Abstracts

Solid-State X-Band Power Limiter

W.F. Krupke, T.S. Hartwick and M.T. Weiss. "Solid-State X-Band Power Limiter." 1961 Transactions on Microwave Theory and Techniques 9.6 (Nov. 1961 [T-MTT]): 472-480.

An X-band solid-state power limiter has been designed and built to protect receiver crystals from high-power microwave pulses in the kilowatt region. This passive and reliable crystal protection has been achieved by utilizing the nonlinear properties of both ferrites and semiconductor diodes. An understanding of the ferrite nonlinear mechanism, which gives rise to the characteristically large leakage spike, has been achieved and quantitatively described. This formulation resulted in an essentially optimized high-power ferrite limiter, whose mode of operation is qualitatively understood. Use of this ferrite limiter for crystal protection requires a fast response, lower threshold secondary-limiting unit, which was developed by using semiconductor diodes for power limiting in a reactive mode of operation. The ferrite and diode limiters were combined in a single device with an over-all insertion loss of 2.0 db and a 200-Mc operating "bandwidth."

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