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(54) Title: METHODS FOR FORMING DOPED REGIONS IN A SEMICONDUCTOR MATERIAL

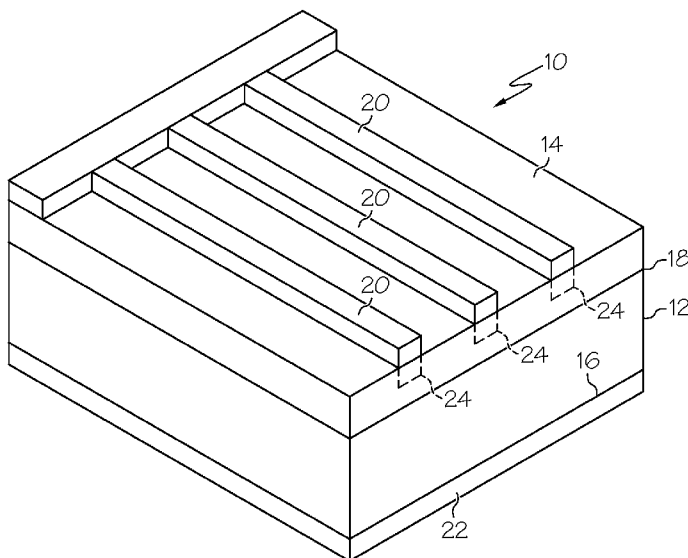


FIG. 1
(PRIOR ART)

(57) Abstract: Methods for forming doped regions in a semiconductor material that minimize or eliminate vapor diffusion of a dopant element and/or dopant from a deposited dopant and/or into a semiconductor material and methods for fabricating semiconductor devices that minimize or eliminate vapor diffusion of a dopant element and/or dopant from a deposited dopant and/or into a semiconductor material are provided. In one exemplary embodiment, a method for forming doped regions in a semiconductor material comprises depositing a conductivity-determining type dopant comprising a dopant element overlying a first portion of the semiconductor material. A diffusion barrier material is applied such that it overlies a second portion of the semiconductor material. The dopant element of the conductivity-determining type dopant is diffused into the first portion of the semiconductor material.

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| According to International Patent Classification (IPC) or to both national classification and IPC | | |
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| Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Korean utility models and applications for utility models Japanese utility models and applications for utility models (Chinese Patents and application for patent) | | |
| Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) eKOMPASS(KIPO internal) & Keywords: doping, diffusion, barrier | | |
| C. DOCUMENTS CONSIDERED TO BE RELEVANT | | |
| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
| X A | US 6756290 B1 (BULTMAN; JAN HENDRIK) 29 June 2004 See Abstract;Column 1, Line 6-Column 4, Line 52;Claims 1-13;Figures 1-5 | 1-12 13-20 |
| A | US 6825104 B2 (HORZEL Jöl;RG et al.) 30 November 2004 See Abstract;Column 1, Line 12-Column 10, Line 49;Claims 1-17;Figures 1-16 | 1-20 |
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| <input type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> See patent family annex. | | |
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