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(54) Title (EN): NOVEL 3D NAND MEMORY DEVICE AND METHOD OF FORMING THE SAME

(54) Title (FR): NOUVEAU DISPOSITIF DE MÉMOIRE NON-ET 3D ET PROCÉDÉ DE FORMATION ASSOCIÉ

(57) Abstract:

(EN): A 3D-NAND memory device is provided. The memory device includes a substrate, a bottom select gate (BSG) disposed over the substrate, a plurality of word lines positioned over the BSG with a staircase configuration and a plurality of insulating layers disposed between the substrate, the BSG, and the plurality of word lines. In the disclosed memory device, one or more first dielectric trenches are formed in the BSG and extend in a length direction of the substrate to separate the BSG into a plurality of sub-BSGs. In addition, one or more common source regions are formed over the substrate and extend in the length direction of the substrate. The one or more common source regions further extend through the BSG, the plurality of word lines and the plurality of insulating layers.

(FR): L'invention concerne un dispositif de mémoire NON-ET 3D. Le dispositif de mémoire selon l'invention comprend un substrat, une grille de sélection inférieure (BSG) disposée sur le substrat, une pluralité de lignes de mots placées sur la BSG avec une configuration en escalier, et une pluralité de couches isolantes disposées entre le substrat, la BSG et la pluralité de lignes de mots. Dans le dispositif de mémoire selon l'invention, au moins une première tranchée diélectrique est formée dans la BSG et s'étend dans le sens de la longueur du substrat afin de diviser la BSG en une pluralité de sous-BSG. En outre, au moins une région source commune est formée sur le substrat et s'étend dans le sens de la longueur du substrat. Ladite région source commune au moins s'étend également sur la BSG, la pluralité de lignes de mots et la pluralité de couches isolantes.

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