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GUO et al.

(54) **MANUFACTURING METHOD OF SEMICONDUCTOR STRUCTURE AND SEMICONDUCTOR STRUCTURE**

(71) Applicant: **CHANGXIN MEMORY TECHNOLOGIES, INC.**, Hefei City (CN)

(72) Inventors: **Shuai GUO**, Hefei City (CN); **Mingguang Zuo**, Hefei City (CN); **Shijie Bai**, Hefei City (CN)

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(57) **ABSTRACT**

The present disclosure provides a semiconductor structure and a manufacturing method thereof. The manufacturing method includes: depositing a thin-film stacked structure on a substrate; forming a first hole in the thin-film stacked structure; growing an epitaxial silicon pillar in the first hole; etching the thin-film stacked structure and the epitaxial silicon pillar along a first direction to form a first trench, the first trench passing through a center of the epitaxial silicon pillar and dividing the epitaxial silicon pillar into a first half pillar and a second half pillar; forming a first isolation layer; forming a first channel region of a first doping type, and forming a second channel region of a second doping type; and forming a gate dielectric layer and a gate conductive layer on a surface of each of the first channel region and the second channel region.