Abstracts

Analysis of Anisotropic High Temperature Superconductor Planar Structures on Sapphire Anisotropic Substrates (Short Papers)

M.A. Megahed and S.M. El-Ghazaly. "Analysis of Anisotropic High Temperature Superconductor Planar Structures on Sapphire Anisotropic Substrates (Short Papers)." 1995 Transactions on Microwave Theory and Techniques 43.8 (Aug. 1995 [T-MTT]): 1989-1992.

A full-wave finite-difference time-domain technique is used to study the anisotropy associated with high temperature superconductor (HTS) planar structures. The analysis is performed on anistropic YBCO film deposited on anisotropic sapphire substrate. The solution incorporates all the physical aspects of the HTS materials. The finite thickness of the anisotropic strip is rigorously modeled using a graded non uniform mesh generator. The propagation characteristics of HTS microstrip tine are evaluated. The current distributions inside the HTS are calculated for both the normal and the super fluids. It is shown that the 90° r-cut sapphire substrate structure has lower loss and lower effective dielectric constant than the 0° r-cut substrate. Interesting, aspects, concerning the anisotropy of HTS microwave structures, are presented.

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