Abstracts

Design of embedded passive components in Low-Temperature Cofired Ceramic on Metal (LTCC-M) technology

A. Fathy, V. Pendrick, G. Ayers, B. Geller, Y. Narayan, B. Thaler, H.D. Chen, M.J. Liberatore, J. Prokop, K.L. Choi and M. Swaminathan. "Design of embedded passive components in Low-Temperature Cofired Ceramic on Metal (LTCC-M) technology." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1281-1284.

This Sarnoff-developed technology combines conventional Low-Temperature Cofired Ceramic (LTCC) technology and a clad metal base to provide constrained sintering, ruggedness, improved thermal path, and complex cavities with metal ground. Constrained sintering leads to almost zero shrinkage in the x-y plane during the firing operation allowing the accurate placement of embedded components such as resistors, capacitors, transmission lines, etc. This paper describes the development of CAD models for the design and analysis of embedded LTCC-M components. Models were verified by fabricating and testing LTCC-M test coupons for resistors, capacitors, and transmission lines. Results were compared with both EM simulation and circuit modeling. These CAD models operate within the industry standard HP Communications Design Suite utilizing its existing library models; an efficient and cost effective approach. Models, test results, range of validity of these models, and design guidelines are presented.

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