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Yoshida et al.

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(54) **MULTILAYER PRINTED CIRCUIT BOARD**

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(51) **Int. Cl.**
H05K 1/03 (2006.01)

(52) **U.S. Cl.** **174/255; 174/259**

(58) **Field of Classification Search** 174/255-259
See application file for complete search history.

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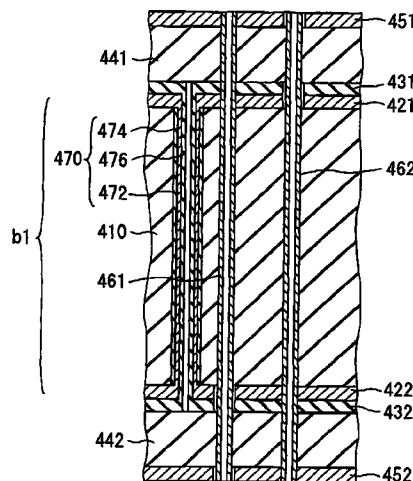
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(57) **ABSTRACT**

A multilayer printed circuit board includes an inner magnetic layer essentially consisting of magnetic material. The inner magnetic layer may be formed by an action of chemical bond or van der Waals force. The inner magnetic layer may comprise a plurality of magnetic units, each of which provides magnetism, and may be formed by magnetically coupling the magnetic units with each other by using a strong interaction. The inner magnetic layer may essentially consist of a ferrite film. The ferrite film may be formed directly on the inner conductive layer by means of an electroless plating method. The ferrite film may essentially consist of an oxide metal composition, the metal composition being represented by the formula of $Fe_aNi_bZn_cCo_d$, where: $a+b+c+d=3.0$; $2.1 \leq a \leq 2.7$; $0.1 \leq b \leq 0.3$; $0.1 \leq c \leq 0.7$; and $0 \leq d \leq 0.15$.

2 Claims, 9 Drawing Sheets



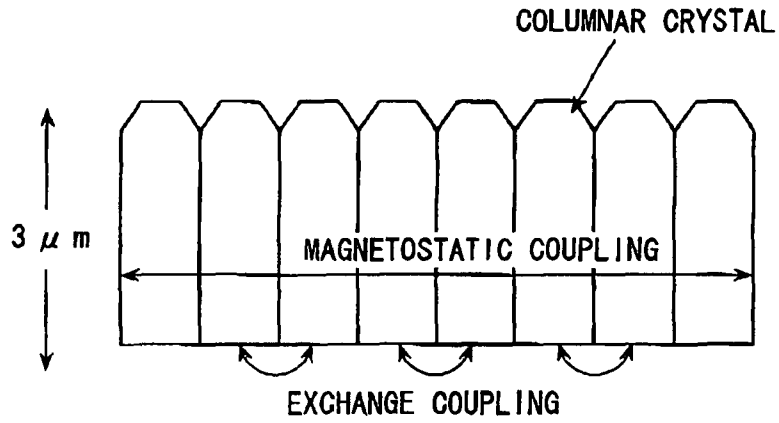


FIG. 1

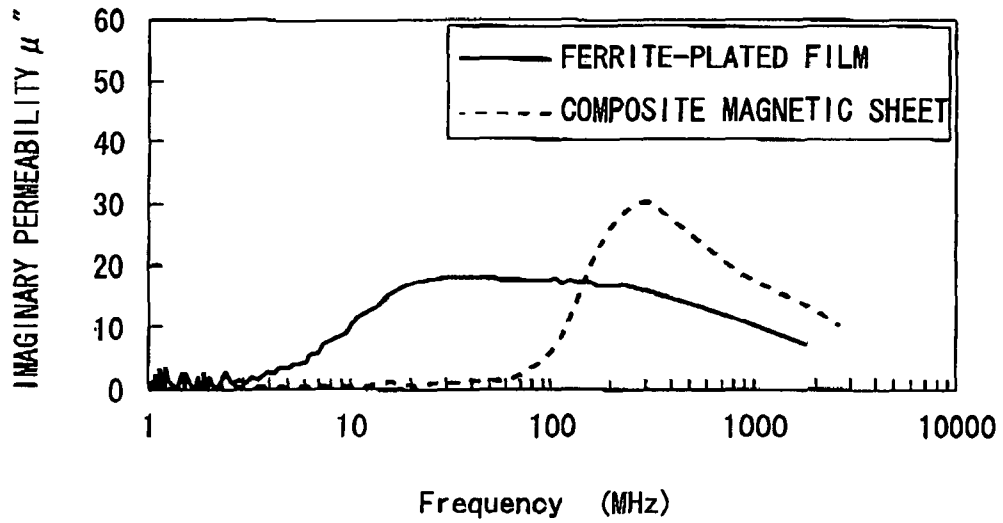


FIG. 2

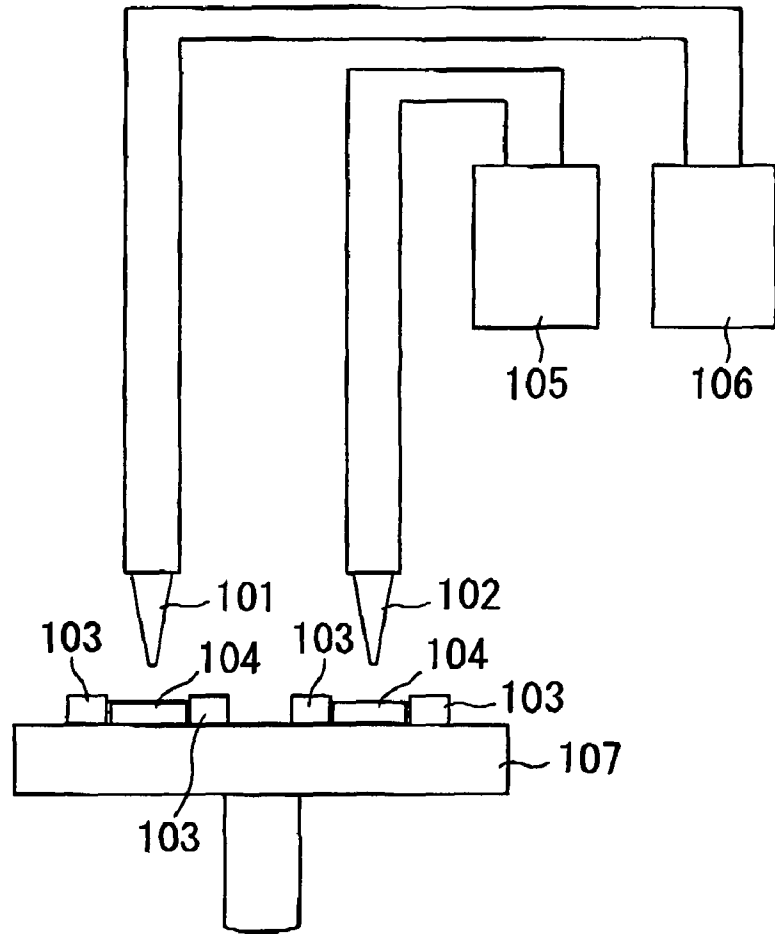


FIG. 3A

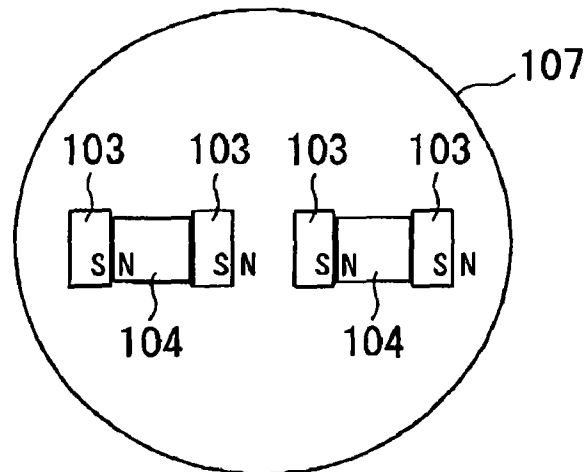


FIG. 3B

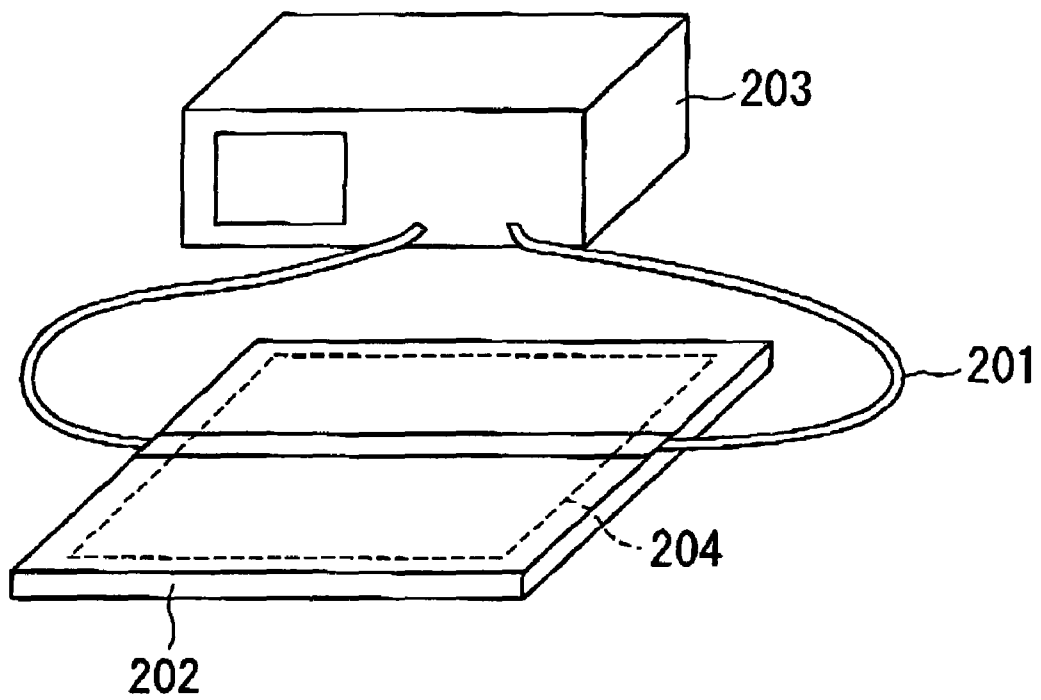


FIG. 4

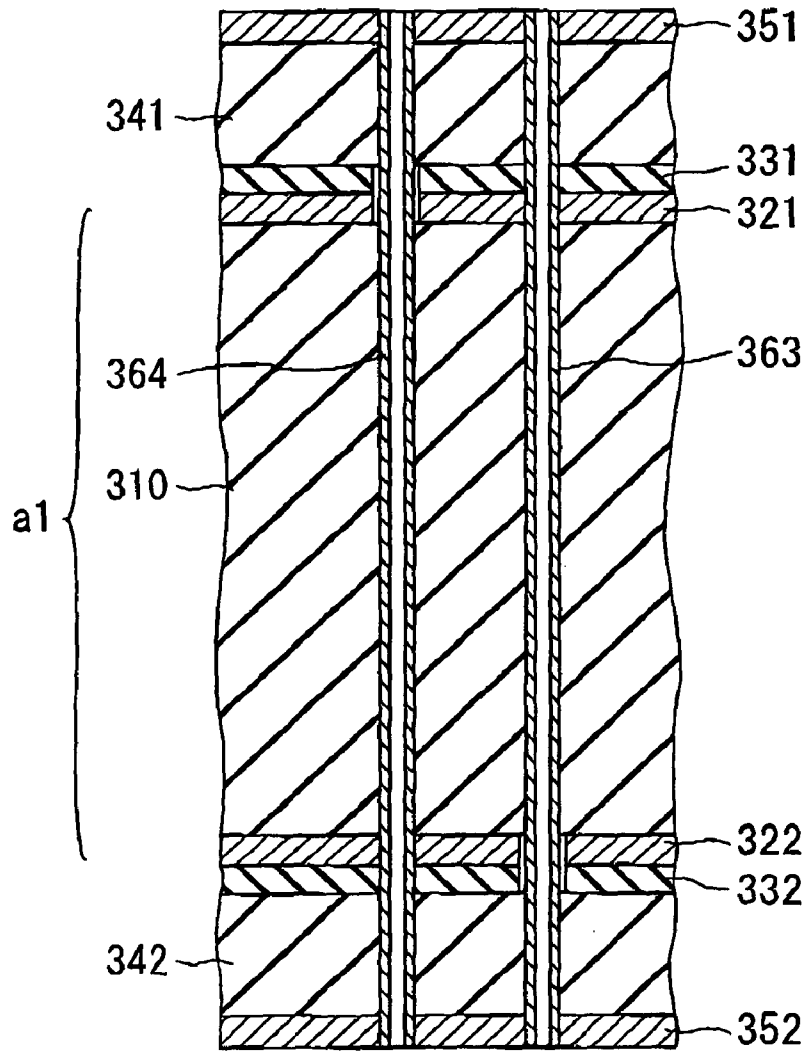


FIG. 5

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