Abstracts

Characteristics of Ferrite Microwave Limiters

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Microwave ferrites that exhibit a nonlinear RF absorption as a function of RF power level can be utillzed in the construction of a passive microwave device which will allow small RF signals to be transmitted with very little attenuation but which will attenuate large RF signals considerably. Such a device tends to "limit" the amplitude of the microwave energy passing through the device and is therefore called a ferrite microwave limiter. One application of the ferrite limiter is in the protection of crystal detectors in pulsed radar sets. However, when a rectangular pulse of X-band RF energy is transmitted through the limiter, the output waveform is no longer rectangular but consists of a leading edge spike of 0.1-µsec duration followed by a plateau of highly attenuated RF energy. At the present time the leading edge spike is the major obstacle in the successful use of the ferrite microwave limiter as a TR cell in the protection of crystal detectors. Experimental techniques used to improve the performance of the limiter are presented, and the performance characteristics of an X-band ferrite microwave limiter are shown.

❑ Return to main document.