United States Patent [19]

Lowrey et al.

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[54] **TWO PIECE ASSEMBLY FOR THE SELECTION OF PINOUTS AND BOND OPTIONS ON A SEMICONDUCTOR DEVICE**

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[73] Assignee: **Micron Technology, Inc.**, Boise, Id.

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Related U.S. Application Data

[63] Continuation of Ser. No. 811,768, Dec. 20, 1991, abandoned.

[51] **Int. Cl.5** **H01L 23/48; H01L 29/44; H01L 29/52; H01L 29/60**

[52] **U.S. Cl.** **257/666; 257/698; 257/692**

[58] **Field of Search** 257/691, 698, 692, 693, 257/690, 666

[56] **References Cited**

U.S. PATENT DOCUMENTS

3,663,868	5/1972	Noguchi et al.	257/698
4,901,136	2/1990	Neugebauer et al.	257/691
4,922,324	5/1990	Sudo	257/698
5,045,921	9/1991	Lin et al.	257/698
5,302,849	4/1994	Covasin	257/676

OTHER PUBLICATIONS

"Z–Axis Conductive Adhesive" Zymet Inc., 7 Great Meadow Lane, E. Hanover, N.J. 07936.

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[57] **ABSTRACT**

The invention comprises a semiconductor package which allows pinouts and bond options to be customized after the encasement of a die in plastic, ceramic, or other suitable materials. A first embodiment of the invention has a first assembly comprising an encapsulated die having bond pads connected to bond wires which terminate in exterior pad portions on the exterior of the encapsulant. Conductive paths which are part of a second assembly electrically connect with the exterior pad portions of the first assembly and pass signals to device pinouts, which can be leads or other connecting means, to an electronic device into which the module is installed. By selectively connecting the exterior pad portions of the first assembly to the connection points of the conductive paths of the second assembly, the device pinouts and bond options can be selected. To manufacture a device having different pinouts or bond options, a bottom section having a different design is used.
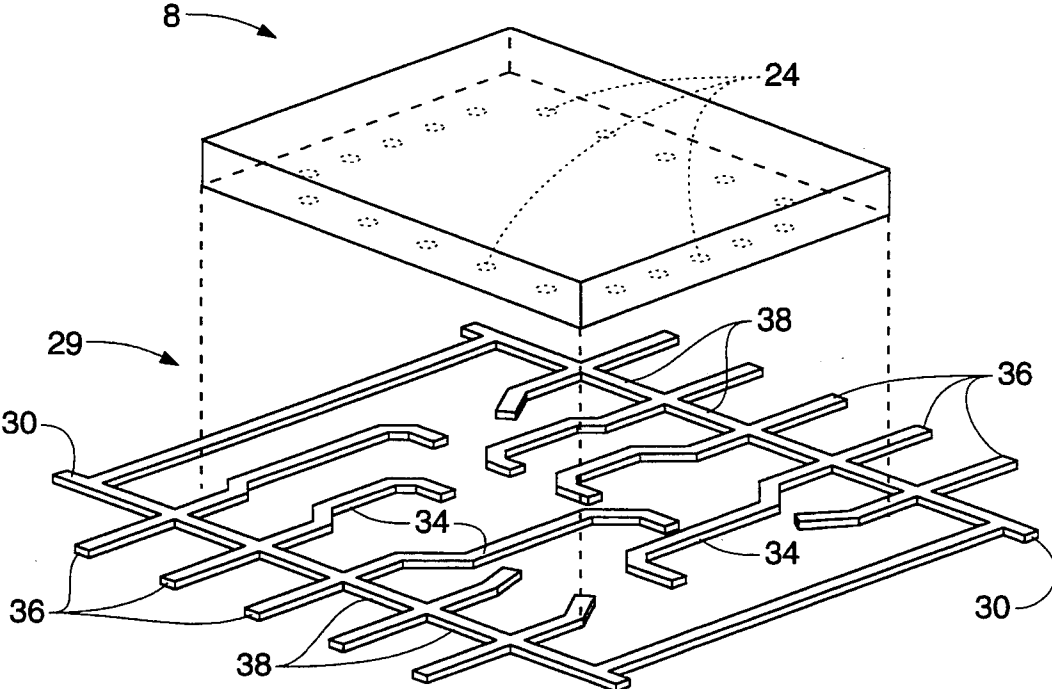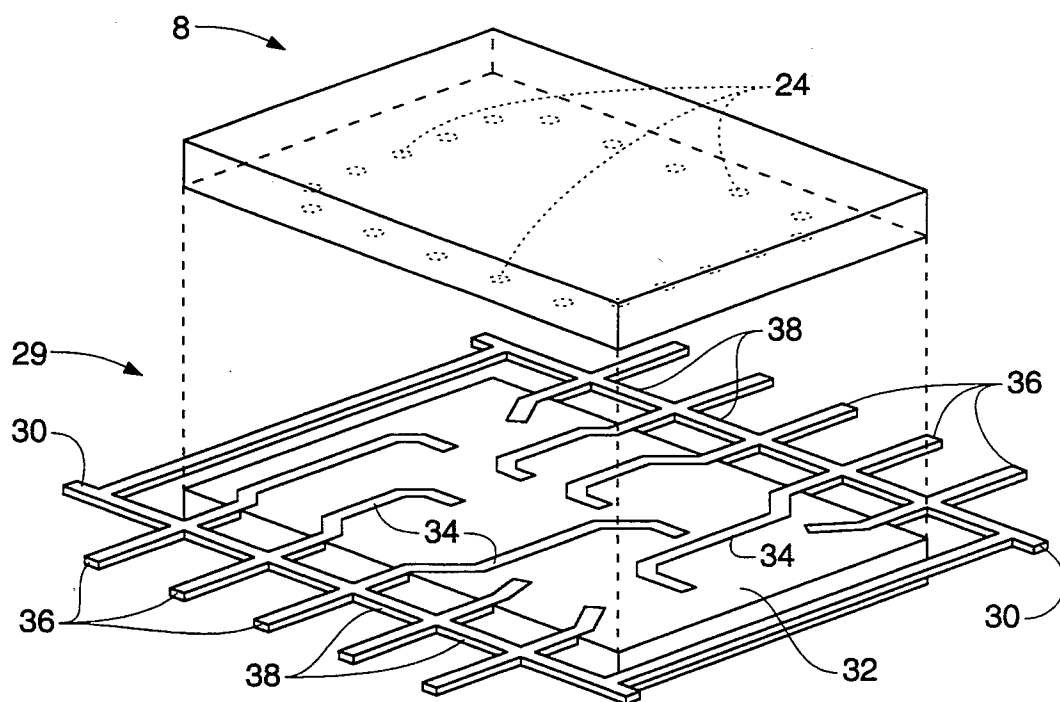
20 Claims, 7 Drawing Sheets

FIG. 1A

FIG. 1B
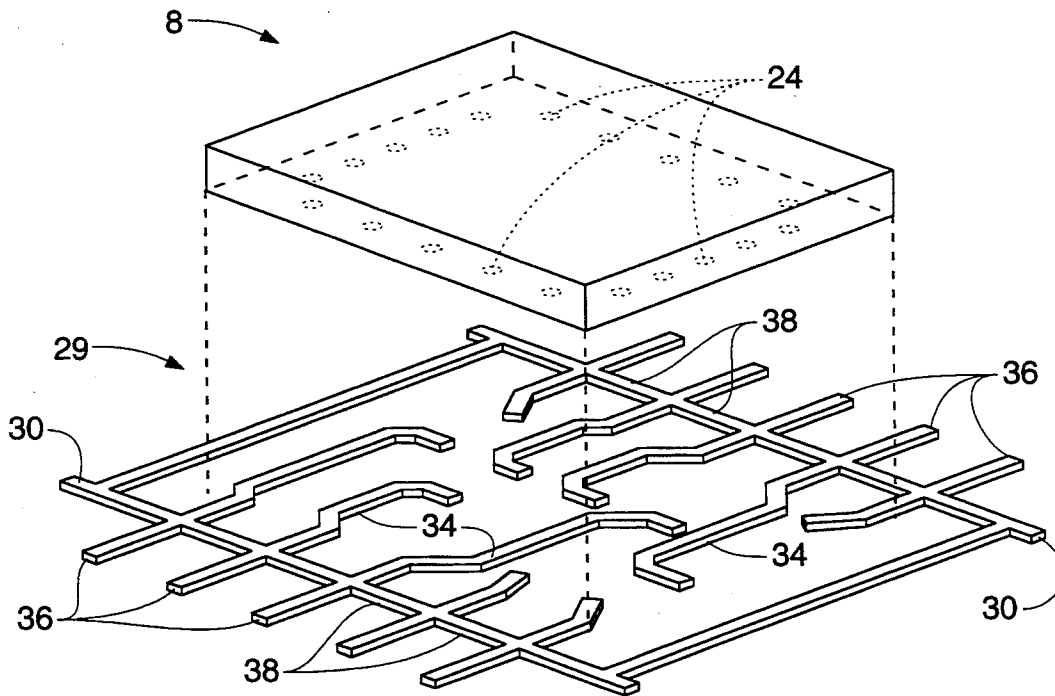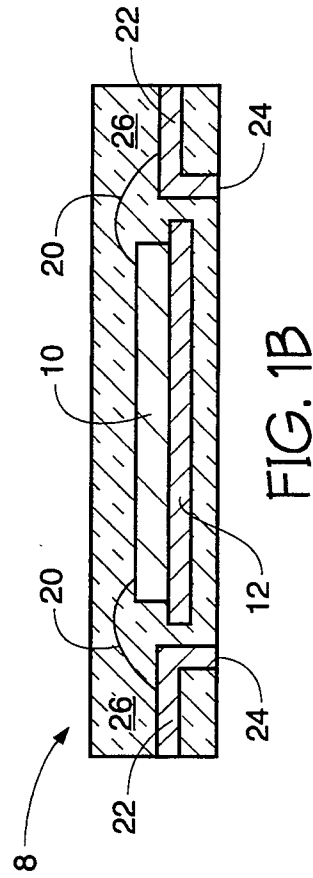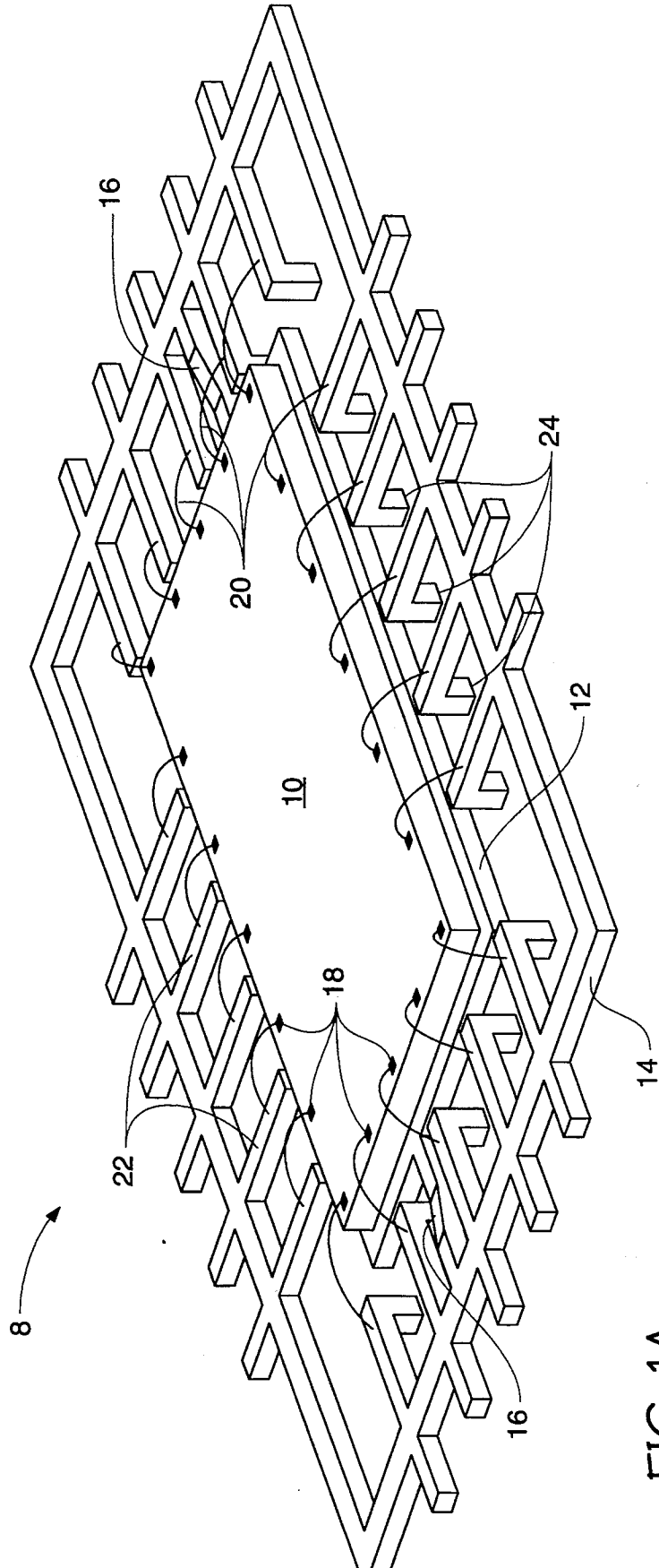
FIG. 2A

FIG. 2B

FIG. 3

DOCKET ALARM
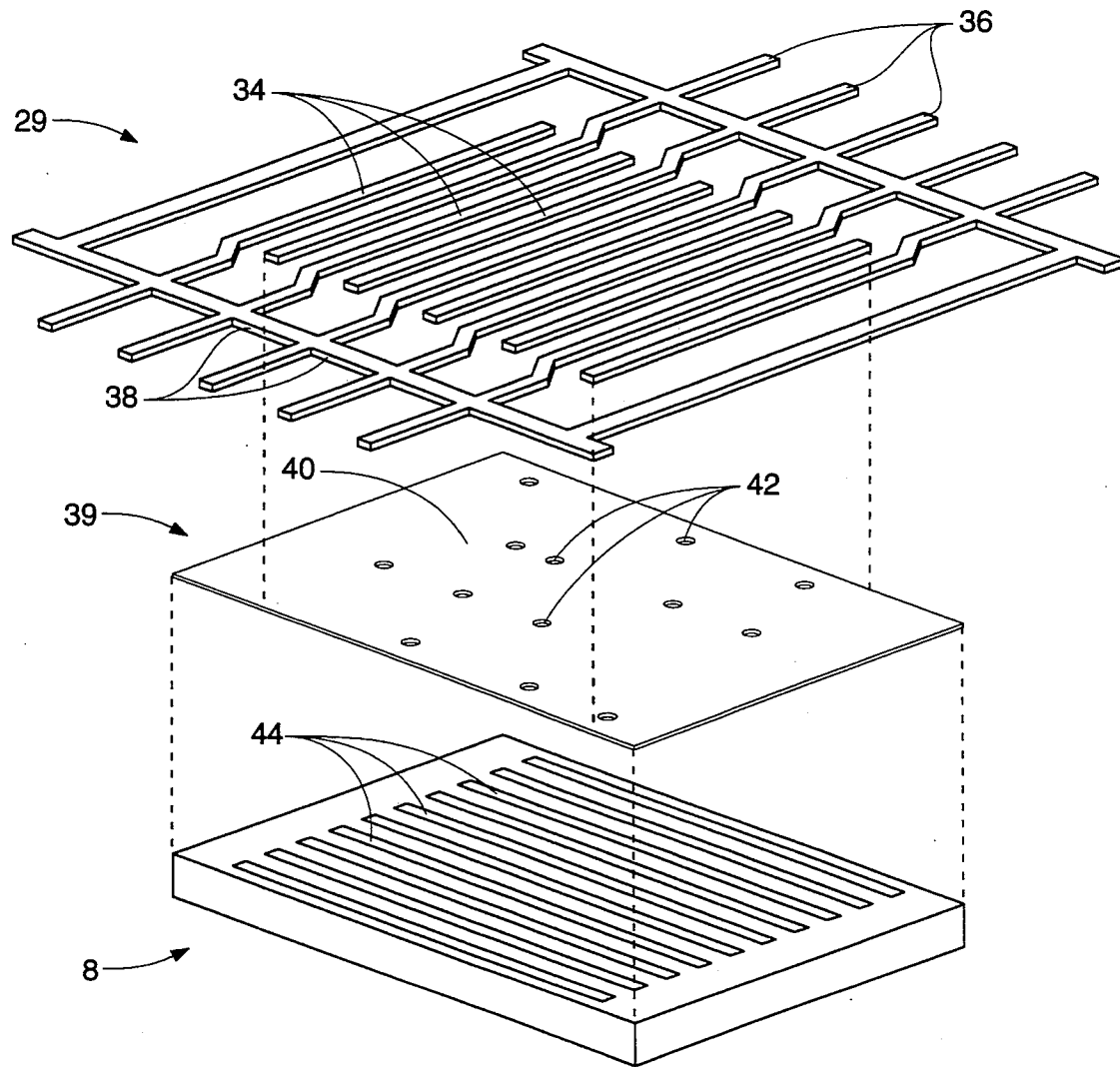
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