Abstracts

Improved three-dimensional GaAs inductors

B. Piernas, K. Nishikawa, K. Kamogawa, T. Nakagawa and K. Araki. "Improved three-dimensional GaAs inductors." 2001 MTT-S International Microwave Symposium Digest 01.1 (2001 Vol. I [MWSYM]): 189-192 vol.1.

This paper clarifies the state-of-the-art GaAs inductors fabricated using three-dimensional (3-D) MMIC technology. A novel 3-D inductor is proposed and evaluated experimentally. Our 4.9 nH inductance achieves a peak Q factor of 35.93 with a resonant frequency of 8.07 GHz. To the knowledge of the authors, this performance is the highest yet reported for GaAs on-chip inductors. A 0.6-4 GHz band LNA is fabricated using 0.15 /spl mu/m GaAs PHEMT devices (f/sub max/=120 GHz) and the 3-D inductors. The fabricated LNA offers 12.3 dB gain and a noise figure under 1.5 dB with a d.c. power consumption of 27.84 mW.

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