Abstracts

An Evaluation of Materials and Processes for Integrated Microwave Circuits

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This paper presents an evaluation of materials and processes applicable to the fabrication of hybrid microstrip microwave circuits. Substrate materials evaluated included aluminas, beryllias, quartz, and glass of varying purities and surface finishes. Conductor materials evaluated included silver, copper, gold, and aluminum. Fabrication processes studied included vacuum deposition, sputtering, electroless and electroplating, thick-film screening and firing, and photoetching. Sapphire and high-purity alumina (99.5 percent pure or better) substrates were found superior as substrates for microstrip circuits. Conductor materials and processing methods found best were 1) vacuum deposited chromium-gold thin film which was gold electroplated and photoetched; 2) thick-film silver which was photoetched to delineate the microwave pattern.

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