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[54] **FORMATION OF MULTIPLE LEVELS OF POROUS SILICON FOR BURIED INSULATORS AND CONDUCTORS IN SILICON DEVICE TECHNOLOGIES**

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[52] **U.S. Cl.** **437/187;** 437/33; 437/61; 437/62; 437/170; 156/657

[58] **Field of Search** 437/187, 62, 61, 33, 437/170; 156/657

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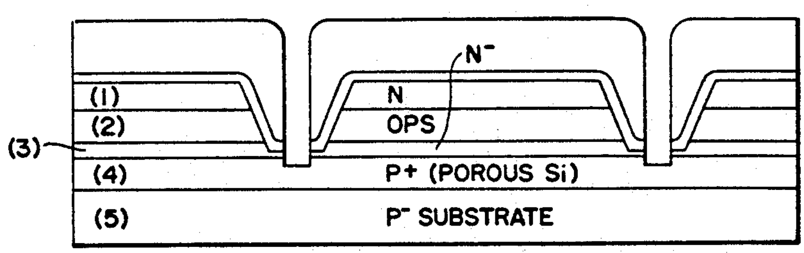
[57] **ABSTRACT**

A method of forming a multiple level porous silicon substrate for semiconductor integrated circuits including anodizing non-porous silicon layers of a multi-layer silicon substrate to form multiple levels of porous silicon. At least one porous silicon layer is then oxidized to form an insulating layer and at least one other layer of porous silicon beneath the insulating layer is metallized to form a buried conductive layer. Preferably the insulating layer and conductive layer are separated by an anodization barrier formed of non-porous silicon. By etching through the anodization barrier and subsequently forming a metallized conductive layer, a fully or partially insulated buried conductor may be fabricated under single crystal silicon.

14 Claims, 6 Drawing Sheets

Anodization of Layer 4



Metallization of Layer 4 - Porous Si