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ABSTRACT

A METHOD TO PATTERN SMALL FEATURES BY USING A RE-FLOWABLE HARD MASK

A method of forming small features, comprising the following steps. A substrate having a dielectric layer formed thereover is provided. A spacing layer is formed over the dielectric layer. The spacing layer has a thickness equal to the thickness of the small feature to be formed. A patterned, re-flowable masking layer is formed over the spacing layer. The masking layer having a first opening with a width "L". The patterned, re-flowable masking layer is re-flowed to form a patterned, re-flowed masking layer having a re-flowed first opening with a lower width "l". The re-flowed first opening lower width "l" being less than the pre-re-flowed first opening width "L". The spacing layer is etched down to the dielectric layer using the patterned, re-flowed masking layer as a mask to form a second opening within the etched spacing layer having a width equal to the re-flowed first opening lower width "l". Removing the patterned, re-flowed masking layer. A small feature material is then formed within the second opening and any excess small feature material above the etched spacing layer is removed. The etched spacing layer is removed to form the small feature comprised of the small feature material.

FIGURE 4

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