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(54) **IMPROVED VERTICAL 3D MEMORY  
DEVICE AND ACCESSING METHOD**

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(57) **ABSTRACT**

The present disclosure provides a memory device and accessing/de-selecting methods thereof. The memory device comprises a memory layer including a vertical three-dimensional (3D) memory array of memory cells formed therein, wherein a memory cell is accessed through a word line and a digit line orthogonal to each other, and the digit line is in a form of conductive pillar extending vertically; a pillar selection layer formed under the memory layer and having thin film transistors (TFTs) formed therein for accessing memory cells; and a peripheral circuit layer formed under the pillar selection layer and having a sense amplifier and a decoding circuitry for word lines and bit lines, wherein a TFT is configured for each pillar.

