Abstracts

High-Efficiency X-Band HBT Power Amplifier

A. Khatibzadeh, W. Liu, T. Henderson, J. Sweder and S. Pierce. "High-Efficiency X-Band HBT Power Amplifier." 1994 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest 94.1 (1994 [MCS]): 117-120.

We report on the state-of-the-art performance of monolithic HBT amplifiers at X-band. Single-chip, two-stage amplifiers have been designed and fabricated using AIGaAs/GaAs HBT process. An output power level of 12.5 W, with 51% power-added efficiency and 13dB associated gain have been achieved at 8.5 GHz. The amplifier delivers more than 10 W output power with minimum 41% PAE in the 8.3-9.5 GHz band, and 9W power with minimum 38% PAE in the 8.3-10.0 GHz band. The amplifier measures 4.5x4.5 mm^2 in size and is thermally ballasted for reliable operation, To our knowledge, these results represent state-of-the-art performance in terms of the combination of power, bandwidth, and efficiency for any monolithic solid-state amplifier technology.

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