Abstracts

A Two-Port Microwave Variable Delay Line

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The ability to delay microwave signals and, in particular, to electronically control the delay, is exceedingly important in certain electronic systems. There has been considerable activity in this field recently, much of it centered about fixed-delay techniques using acoustic waves, and variable-delay techniques using combinations of acoustic waves and spin waves, in various single-crystal materials. This paper describes the operation of a new kind of delay device--a two-port electronically variable delay line utilizing pure spin-wave propagation in single-crystal yttrium iron garnet. Particular advantages of this device are transmission-type (two-port) operation, delay continuously variable from zero to several microseconds by means of the magnetic field, and no critical dimensions or surface finishes.

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