Abstracts

High Power, p-i-n Diode Controlled, Microwave Transmission Phase Shifters

J.F. White. "High Power, p-i-n Diode Controlled, Microwave Transmission Phase Shifters." 1965 Transactions on Microwave Theory and Techniques 13.2 (Mar. 1965 [T-MTT]): 233-242.

An iterative circuit, diode, transmission phase shifter is discussed, having a canonic form that consists, of a length of transmission line symmetrically loaded at its ends by small susceptances whose values are diode controllable. The spacing of the susceptances is chosen so that their reflections are nearly mutually canceling, (about a quarter wavelength if equal magnitude, opposite sign susceptances are used). A change of electrical length of the section of 23°, in principle, is obtainable with a maximum input VSWR of 1.04. Eight section, experimental circuits yielded 180° total phase shift with less than one decibel of loss in the L and S bands and peak RF power capability to 15 kilowatts. Operation to 140 kilowatts peak power was achieved with reduced phase shift per section. The transmission phase shifter is believed to be well suited as a phase control element for beam steering of array antennas.

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