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United States Patent [19]

Higgins, III

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[54] **SHIELDED ELECTRONIC COMPONENT ASSEMBLY AND METHOD FOR MAKING THE SAME**

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[73] Assignee: **Motorola Inc.**, Schaumburg, Ill.

[21] Appl. No.: **229,495**

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[51] **Int. Cl.**[6] **H05K 1/00**

[52] **U.S. Cl.** ..... **174/35 MS**; 174/35 R; 361/816; 361/818; 257/655; 257/660

[58] **Field of Search** ..... 174/35 R, 260, 174/35 MS; 361/816, 818; 257/655, 660, 728, 659

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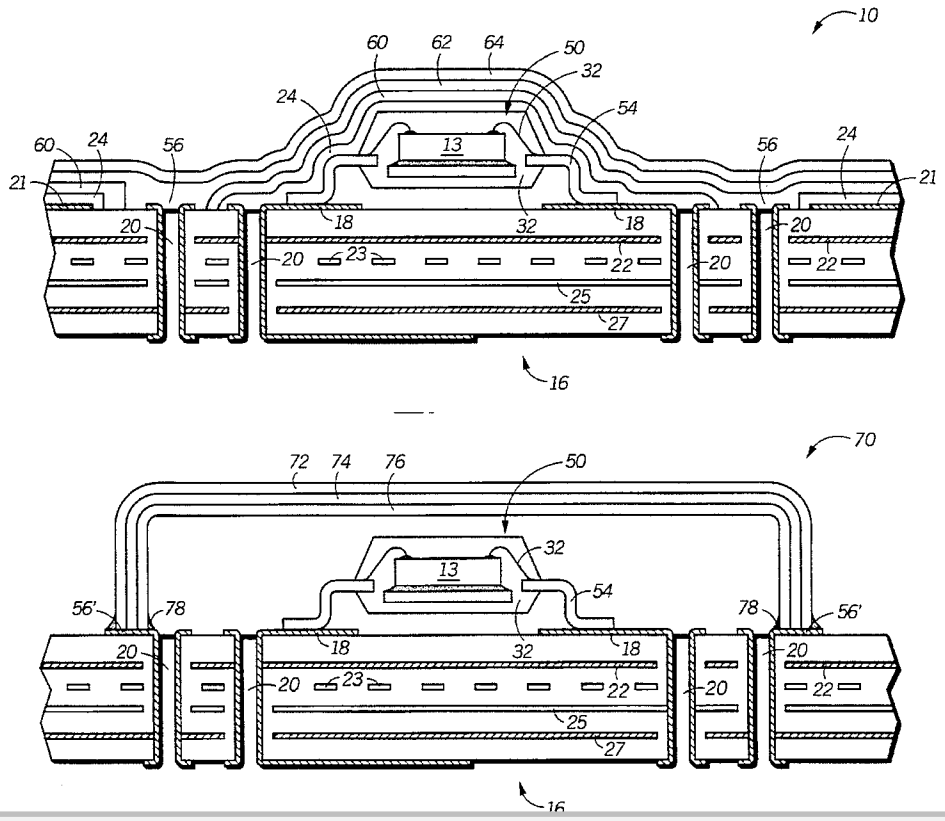
[57] **ABSTRACT**

Electronic components are shielded from electromagnetic interference (EMI) by one or more conformal layers filled with selected filler particulars for attenuate specific EMI frequencies or a general range of frequencies. Shielding is accomplished through the use of a single general purpose shielding layer, or through a series of shielding layers for protecting more specific EMI frequencies. In a multilayer embodiment, a semiconductor device (**50**) is mounted on a printed circuit board substrate (**16**) as a portion of an electronic component assembly (**10**). A conformal insulating coating (**24**) is applied over the device to provide electrical insulation of signal paths (e.g. leads **54** and conductive traces **18**) from subsequently deposited conductive shielding layers. One or more shielding layers (**60**, **62**, and **64**) are deposited, and are in electrical contact with a ground ring (**56**). In a preferred embodiment, the ground connections for the shield layers are separate from those used for power distribution within the devices.

27 Claims, 7 Drawing Sheets



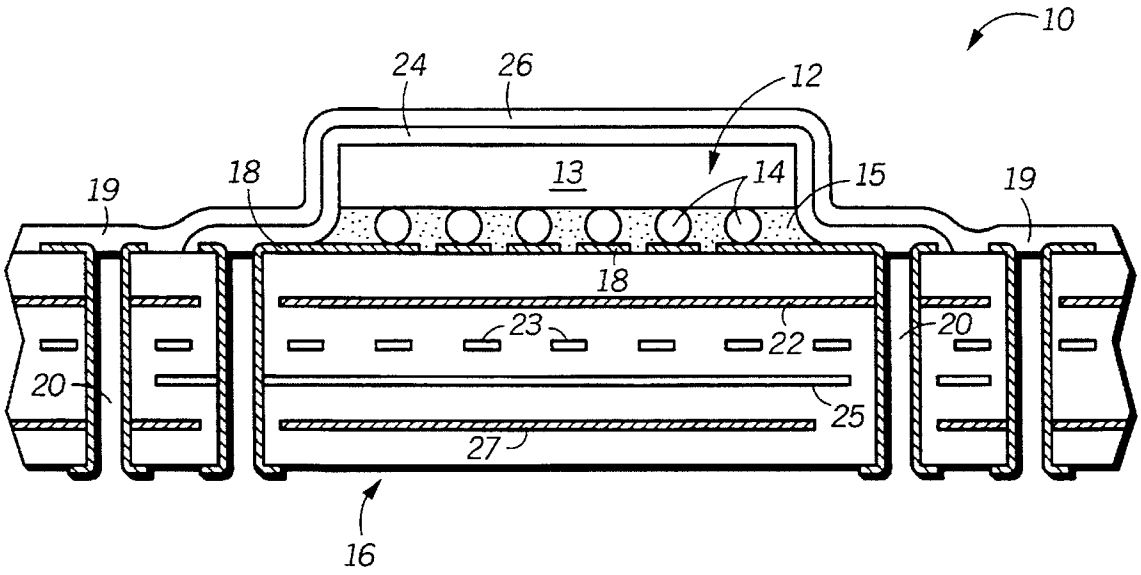


FIG.1

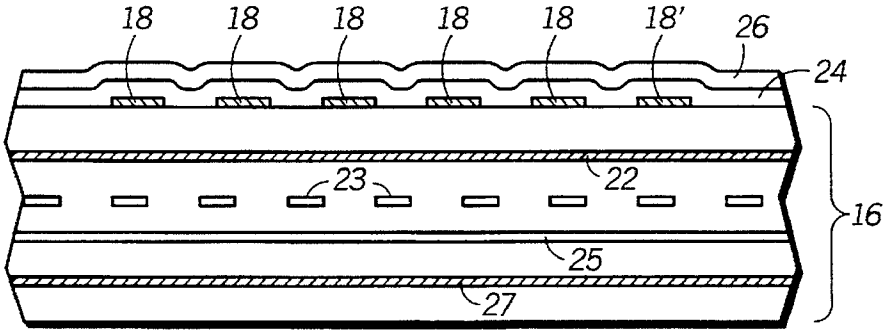
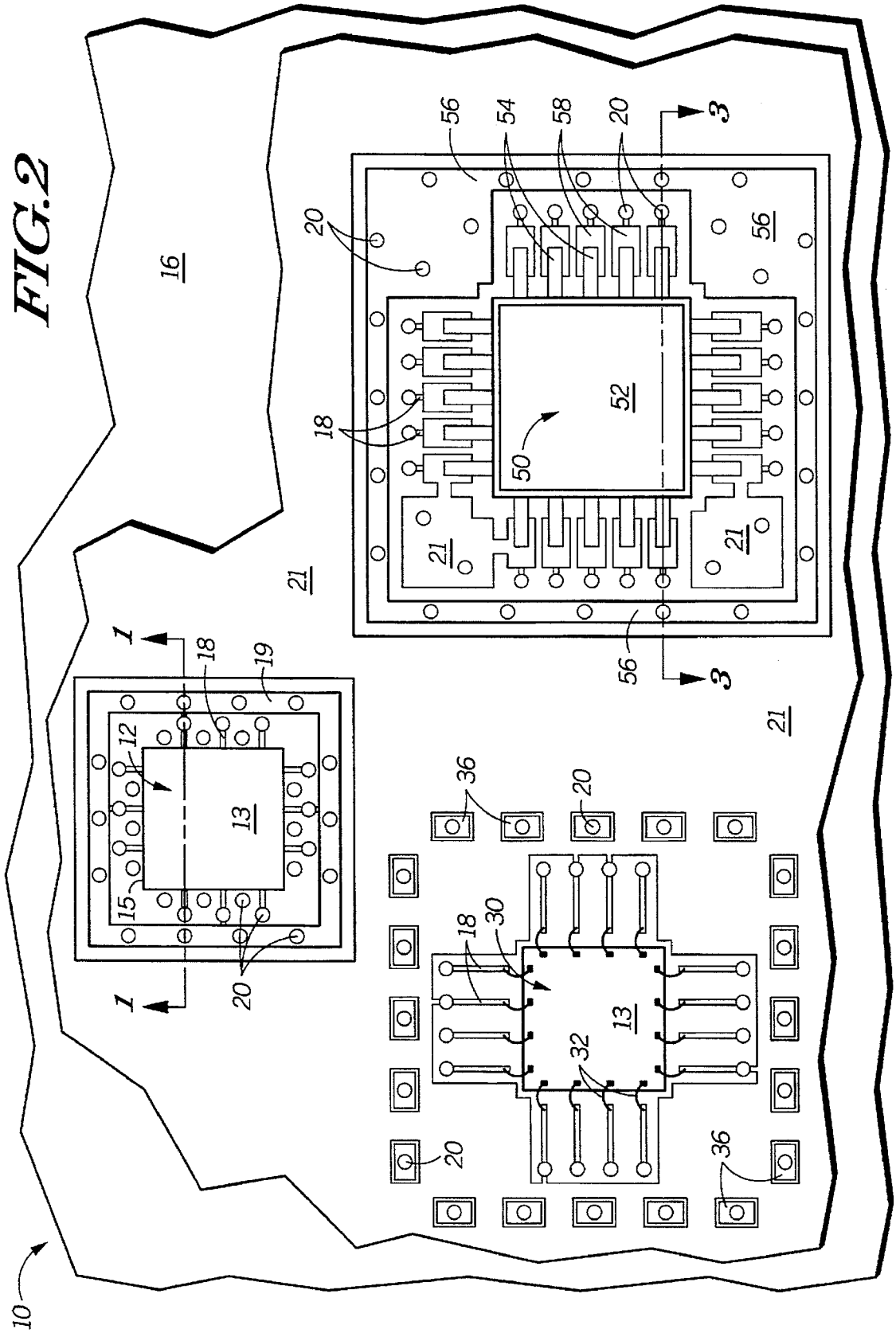


FIG.4

FIG.2



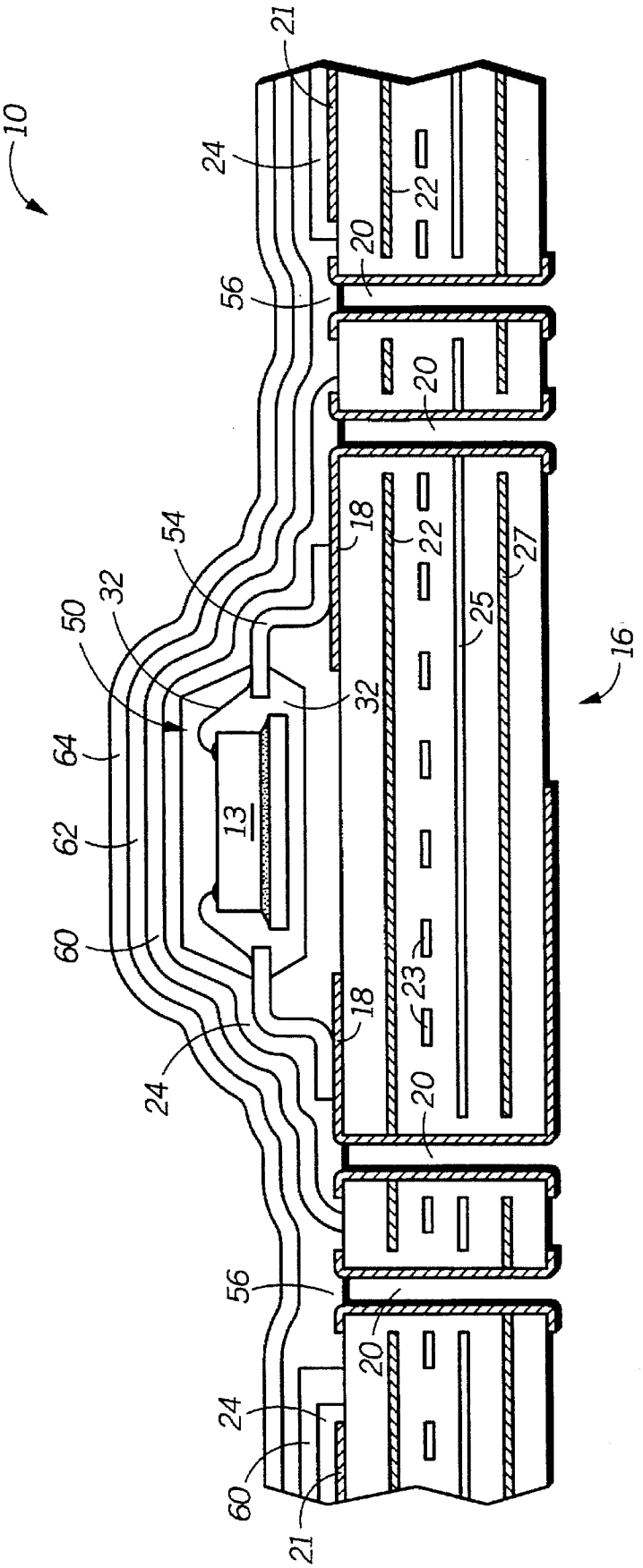


FIG.3

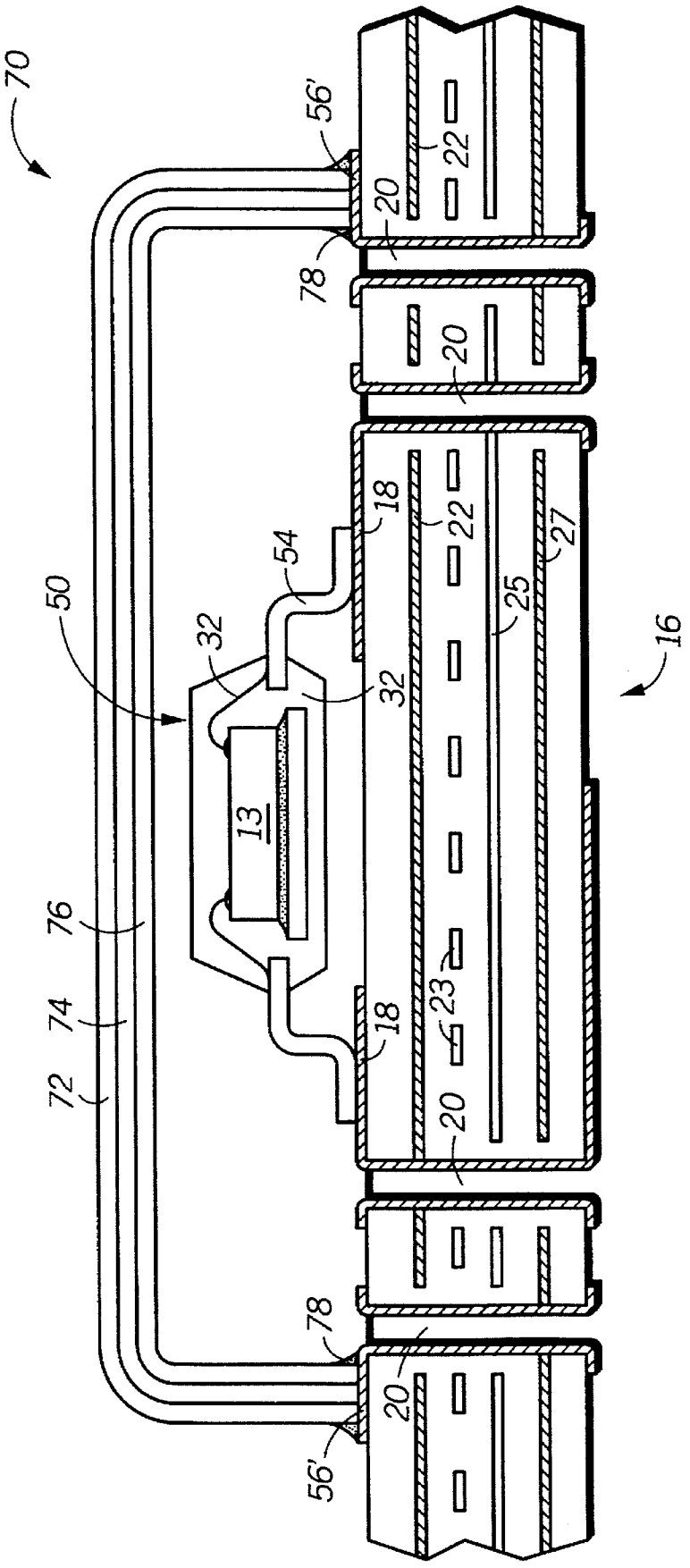


FIG. 5

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