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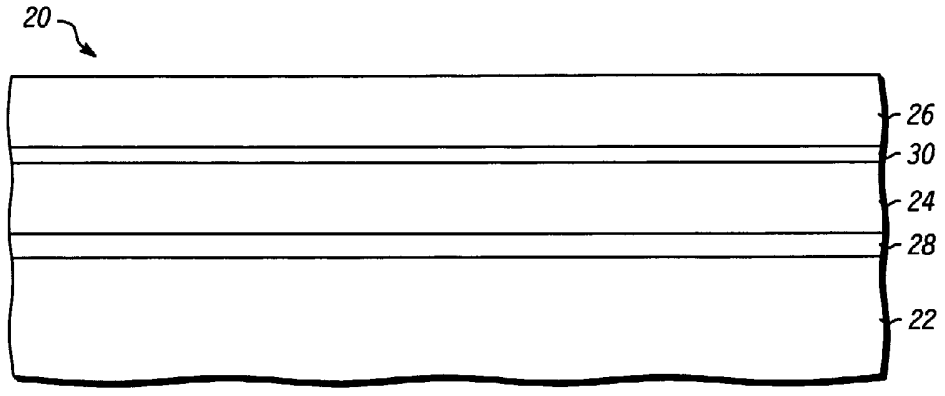
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(54) Title: SEMICONDUCTOR STRUCTURES AND DEVICES NOT LATTICE MATCHED TO THE SUBSTRATE



(57) Abstract: High quality epitaxial layers of monocrystalline materials can be grown overlying monocrystalline substrates (22) such as large silicon wafers by forming a compliant substrate for growing the monocrystalline layers. An accommodating buffer layer (24) comprises a layer of monocrystalline oxide spaced apart from the silicon wafer byan amorphous interface layer (28) of silicon oxide. The amorphous interface layer (28) dissipates strain and permits the growth of a high quality monocrystalline oxide accommodating buffer layer (24). The accommodating buffer layer (24) is substantially lattice matched to both the underlying silicon wafer (22) and the overlying monocrystalline material layer (26). Any lattice mismatch between the accommodating buffer layer (24) and the underlying silicon substrate (22) is taken care of by the amorphous interface layer (28). In addition, formation of a compliant substrate may include utilizing surfactant enhanced epitaxy, epitaxial growth of single crystal silicon onto single crystal oxide, and epitaxial growth of Zintl phase materials.

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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

International Application No.
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A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H01L21/20 C30B25/20

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)
IPC 7 C30B H01L

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 556 463 A (GUENZER CHARLES S) 17 September 1996 (1996-09-17) column 4, line 1 - line 15 ---	1,2,18, 19,36-38
X	US 5 478 653 A (GUENZER CHARLES S) 26 December 1995 (1995-12-26) column 3, line 55 -column 4, line 11 ---	1,2,18, 19,36-38
P,X	WO 01 59814 A (MOTOROLA INC) 16 August 2001 (2001-08-16) the whole document --- -/--	1,2,4-6, 16-19, 22,23, 31-34, 36-41, 46-49,52

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

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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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