Abstracts

Microwave Surface Wave Delay Lines as Practical Signal Processing Components

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This paper will describe a family of Surface Wave accoustic delay lines in the 100 MHz to 1100 MHz frequency range which offer a practical way of satisfying many system delay line requirements more easily than with conventional bulk type delay lines. Microwave surface wave delay lines are made by evaporating metallic thin film interdigital transducers on a polished surface of a piezoelectric single crystal material such as lithium niobate. The transducer, whose impedance is determined by the coupling constant of the piezoelectric substrate and the geometry of the transducer electrodes, is matched to system impedances with relatively simple matching circuitry. The transducers are composed of a properly interconnected sequence of parallel lines which may be .85 - 6 microns wide, depending upon the frequency range. In contrast, microwave bulk wave transducers are made by either depositing an oriented piezoelectric thin film on the polished end of a single crystal rod, or by diffusing an insulated layer into the polished end of a relatively high conductivity piezoelectric semiconductor.

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