Abstracts

UHF Film Resonator Evaluation and Resonator-Controlled Oscillator and Filter Design Using Computer-Aided Design Techniques

M.M. Driscoll, S.V. Krishnaswamy, R.A. Moore and J.R. Szedon. "UHF Film Resonator Evaluation and Resonator-Controlled Oscillator and Filter Design Using Computer-Aided Design Techniques." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 239-242.

RF magnetron-sputtered piezoelectric films on silicon semiconductor substrates provide the basis for high Q, temperature-stable, bulk acoustic resonators in monolithic, UHF signal processing circuits. This paper describes the design of UHF oscillators using such resonators as the frequency-controlling elements. RF circuit analysis/optimization software has been used for determining resonator equivalent electrical circuit parameters and oscillator sustaining-stage optimum small-signal impedance characteristics, based on automated measurement of resonator and transistor S-parameters. Oscillator circuits have been designed for potential implementation using silicon and GaAs technology. A prototype oscillator has been fabricated that is realizable in monolithic form and allows resonator utilization as a one port. Measurement of oscillator output-signal phase-noise sideband spectra indicates achievement of L(f) = -110 dB/Hz at 1 kHz carrier offset frequency.

❑ Return to main document.