Abstracts

Distributed active transformer-a new power-combining and impedance-transformation technique

I. Aoki, S.D. Kee, D.B. Rutledge and A. Hajimiri. "Distributed active transformer-a new power-combining and impedance-transformation technique." 2002 Transactions on Microwave Theory and Techniques 50.1 (Jan. 2002, Part II [T-MTT] (Special Issue on Silicon-Based RF and Microwave Integrated Circuits)): 316-331.

In this paper, we compare the performance of the newly introduced distributed active transformer (DAT) structure to that of conventional on-chip impedance-transformations methods. Their fundamental power-efficiency limitations in the design of high-power fully integrated amplifiers in standard silicon process technologies are analyzed. The DAT is demonstrated to be an efficient impedance-transformation and power-combining method, which combines several low-voltage push-pull amplifiers in series by magnetic coupling. To demonstrate the validity of the new concept, a 2.4-GHz 1.9-W 2-V fully integrated power-amplifier achieving a power-added efficiency of 41% with 50-/spl Omega/ input and output matching has been fabricated using 0.35-/spl mu/m CMOS transistors.

❑ Return to main document.