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(54) **SEMICONDUCTOR DEVICE HAVING
TRANSISTOR DEVICE OF
THREE-DIMENSIONAL STRUCTURE**

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(57)

ABSTRACT

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A semiconductor device includes a substrate, a bit line conductive layer extending in a lateral direction substantially parallel to a surface of the substrate, a first insulation line structure extending in a second direction that is perpendicular to the first lateral direction and that is substantially parallel to the surface of the substrate, first and second channel structures that are disposed to respectively contact first and second sides of the first insulation line structure and that partially overlap with the bit line conductive layer, first and second gate dielectric layers respectively disposed over the substrate and on side surfaces of the first and second channel structures, and first and second gate line conductive layers extending in the second lateral direction over the substrate and covering at least a portion of each of the first and second gate dielectric layers, respectively.

