Abstracts

Transient Thermal Behavior of Latching Ferrite Phase Shifters (Correspondence)

G. Klein. "Transient Thermal Behavior of Latching Ferrite Phase Shifters (Correspondence)." 1967 Transactions on Microwave Theory and Techniques 15.7 (Jul. 1967 [T-MTT]): 429-430.

Latching ferrite phase shifters have been under investigation and development for a number of years as digital phase control elements in electronically steerable arrays. This device employs the remanent magnetization available in a closed magnetic circuit to eliminate the large and inefficient electromagnets associated with previous ferrite phase shifters, and to provide for micro-second speed switching with low energy. The basic element of a waveguide latching phase shifter is a rectangular toroid of square hysteresis loop ferromagnetic material with an axial magnetizing wire. Current pulses are used to switch the toroid magnetization between the two possible remanent states. The effect of changing the direction of remanent magnetization is to perturb the propagation constant of the ferrite loaded guide in the order of 10 percent, creating a differential phase shift.

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