Abstracts

A high efficiency 0.25 /spl mu/m CMOS PA with LTCC multi-layer high-Q integrated passives for 2.4 GHz ISM band

D. Heo, A. Sutono, E. Chen, E. Gebara, S. Yoo, Y. Suh, J. Laskar, E. Dalton and E.M. Tentzeris. *"A high efficiency 0.25 /spl mu/m CMOS PA with LTCC multi-layer high-Q integrated passives for 2.4 GHz ISM band." 2001 MTT-S International Microwave Symposium Digest 01.2 (2001 Vol. II [MWSYM]): 915-918 vol.2.*

We present the first high efficiency CMOS power amplifier utilizing fully integrated multi-layer Low Temperature Co-fired Ceramic (LTCC) high-Q passives for 2.4 GHz ISM band applications. The inductor and capacitor library was built in a multi-layer LTCC board using a compact topology. An inductor Q-factor as high as 110 with a self-resonant-frequency (SRF) as high as 12 GHz was demonstrated. Measured results of the CMOS-LTCC PA show 45% power added efficiency, 23 dBm output power and 18 dB gain at 2.4 GHz with a low 2.5 V drain supply voltage. This result is the first significant step toward a compact transceiver module development utilizing fully integrated multi-layer LTCC high-Q passives and a deep submicron (0.25 /spl mu/m) CMOS technology.

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