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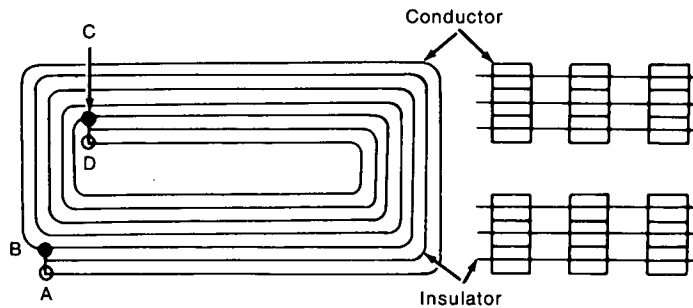
Low-Loss Stripe-Line Coil for Magnetic Bubble Memory Device

An improved version of the stripe-line coil design presented in Langley Research Center Tech Brief B75-10195 (LAR-11705) has been developed. The total power dissipation of the coil depends on its overall resistance. It is desirable to have a stripe line with maximum conductor thickness and minimum insulation thickness for minimum coil size and power loss. Although the conductor film can be plated to several thousandths of an inch in thickness, problems still exist.

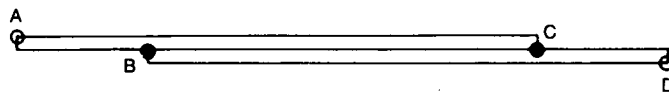
- a. A thick conductor film cannot be wrapped to a small radius as stress induced in the wrapping will cause cracking in the conductor, thereby increasing electrical resistance and power dissipation.
- b. Stripe pattern etching in thick conductor film is more difficult because of the etch depth-to-width ratio, increasing etch loss in the stripe pattern and, therefore, increasing power loss of the coil.

The low-loss stripe-line coil design method is illustrated. Instead of doubling the conductor thickness on one side, an additional conductor film is placed on the back side of the insulator film to form a double-sided film. The stripe-line pattern is etched on both sides of the film, and since the conductor thickness is only half that of the equivalent single-sided film, the problems in wrapping and etching are greatly reduced.

The stripe-line coil is wrapped in the same manner as when using single-sided film except that care has to be taken on aligning the stripe patterns between layers. Two electrical connections between layers (B and C on the illustration) assure that conductor layers in close contact are all of the same electrical potential. With this arrangement no electrical insulation is required between layers, reducing the insulator film to one-half that required for single-sided conductor coil.



(a) Stripe-Line Coil Structure



(b) Equivalent Conductor Path

Stripe-Line Coil Structure With Double-Sided Conductor Strip

(continued overleaf)

Note:

Requests for further information may be directed to:

Technology Utilization Officer
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Hampton, Virginia 23665
Reference: B75-10196

Patent status:

Title to this invention has been waived under the provisions of the National Aeronautics and Space Act [42 U.S.C. 2457(f)], to the Rockwell International Corporation, Anaheim, California 92803.

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(LAR-11707)