Abstracts

High performance spiral inductors embedded on organic substrates for SOP applications

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This paper presents the design, measured data, and systematic analysis of spiral embedded inductors fabricated on standard organic substrates using low-cost, large-area MCM-L technology. Several configurations for inductors were investigated to optimize the inductor layout dimensions such as conductor width, number of turns, inner diameter, spacing between inductor and ground, and inductor area. A maximum Q of 100 was measured for a 3.6 nH inductor at 1.8 GHz on an organic substrate with a self resonance frequency of 10.6 GHz within an inductor core area of 0.72 mm/sup 2/. The effects of configurational variables on inductor characteristics such as quality factor, self-resonance frequency, and inductance are discussed. High-Q inductors embedded on organic substrates can find numerous RF and microwave system-on-package (SOP) applications, such as VCOs, IF/RF bandpass filters, LNAs, etc., in which IC chips are flip-chip mounted on the package substrate.

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