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(54) Title: SIDEWALL FORMING PROCESSES

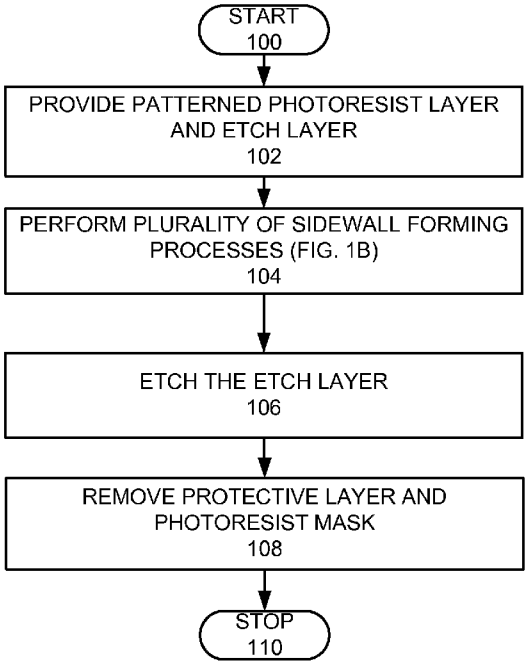


FIG. 1A

(57) Abstract: An etch layer underlying a patterned photoresist mask is provided. A plurality of sidewall forming processes are performed. Each sidewall forming process comprises depositing a protective layer on the patterned photoresist mask by performing multiple cyclical depositions. Each cyclical deposition involves at least a depositing phase for depositing a deposition layer over surfaces of the patterned photoresist mask and a profile shaping phase for shaping vertical surfaces in the deposition layer. Each sidewall forming process further comprises a breakthrough etch for selectively etching horizontal surfaces of the protective layer with respect to vertical surfaces of the protective layer. Afterwards, the etch layer is etched to form a feature having a critical dimension that is less than the critical dimension of the features in the patterned photoresist mask.

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