Abstracts

High Power, Magnetic Field Controlled Microwave Gas Discharge Switches

S.J. Tetenbaum and R.M. Hill. "High Power, Magnetic Field Controlled Microwave Gas Discharge Switches." 1959 Transactions on Microwave Theory and Techniques 7.1 (Jan. 1959 [T-MTT]): 73-82.

A new type of gas discharge switch is described, It is electronically controllable, broadband, and capable of rapidly switching high power pulsed microwaves from either of two waveguide input ports to a single waveguide output port, or from one waveguide input port to either of two waveguide output ports. The electronic control is achieved by turning on or off a magnetic field set for cyclotron resonance. An approximate analysis is given of the operation of the active element of the switch and the results are compared with experiment. An analysis of the effects of frequency scaling indicates that, with the exception of the magnetic flux density which increases with increasing frequency, the switch parameters either improve or remain unchanged in going to higher frequencies. Two different switch configurations are investigated, one a Y-junction switch for operation at S band and the other a balanced top-wall hybrid coupler switch for operation at K/sub u/ band. Their electrical characteristics are described.

❑ Return to main document.