

US005920790A

## United States Patent [19]

Wetzel et al.

[11] Patent Number: 5,920,790 [45] Date of Patent: Jul. 6, 1999

#### [54] METHOD OF FORMING A SEMICONDUCTOR DEVICE HAVING DUAL INLAID STRUCTURE

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- [73] Assignee: Motorola, Inc., Schaumburg, Ill.
- [21] Appl. No.: 08/921,293
- [22] Filed: Aug. 29, 1997
- [51] Int. Cl.<sup>6</sup> ...... H01L 21/4763

## [56] References Cited

#### U.S. PATENT DOCUMENTS

4,702,792	10/1987	Chow et al.	 156/628
4,789,648	12/1988	Chow et al.	 437/225
4,944,836	7/1990	Beyer et al.	 156/645

#### OTHER PUBLICATIONS

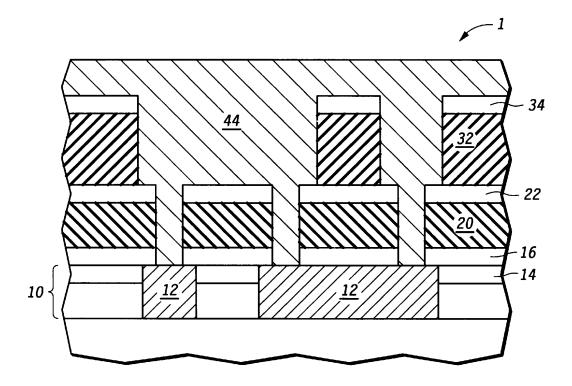
B. Luther et al., "Planar Copper-Polyimide Back End of the Line Interconnections for ULSI Devices", Jun. 8-9, 1993 VMIC Conference, Catalog No. 93ISMIC-102, pp. 15-21.

Primary Examiner—John F. Niebling Assistant Examiner—David A. Zarneke

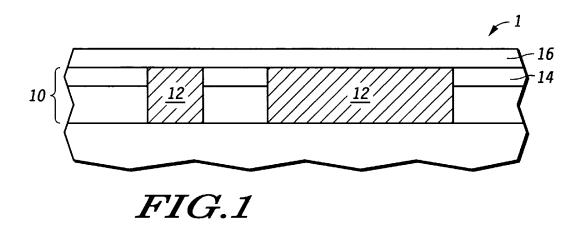
[57] ABSTRACT

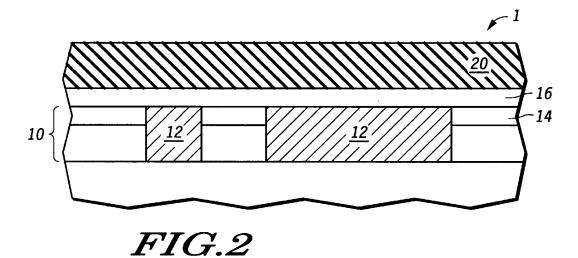
A method for forming semiconductor device (1) that includes providing a substrate (10) having a metal interconnect (12), depositing a via interlevel dielectric (ILD) layer (20) over the substrate (10) and the metal interconnect (12), etching the via ILD layer (20) to form a via (30) over the metal interconnect (12), depositing a trench ILD layer (32) over the via ILD layer (12) and the via (30), etching the trench ILD layer (32) to form a trench (40), the trench (40) being contiguous with the via (12), and depositing a metal (44) so as to fill the via (30) and the trench (40), and provide electrical connection with the metal interconnect (12).

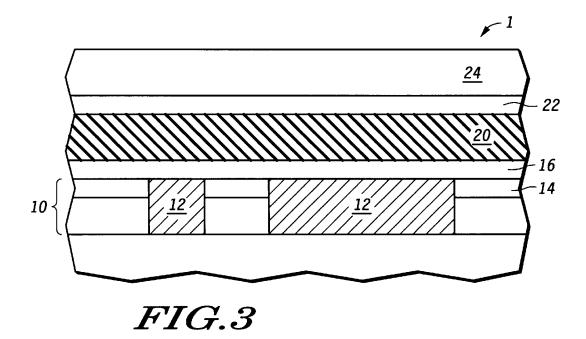
## 26 Claims, 4 Drawing Sheets



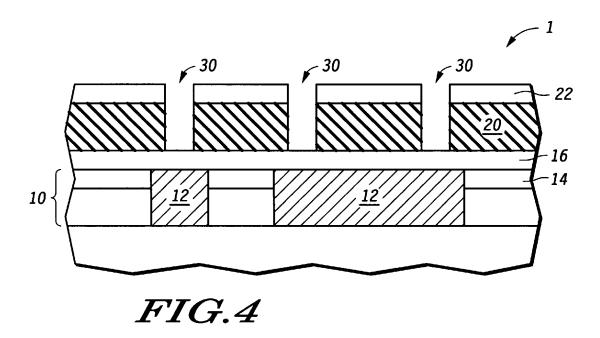


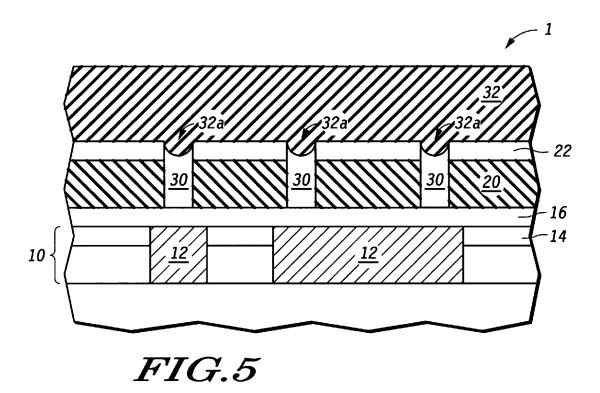




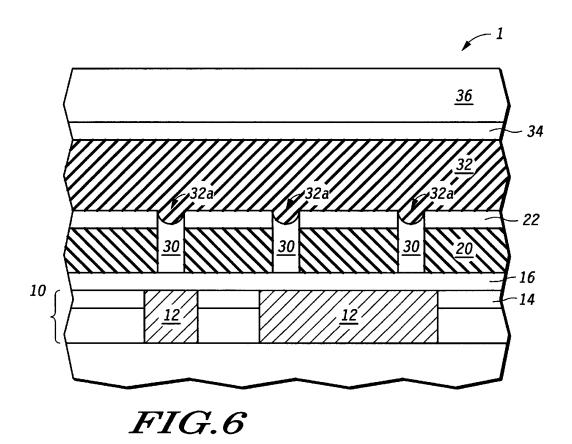


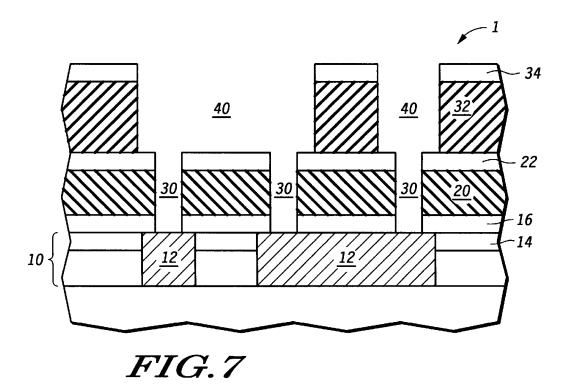




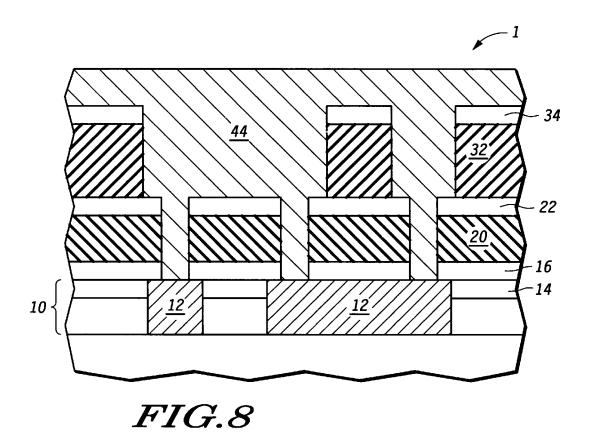


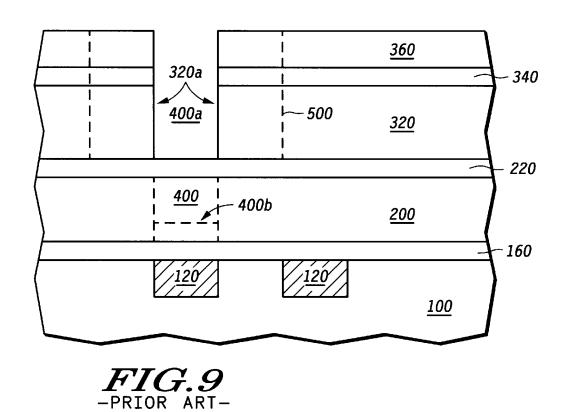














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