Abstracts

High-Q copper inductors on standard silicon substrate with a low-k BCB dielectric layer (2002 [RFIC])

Xiao Huo, K.J. Chen and P.C.H. Chan. "High-Q copper inductors on standard silicon substrate with a low-k BCB dielectric layer (2002 [RFIC])." 2002 Radio Frequency Integrated Circuits (RFIC) Symposium 02. (2002 [RFIC]): 403-406.

High-Q Cu inductors using low-k benzocyclobutene (BCB) dielectric as an interface layer have been fabricated on a standard CMOS-grade silicon substrate. Metal ohmic loss and substrate loss, the two major factors that degrade the Q-factors of on-chip inductors, are suppressed by the employment of electroplated copper and the BCB dielectric, respectively. Quality-factor as high as 25 was obtained for a 1 nH inductor at 2 GHz. The inductor fabrication process is low-cost and low-temperature, making it suitable for a post-IC process for high-performance RFIC's and MMIC's.

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