Abstracts

Thermal Stress-Induced Breakdown in an S-Band Isolator

D.C. Buck and M.L. King. "Thermal Stress-Induced Breakdown in an S-Band Isolator." 1978 Transactions on Microwave Theory and Techniques 26.5 (May 1978 [T-MTT] (Special Issue on High-Power Microwaves)): 357-360.

In increasing the average power capability of a high peak power S-band isolator, severe RF breakdown was repeatedly encountered, which always led to extensive destruction of the ferrite material. Through careful study of the microwave and thermal test data, it was ascertained that breakdown was preceded by thermally induced stress and fracture in the ferrite, which was a consequence of a thermally induced adhesive failure. It is shown that the adhesive parameters of importance include the tensile strength and the thermal elongation of the adhesive layer. Also, restrictions on the range of dielectric loss tangents of the ferrite consistent with the proposed breakdown mechanism are given.

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