the second stack structure, and the sacrificial layers have high etching selectivity relative to the first semiconductor layers or the second semiconductor layers; removing either the first semiconductor layers or the second

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semiconductor layers, and the sacrificial layers; and forming a gate structure around the other of the first semiconductor layers and the second semiconductor layers. According to the present application, an isolation wall and sacrificial layers are formed in the isolation trench, and the sacrificial layers are removed by means of a subsequent etching process, so as to form a gate structure surrounding the entire channel area, achieving less DIBL, achieving better control on leakage current of semiconductor devices.

(57) 摘要: 本申请属于半导体技术领域, 具体公开一种半导体器件的制造方法, 包括: 在衬底上形成相互间隔的第一叠层结构和第二叠层结构, 第一叠层结构和第二叠层结构分别包括交替堆叠的第一半导体层和第二半导体层; 在第一叠层结构和第二叠层结构之间填充隔离墙和牺牲层, 牺牲层位于隔离墙的两侧, 以分别间隔隔离墙与第一叠层结构和第二叠层结构, 牺牲层相对于第一半导体层或第二半导体层具有高刻蚀选择比; 去除第一半导体层和第二半导体层中的一者以及牺牲层; 在另一者周围形成栅极结构。本申请在隔离沟槽内形成隔离墙和牺牲层并通过后续刻蚀工艺去除牺牲层, 从而形成围绕整个沟道区周围的栅极结构, 能够实现更小的DIBL, 对半导体器件的漏电流实现更好的控制。