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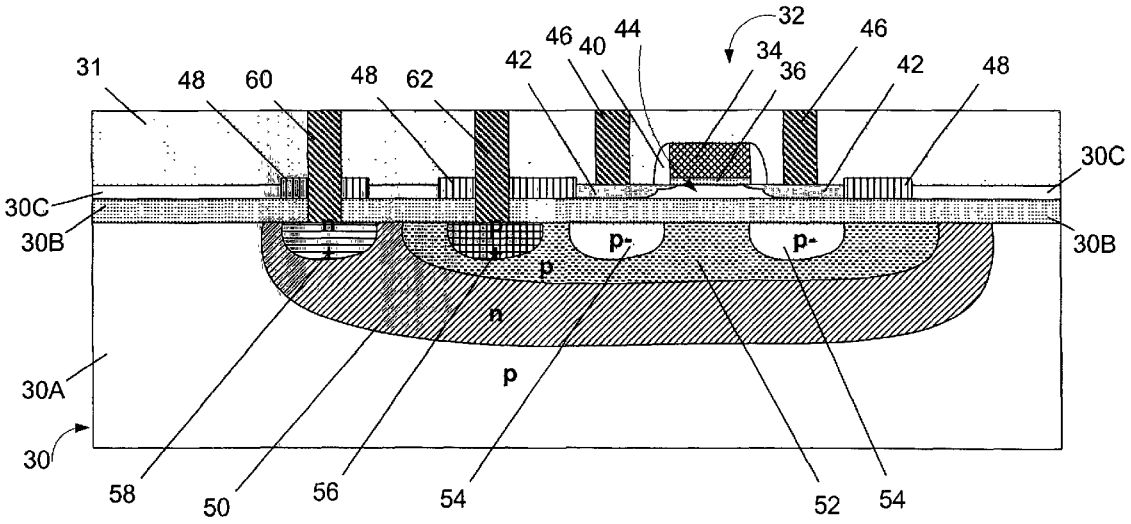
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(54) Title: BASED, TRIPLE-WELL FULLY DEPLETED SOI STRUCTURE, AND VARIOUS METHODS OF MAKING AND OPERATING SAME



(57) Abstract: In one illustrative embodiment, the device comprises a transistor (32) formed above a silicon-on-insulator substrate (30) comprised of a bulk substrate (30A), a buried insulation layer (30B) and an active layer (30C), the bulk substrate (30A) being doped with a first type of dopant material and a first well (50) formed in the bulk substrate (30A), the first well (50) being doped with a second type of dopant material that is of a type opposite the first type of dopant material. The device further comprises a second well (52) formed in the bulk substrate (30A) within the first material, the transistor (32) being formed in the active layer (30C) above the second well (52) an electrical contact (60) for the first well (50) and an electrical contact (62) for said second well (52). In one illustrative embodiment, a method of forming a transistor (32) above a silicon-on-insulator substrate (30) comprisedof a bulk substrate (30A) a buried oxide layer (30B) and an active layer (30C), the bulk substrate (30A) being doped with a first type of dopant material is disclosed. The method comprises performing a first ion implant process using a dopant material that is of a type opposite the first type of dopant material to form a first well region (50) within the bulk substrate (30A), performing a second ion implant process using a dopant material that is the same type as the first type of dopant material to form a second well region (52) in the bulk substrate (30A) within

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WO 03/081677 A1

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the first well (50), the transistor (32) being formed in the active layer (30C) above the second well (52), forming a conductive contact (60) to the first well (50) and forming a conductive contact to the second well (60). The method further comprises a contact well (58) formed in the bulk substrate (30A) within the first well (50), the contact well (58) being comprised of a dopant material that is of the same type as the second type of dopant material, the contact well (58) within the first well (50) having a dopant concentration that is greater than a dopant concentration of the first well (50).