Abstracts

A New Broad-Band Absorption Modulator for Rapid Switching of Microwave Power

F. Reggia. "A New Broad-Band Absorption Modulator for Rapid Switching of Microwave Power." 1961 Transactions on Microwave Theory and Techniques 9.4 (Jul. 1961 [T-MTT]): 343-349.

This paper describes a new technique for obtaining a broad-band absorption modulator for high-speed switching or amplitude modulation of microwave power. This ferrite modulator, an outgrowth of the longitudinal-field rectangular-waveguide phase shifter, has electrical characteristics particularly desirable in a microwave switch. These include a zero-field insertion loss of approximately 0.5 db in the ON state, an isolation of greater than 60 db in the OFF state which is nearly independent of the magnetic control field in this state, and a nearly matched input impedance for all values of applied field. These electrical characteristics are nearly constant over a 30 per cent bandwidth at X band. Also, it is possible to design the amplitude modulator to have negligible phase shift at the desired operating frequency. Other characteristics of this ferrite modulator include small physical size, magnetic control fields of less than 50 oersteds, operating temperatures up to 150°C, and a capability of less than one μsec switching time.

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