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**ABSTRACT**

A semiconductor device with a novel structure is provided. The semiconductor device includes a first substrate, a first element layer provided in contact with a second substrate, and a first through electrode provided in the second substrate and the first element layer. The first element layer includes a first memory cell, a first electrode, a second electrode, and a third electrode. The first memory cell includes a first transistor. The first transistor includes a semiconductor layer containing a metal oxide in a channel formation region. The first electrode is electrically connected to the third electrode via the second electrode. The third electrode is provided to be exposed on a surface of the first element layer. The first through electrode is provided to be exposed on a surface of the second substrate and is electrically connected to the first electrode. The second substrate and the first element layer are provided to be stacked in a direction perpendicular or substantially perpendicular to a surface of the first substrate. The first transistor is provided in a region overlapping with the first through electrode.

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