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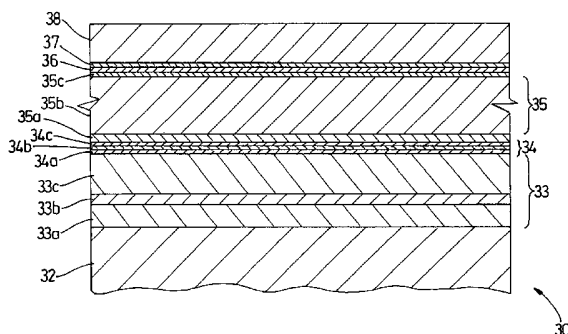
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(54) Title: CONTROL OF CONTACT RESISTANCE IN QUANTUM WELL INTERMIXED DEVICES



(57) Abstract: A method of performing quantum well intermixing in a semiconductor device structure uses a sacrificial part of a cap layer, that is removed after QWI processing, to restore the cap surface to a condition in which high performance contacts are still possible. The method includes: a) forming a layered quantum well structure including a doped cap layer; b) forming an etch stop layer over said cap layer; c) forming a sacrificial layer over said etch stop layer, said etch stop layer having a substantially lower etch rate than said sacrificial layer when exposed to predetermined etch conditions; d) carrying out a quantum well intermixing process on the device structure, which process induces significant damage to at least a portion of the sacrificial layer; e) removing the sacrificial layer in at least a contact region of the device using an etch procedure selective against the etch stop layer to expose said etch stop layer in the contact region; and f) forming a contact over the layered quantum well structure in at least said contact region.

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A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 H01L21/285 H01L33/00 H01S5/02

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, INSPEC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents:

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O document referring to an oral disclosure, use, exhibition or other means

P document published prior to the international filing date but later than the priority date claimed

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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