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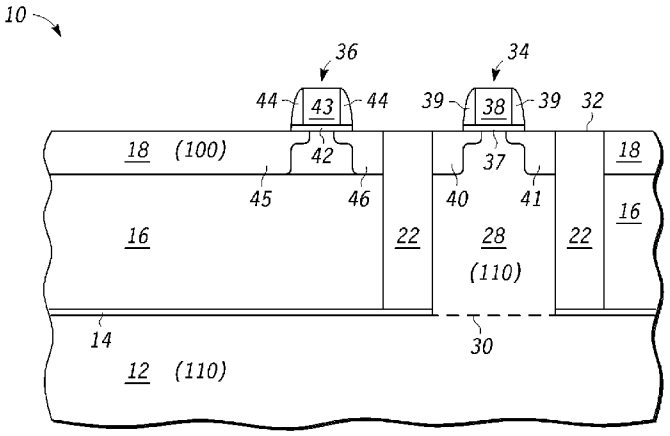
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(54) Title: METHOD OF MAKING A MULTIPLE CRYSTAL ORIENTATION SEMICONDUCTOR DEVICE



(57) Abstract: A method of having transistors formed in enhanced performance crystal orientations begins with a wafer having a semiconductor substrate (12,52) of a first surface orientation, a thin etch stop layer (14,54) on the semiconductor substrate, a buried oxide layer (16,56) on the thin etch stop layer, and a semiconductor layer (18,58) of a second surface orientation on the buried oxide layer. An etch penetrates to the thin etch stop layer. Another etch, which is chosen to minimize the damage to the underlying semiconductor substrate, exposes a portion of the semiconductor substrate. An epitaxial semiconductor (28,66) is then grown from the exposed portion of the semiconductor substrate to form a semiconductor region having the first surface orientation and having few, if any, defects. The epitaxially grown semiconductor region is then used for enhancing one type of transistor while the semiconductor layer of the second surface orientation is used for enhancing a different type of transistor.

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