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HWANG et al.(10) **Pub. No.: US 2024/0213249 A1**(43) **Pub. Date: Jun. 27, 2024**(54) **INTEGRATED CIRCUIT DEVICE****H01L 29/417** (2006.01)**H01L 29/423** (2006.01)(71) Applicant: **Samsung Electronics Co., Ltd.**,
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ABSTRACT

An integrated circuit device includes a lower insulating line extending in a first direction, a plurality of lower channel lines over the lower insulating line, first and second lower gate lines respectively on opposing sides of the lower insulating line and opposing sides of one of the lower channel lines, a third lower gate line extending around upper and lower surfaces of the one of the lower channel line and connecting the first and second lower gate lines to each other, an outer gate line arranged under the lower insulating line and contacting the first and second lower gate lines, an upper insulating line over an upper surface of each lower channel line, a plurality of upper channel lines over the upper insulating line, and an upper gate line extending around one of the upper channel lines.

