Abstracts

A Switching Circulator: S-Band; Stripline; Remanent; 15 kilowatts; 10 microseconds; Temperature-Stable

F. Betts, D.H. Temme and J.A. Weiss. "A Switching Circulator: S-Band; Stripline; Remanent; 15 kilowatts; 10 microseconds; Temperature-Stable." 1966 Transactions on Microwave Theory and Techniques 14.12 (Dec. 1966 [T-MTT]): 665-669.

A stripline, three-port remanence circulator switch has been designed for high-speed switching of time delay in a phased array radar at S-band (2.9 GHz). Special attention was devoted to minimizing switching time and energy through design of the magnetic circuit and suppression of eddy currents. Temperature stabilization of insertion phase was accomplished by means of a flux regulating magnetic circuit. Switching performance: time: less than 10 micro-seconds; energy: 450 microjoules. Circulator performance: bandwidth for >26 dB isolation, 8.9 percent; insertion loss, 0.35 dB. Temperature stability of insertion phase: one electrical degree per 10°C. Peak RF power: 15 kW. The discussion includes details of the junction design and performance, techniques of eddy current suppression, temperature stabilization, and the method of switching energy measurements.

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