Abstracts

Ferrite Switches in Coaxial or Strip Transmission Line (1962 [MWSYM])

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In many microwave systems there is need for a fast-acting switch which has negligible insertion loss in its "On" condition and substantial attenuation in its "Off" condition. Ferrite switches can in general be made fast-acting by thinning waveguide walls to a few skin depths, using low inductance coils and applying pulse circuitry techniques. Switches in rectangular or circular waveguide have been either of the Faraday rotation or the waveguide-beyond-cutoff variety. Some coaxial or stripline structures have been described which show interesting properties. Early work at Bell Telephone Laboratories on ferrite loaded coaxial lines indicated that large amounts of attenuation could be obtained with axial magnetic fields. The high attenuation is the result of a cutoff condition in the ferrite loaded line, and/or ferromagnetic resonance in the ferrite. The applied field may be switched to bring the line into a propagating and low loss condition.

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