Abstracts

High-Temperature Superconductive Devices on Sapphire

G.-C. Liang, R.S. Withers, B.F. Cole and N. Newman. "High-Temperature Superconductive Devices on Sapphire." 1994 Transactions on Microwave Theory and Techniques 42.1 (Jan. 1994 [T-MTT]): 34-40.

The low-loss and uniform dielectric properties of sapphire make it attractive for high-performance microwave devices using high-temperatnre superconductors. YBa/sub 2/Cu/sub 3/O/sub 7-delta/ films have been deposited on oxide-buffered 5-cm-diameter wafers and demonstrated a surface resistance of 0.5 mOmega at 10 GHz and 77 K. Long (9-ns) delay lines have for the first time been produced on these substrates and have a measured insertion loss of 1.5 dB at 6 GHz and 77 K. Design techniques appropriate for the dielectric anisotropy of sapphire are discussed.

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