Abstracts

Application of digital PGA technology to K-band microcircuit and microwave subsystem packages

Hongwei Liang, H.L. Barnes, J. Laskar and D. Estreich. "Application of digital PGA technology to K-band microcircuit and microwave subsystem packages." 2000 Transactions on Microwave Theory and Techniques 48.12 (Dec. 2000 [T-MTT] (Special Issue on 2000 International Microwave Symposium)): 2644-2651.

We present for the first time a low-cost high-performance pin grid array (PGA) packaging technology for K-band microcircuit and microwave subsystem packaging. The first-generation package demonstrates a 20 dB return loss to 8 GHz, and the second-generation package improves the return loss to 25 dB from DC to 26.5 GHz. We apply a comprehensive analysis method, which facilitates the optimization of the radio-frequency transition into the package. It combines the time-domain reflectometry analysis and frequency-domain full-wave analysis and reduces the optimization time significantly. The theoretical analysis is verified with measurement in both frequency and time domains. The results demonstrate that the low-cost PGA can be a much more cost-effective microwave packaging solution than the traditional deep cavity metal packages.

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