

United States Patent [19]

Bhattacharyya et al.

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[54] **FORMATION OF VARIABLE-WIDTH
SIDEWALL STRUCTURES**

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[51] **Int. Cl.⁴** B44C 1/22; C03C 15/00;
C23F 1/02; B29C 37/00

[52] **U.S. Cl.** 156/643; 156/646;
156/648; 156/653; 156/656; 156/657;
156/659.1; 156/668; 204/192.37; 437/228;
437/235; 437/245

[58] **Field of Search** 156/643, 646, 648, 652,
156/653, 656, 657, 659.1, 668; 430/313, 314,
317, 318; 204/192.32, 192.35, 192.36, 192.37;
437/40, 41, 56-59, 61, 63, 80, 203, 228, 235, 245

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Attorney, Agent, or Firm—Mark F. Chadurjian

[57] **ABSTRACT**

Spacers are formed having widths that vary as a function of the spacing between the mandrels upon which the conformal material that defines the spacers is deposited and etched. As the spacing between adjacent mandrels decreases, the width of the resulting spacers decreases. The correlation between mandrel spacing and sidewall structure width is independent of the thickness of the conformal material as-deposited. As the spacing between the mandrels decreases, the decrease in width becomes more pronounced, particularly at mandrel spacings of five microns or less. Thus, by making adjacent mandrels closer together or further apart and adjusting mandrel height, active/passive components having differing widths/lengths may be formed from the same conformal layer.

6 Claims, 5 Drawing Sheets

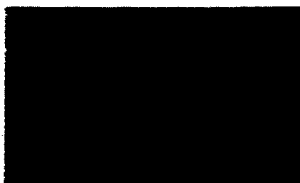


FIG.1

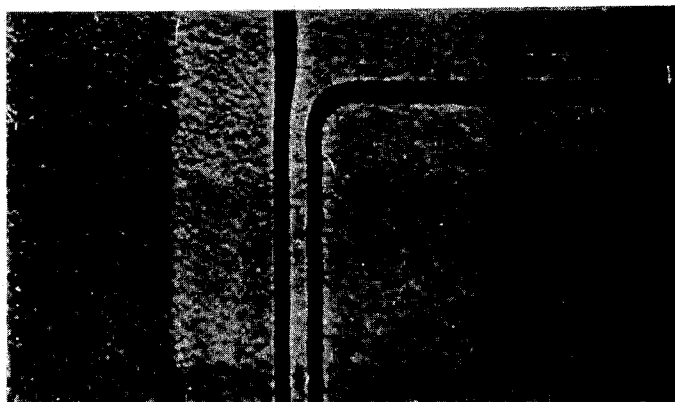


FIG.2

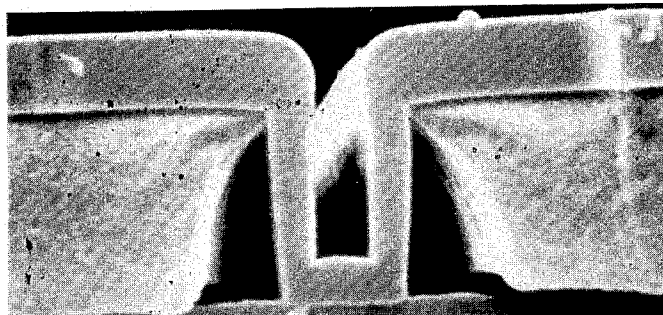


FIG.3

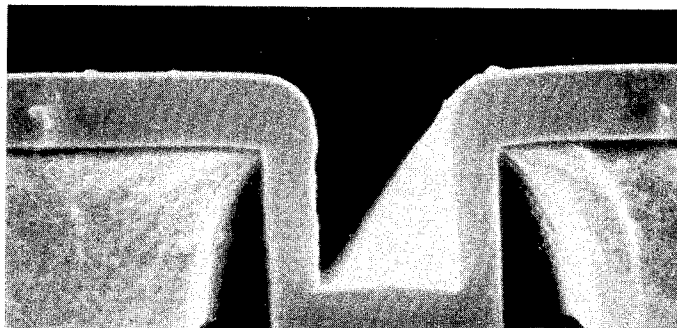


FIG.4

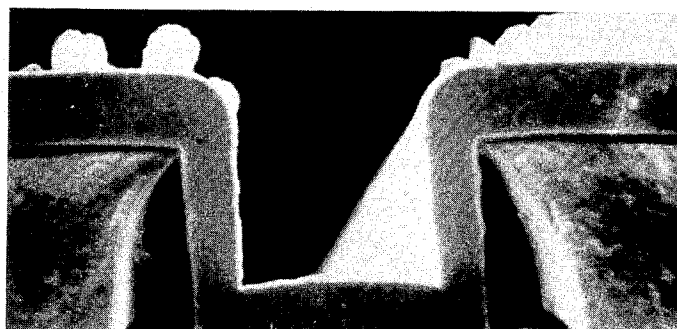
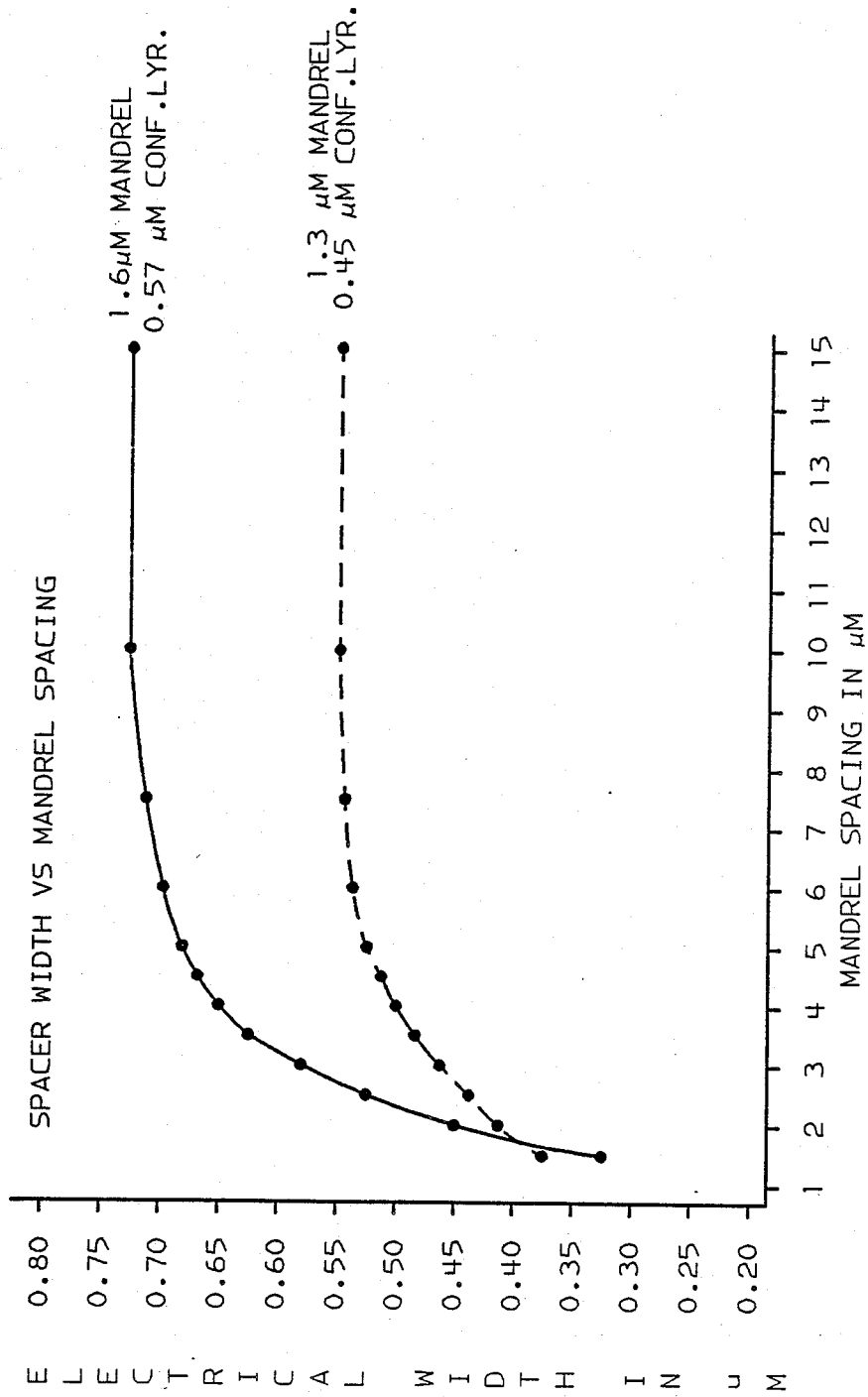
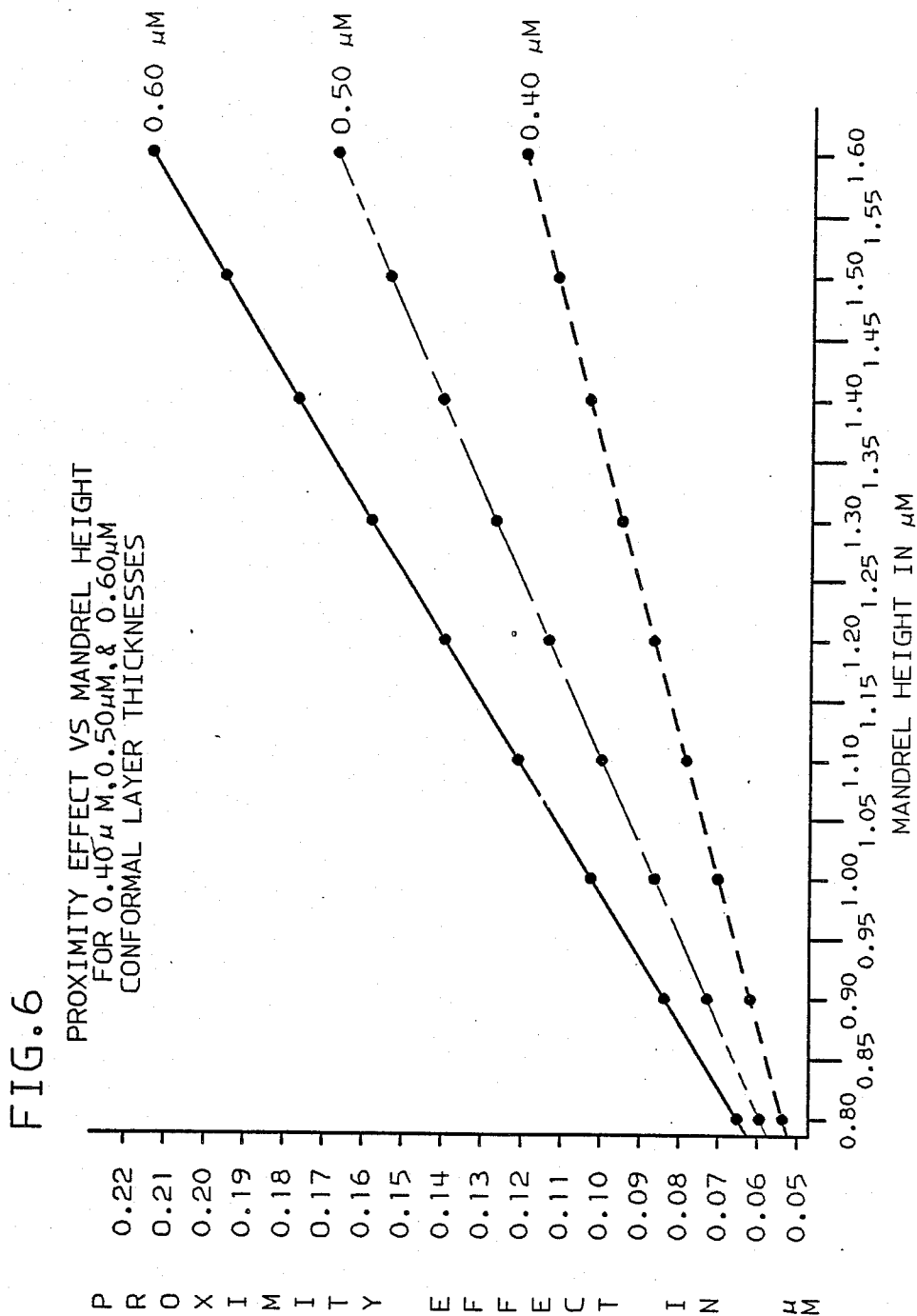


FIG. 5





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