Abstracts

A 2.4 GHz high efficiency SiGe HBT power amplifier with high-Q LTCC harmonic suppression filter

A. Raghavan, Deukhyoun Heo, Moonkyun Maeng, A. Sutono, Kyutae Lim and J. Laskar. "A 2.4 GHz high efficiency SiGe HBT power amplifier with high-Q LTCC harmonic suppression filter." 2002 MTT-S International Microwave Symposium Digest 02.2 (2002 Vol. II [MWSYM]): 1019-1022 vol.2.

We present a 2.4 GHz SiGe HBT power amplifier integrated with a harmonic suppression filter implemented in a high-Q multilayer low-temperature cofired ceramic (LTCC) substrate at the output. The power amplifier delivers a power of up to 27.5 dBm with a maximum power-added efficiency (PAE) of 47%. It has a power output of 27 dBm at an input power of 0 dBm with a PAE of 45%. The second and third harmonics are -44 dBc and -49 dBc, respectively, at this operating point. The power amplifier exhibits a linear gain of 35 dB and operates at a supply voltage of 3.3 V. To the best of our knowledge, this represents the best reported performance of a SiGe HBT power amplifier at 2.4 GHz and is comparable to performance previously achieved only with GaAs-based processes. The harmonic suppression filter and output match network have been implemented completely in LTCC without the use of external discrete components.

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