

- [54] METHOD OF MANUFACTURING A MOS DEVICE WHEREIN AN INSULATING FILM IS DEPOSITED IN A FIELD REGION
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Related U.S. Application Data

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[30] Foreign Application Priority Data

Oct. 27, 1981 [JP] Japan 56-171784

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[52] U.S. Cl. 29/576 W; 29/571; 148/DIG. 50

[58] Field of Search 29/571, 576 W; 357/49, 357/50, 54, 23 CS; 156/643; 148/DIG. 50; 427/93

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[57] ABSTRACT

A method of manufacturing a MOS device wherein a semiconductor substrate is selectively etched to form a groove in a field region and an element formation region surrounded by the groove such that an angle θ is formed between a wall of the groove and a first imaginary extension of a top surface of the element formation region, the angle θ satisfying the relation, $70^\circ \leq \theta \leq 90^\circ$. Then, a field insulating film is deposited in the groove, and a MOS transistor is formed in the element formation region. The element formation region has source, drain and channel regions of a field effect transistor therein and a gate electrode formed on a gate insulating film on the channel region. The gate electrode extends onto the surface portion of the field insulating film. The thickness of an upper portion of the field insulating film above a first imaginary extension of an interface between the gate insulating film and the gate electrode is formed smaller than that of a lower portion of the field insulating film below the first imaginary extension.

6 Claims, 12 Drawing Figures

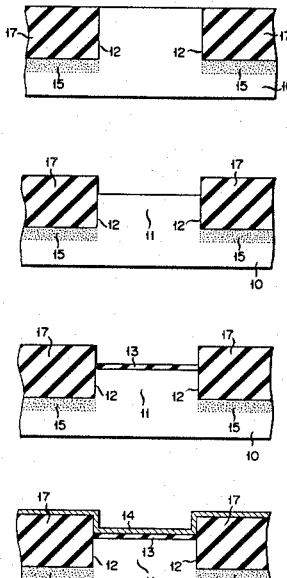


FIG. 1

(PRIOR ART)

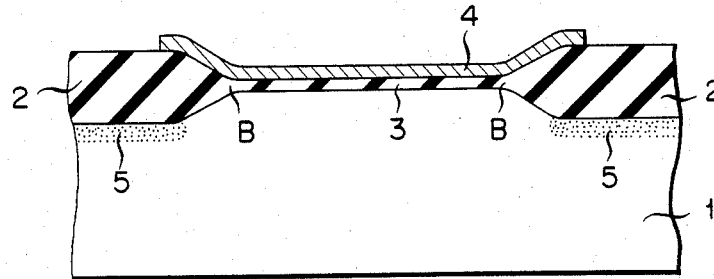


FIG. 2

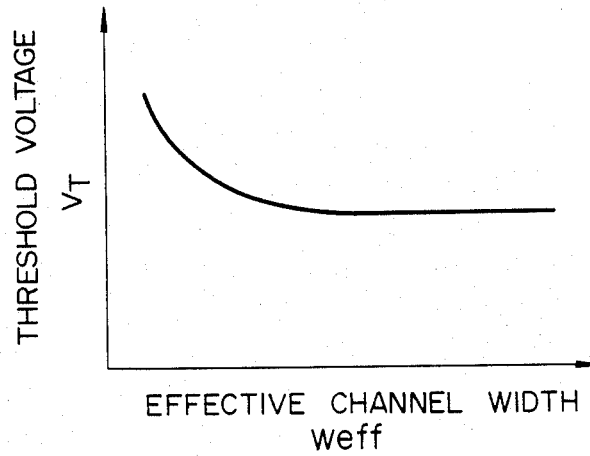


FIG. 3

(PRIOR ART)

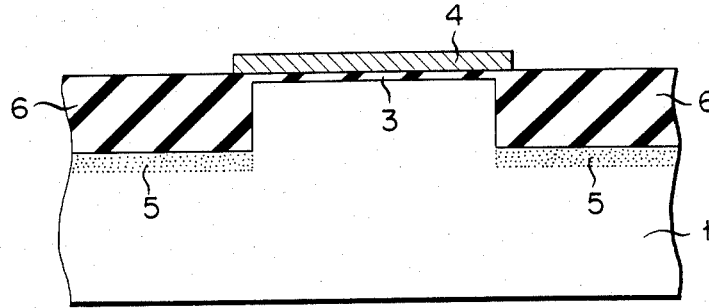


FIG. 4

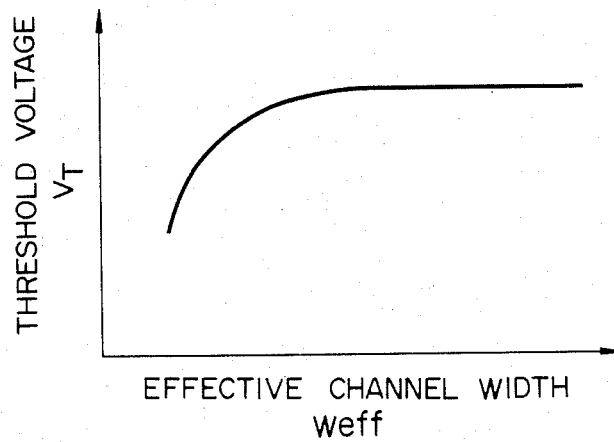


FIG. 5

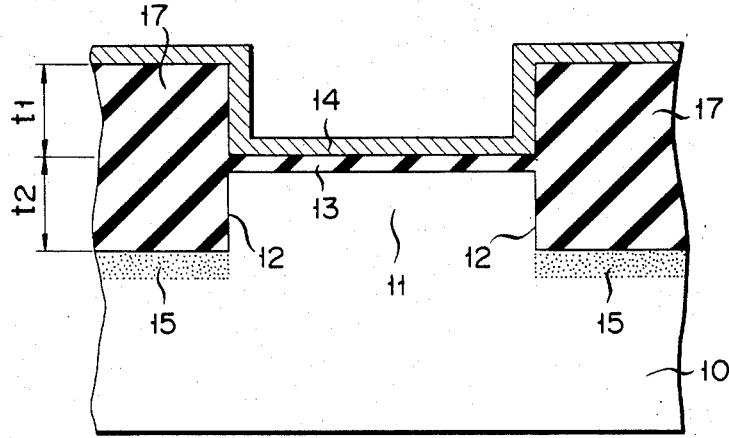


FIG. 6

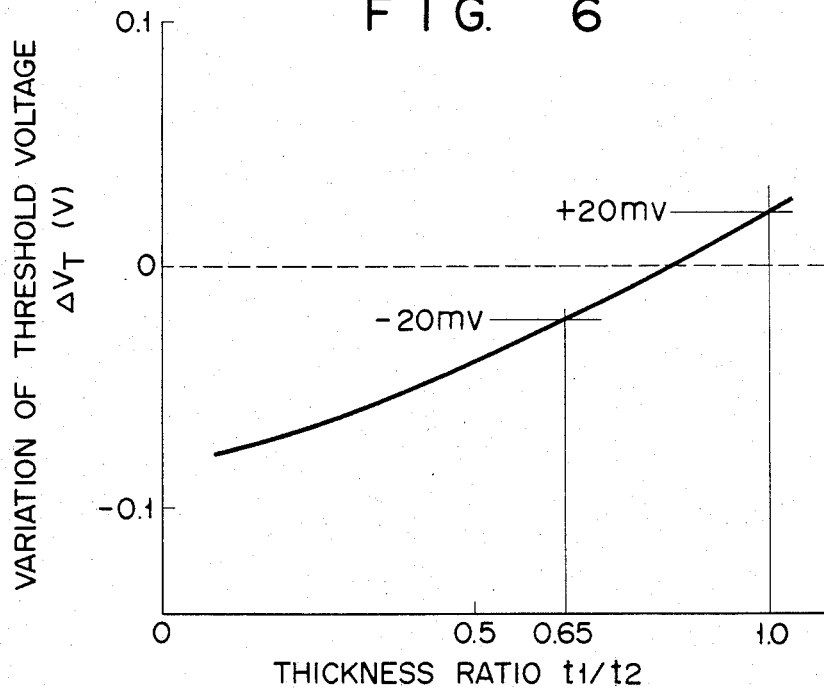


FIG. 7A

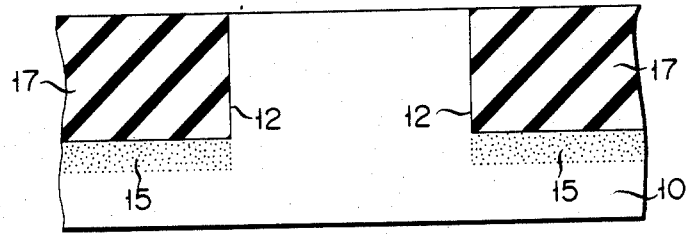


FIG. 7B

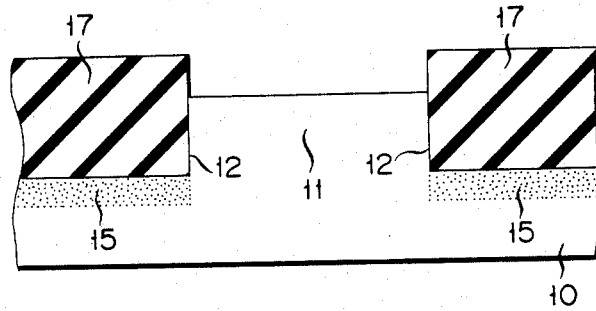


FIG. 7C

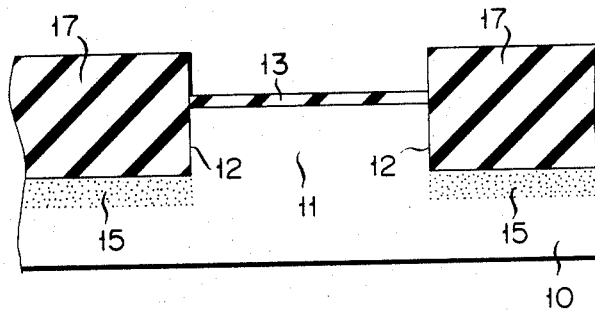
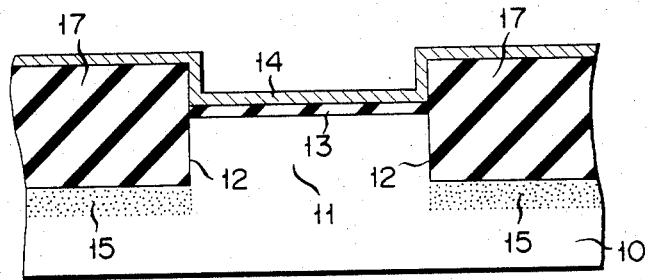


FIG. 7D



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