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Analysis of Finline Structures with Consideration of Metallization Thickness and Substrate Mounting Grooves

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Abstract: In this paper, mathematical analysis and numerical calculations of main parameters of finline structures with finite metallization thickness and substrate mounting grooves are developed based on the Method of Lines (MoL). The results obtained provide confirmation of the validity of the technique used and prove its simplicity and adequacy for treating different types of planar structures mainly finline based structures. Unilateral and bilateral finlines including practical parameters, such as metallization thickness and grooves' depths, have been investigated. The effect of these two parameters have been discussed based on realistic configurations and the results show that, at higher frequencies, the grooves supporting the substrate cannot be neglected and, in addition, their influence is more significant than the effect of finite thickness metallic strips. The isolated finline with more complex configuration with a particular interest in applications involving active components was also analyzed. The obtained results confirm the previous published predictions for these types of structures.

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