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(19) **United States**(12) **Patent Application Publication****Karda et al.**(10) **Pub. No.: US 2024/0251543 A1**(43) **Pub. Date: Jul. 25, 2024**(54) **MEMORY DEVICE HAVING 2-TRANSISTOR VERTICAL MEMORY CELL AND SHIELD STRUCTURES****Publication Classification**(51) **Int. Cl.****H10B 12/00** (2006.01)**G11C 5/06** (2006.01)**H01L 29/24** (2006.01)(52) **U.S. Cl.**CPC **H10B 12/20** (2023.02); **G11C 5/063** (2013.01); **H01L 29/24** (2013.01); **H10B 12/01** (2023.02)(71) Applicant: **Micron Technology, Inc.**, Boise, ID (US)(72) Inventors: **Kamal M. Karda**, Boise, ID (US); **Haitao Liu**, Boise, ID (US); **Karthik Sarpatwari**, Boise, ID (US); **Durai Vishak Nirmal Ramaswamy**, Boise, ID (US)(21) Appl. No.: **18/623,929**(22) Filed: **Apr. 1, 2024****Related U.S. Application Data**

(60) Continuation of application No. 18/137,852, filed on Apr. 21, 2023, now Pat. No. 11,950,402, which is a division of application No. 17/003,054, filed on Aug. 26, 2020, now Pat. No. 11,653,489.

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(57) **ABSTRACT**

Some embodiments include apparatuses and methods of forming the apparatuses. One of the apparatuses includes a conductive region, a first data line, a second data line, a first memory cell coupled to the first data line and the conductive region, a second memory cell coupled to the second data line and the conductive region, a conductive structure, and a conductive line. The first memory cell includes a first transistor coupled to a second transistor, the first transistor including a first charge storage structure. The second memory cell includes a third transistor coupled to a fourth transistor, the third transistor including a second charge storage structure. The conductive structure is located between and electrically separated from the first and second charge storage structures. The conductive line forms a gate of each of the first, second, third, and fourth transistors.

