Abstracts

Ferrite-Eielectric Composite Integrated Microwave Circuit Development

C.G. Aumiller, D.H. Harris, M.C. Willson, Y.S. Wu, F.J. Rosenbaum and D.L. LaCombe. "Ferrite-Eielectric Composite Integrated Microwave Circuit Development." 1971 G-MTT International Microwave Symposium Digest of Technical Papers 71.1 (1971 [MWSYM]): 66-69.

The Arc Plasma Spray process (APS) makes possible the fabrication of complex ferrite/dielectric composite structures suitable for use as substrates for microwave integrated circuits. A typical two layered microstrip geometry is shown in the insert of Fig. 2. The usual microstrip design problems are now complicated because of the choice possible in the selection of the ferrite and dielectric material constants (dielectric constant and permeability) and the relative heights of the two materials. As an example of the structures possible, a substrate for a non-reciprocal latching meanderline phase shifter is shown in Fig. 1. TT1-390 ferrite material was deposited in a preformed cavity of a 0.035" substrate with epsilon/sub d/ = 13. A metallization is made and the meanderline structure is formed. Circulators, filters, etc., can be fabricated in the same fashion. Some of the advantages of this approach are: a) the design of previously unavailable circuits is now feasible, b) ferrite materials can be deposited only where they are required in a given circuit, c) the ferrite microwave properties are maintained or enhanced through the APS process, d) high power handling capability is now possible in planar MIC's and e) potential cost savings.

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