Abstracts

C-band oscillator using high-Q inductors embedded in multi-layer organic packaging

S.-W. Yoon, M.F. Davis, K. Lim, S. Pinel, M. Maeng, C.-H. Lee, S. Chakraborty, S. Mekela, J. Laskar, G. White and R. Tummala. "C-band oscillator using high-Q inductors embedded in multi-layer organic packaging." 2002 MTT-S International Microwave Symposium Digest 02.2 (2002 Vol. II [MWSYM]): 703-706 vol.2.

We present C-band oscillators with external high-Q inductors: wire-bond inductors and embedded inductors in a Multi-Layer Organic (MLO) board fabricated by a thick-film MCM-L technology. The phase-noise performance of oscillators is compared with the oscillator using on-chip inductors. Inductors are designed to obtain high quality factor in C-band. The phase-noise performance of the oscillator with on-chip inductors measures -108 dBc/Hz at 600 kHz offset frequency, and that of the oscillator with external inductors shows -113 dBc/Hz at the same offset. Using MLO inductors, the phase-noise is better than the oscillator with on-chip inductors and comparable to the oscillator with wire-bond inductors. To our knowledge, this is the first C-band oscillator using inductors embedded in the multi-layer organic packaging technology. This is also the first report comparing the performance of oscillators using three different inductor technologies: on-chip integration, wire-bonding, and multi-layer organic packaging technology.

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