Abstracts

The Propagation Characteristics of Wave-Guiding Structures with Very Thin Superconductors; Application to Coplanar Waveguide YBa/sub 2/Cu/sub 3/O/sub 7-x/ Resonators

B.B.G. Klopman, G.J. Gerritsma and H. Rogalla. "The Propagation Characteristics of Wave-Guiding Structures with Very Thin Superconductors; Application to Coplanar Waveguide YBa/sub 2/Cu/sub 3/O/sub 7-x/ Resonators." 1993 Transactions on Microwave Theory and Techniques 41.5 (May 1993 [T-MTT]): 781-791.

We have analyzed the propagation characteristics of wave-guiding structures with superconductors which are thin compared to the magnetic penetration depth. The complex propagation constant is evaluated within the framework of the modified spectral domain method without the need for numerical calculations in the complex plane. Good agreement is found with the results of other methods. The numerical analysis is instrumental in deducing results for the penetration depth and the surface resistance of YBa/sub 2/CU/sub 3/ O/sub 7-x thin films on sapphire with a PrBa/sub 2/CU/sub 3/O/sub 7 buffer layer. We confirm recent observations of a non-single-gap BCS temperature dependence.

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