



US006020233A

**United States Patent** [19]  
**Kim**

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[45] **Date of Patent:** **Feb. 1, 2000**

[54] **FERROELECTRIC MEMORY DEVICE  
GUARANTEEING ELECTRICAL  
INTERCONNECTION BETWEEN LOWER  
CAPACITOR ELECTRODE AND CONTACT  
PLUG AND METHOD FOR FABRICATING  
THE SAME**

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[75] Inventor: **Jae Whan Kim**, Kyongki-do, Rep. of Korea

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[57] **ABSTRACT**

The present invention provides an improved ferroelectric capacitor used in a memory device by providing reliable electrical interconnection between a lower electrode of the capacitor and an active region of transistor, and to provide a method for fabricating the same. A semiconductor capacitor according to the present invention comprises: a first conducting film filling an opening which is formed in an interlayer insulating film, being in contact with an active region of a semiconductor; a stacked charge storage node including a second conducting film formed on the first conducting film and an interlayer insulating film, a first diffusion preventing film formed on the second conducting film, a lower electrode film formed on the first diffusion preventing film, and a ferroelectric film formed on the lower electrode film; and a conducting spacer film formed on sidewalls of the lower electrode film, the first diffusion preventing film and the second conducting film.

[21] Appl. No.: **09/107,288**

[22] Filed: **Jun. 30, 1998**

[30] **Foreign Application Priority Data**

Jun. 30, 1997 [KR] Rep. of Korea ..... 97-29648  
Nov. 20, 1997 [KR] Rep. of Korea ..... 97-61557

[51] **Int. Cl.**<sup>7</sup> ..... **H01L 21/8242**; H01L 21/70

[52] **U.S. Cl.** ..... **438/240**; 438/3; 438/596

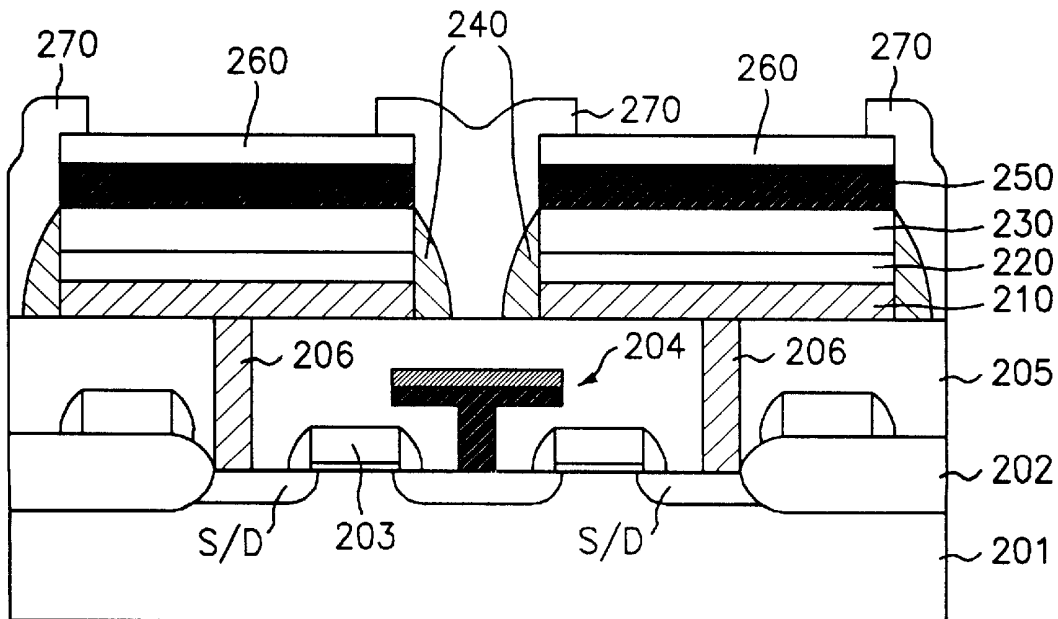
[58] **Field of Search** ..... 438/240, 596,  
438/3; 257/295

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**16 Claims, 8 Drawing Sheets**



**IP Bridge Exhibit 2221**

FIG. 1  
(PRIOR ART)

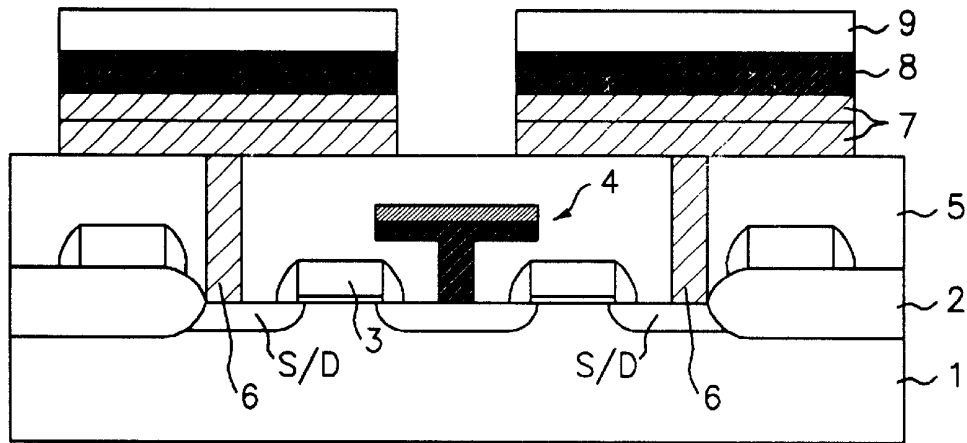


FIG. 2

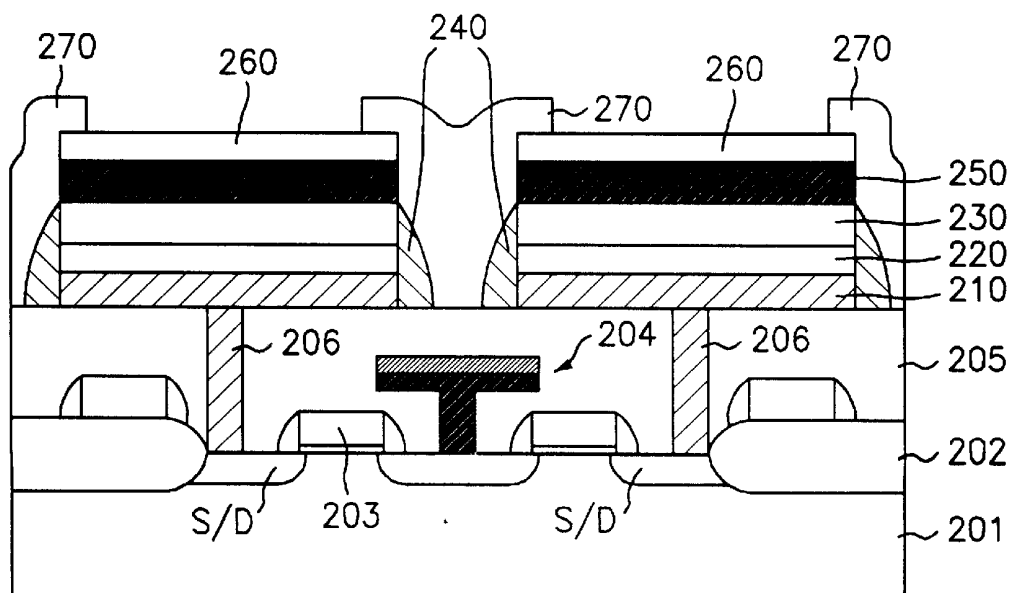


FIG. 3A

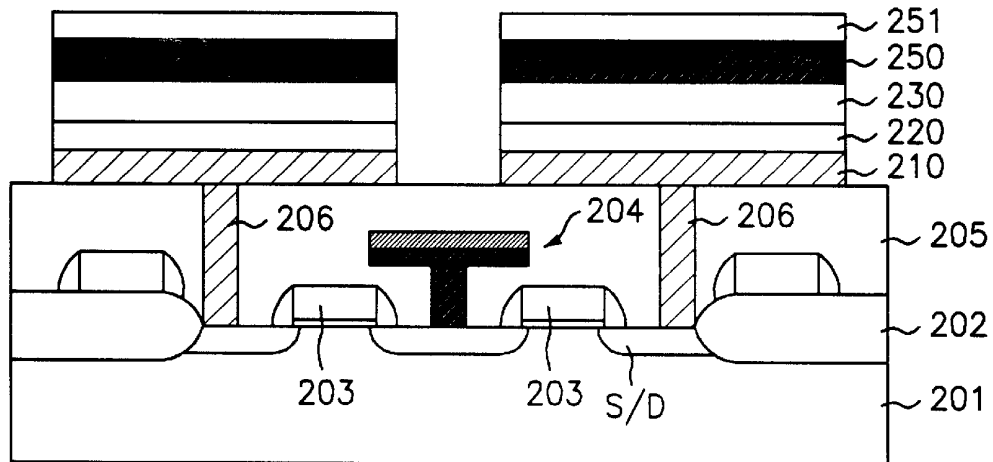


FIG. 3B

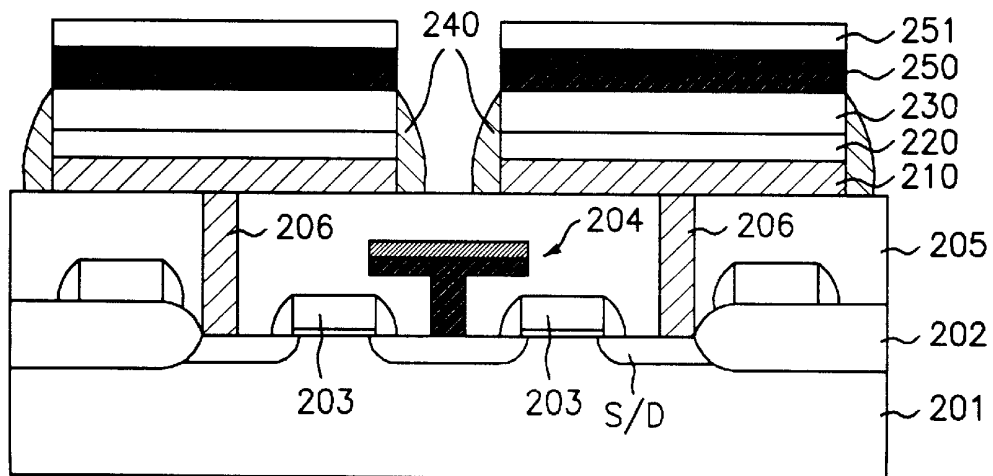


FIG. 3C

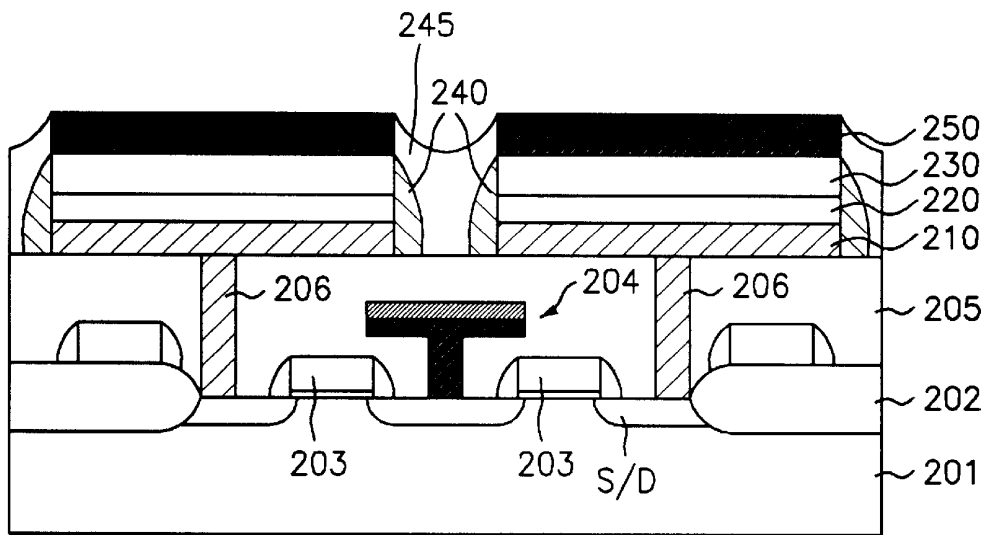


FIG. 4A

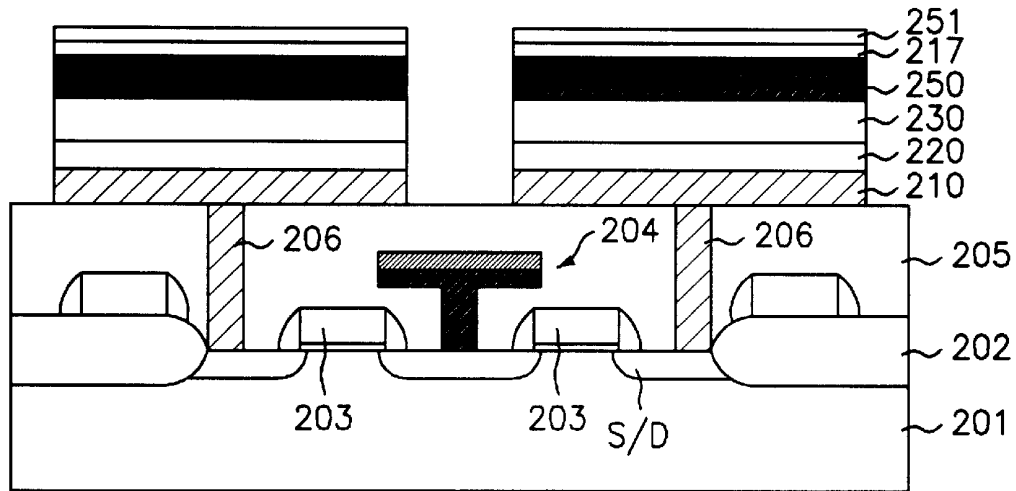
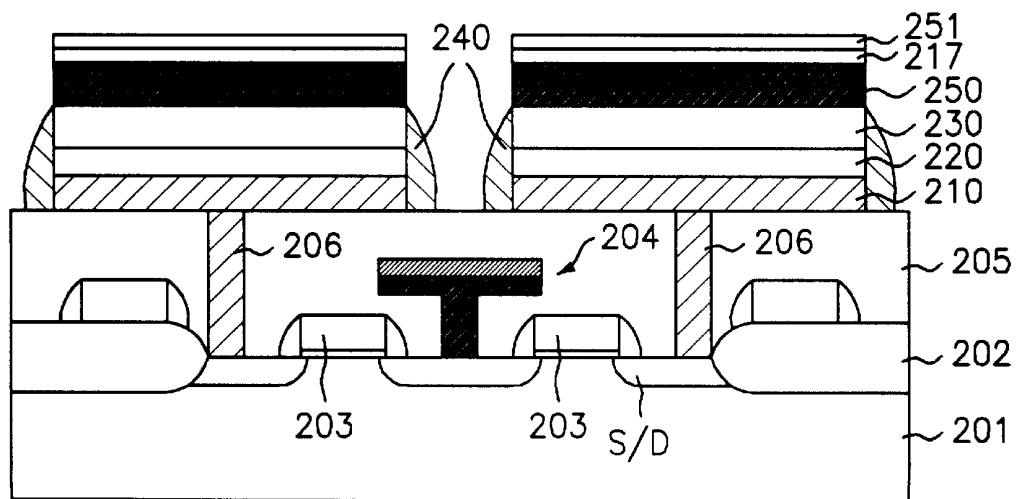


FIG. 4B



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