Abstracts

A Study of Class C Operation of GaAs Power HBTs

F. Ali, A. Gupta, M. Salib and B. Veasel. "A Study of Class C Operation of GaAs Power HBTs." 1995 MTT-S International Microwave Symposium Digest 95.2 (1995 Vol. II [MWSYM]): 721-724.

GaAs power HBTs are traditionally biased in Class A or Class AB mode for power amplifiers. This paper describes the tradeoffs of operating these devices in Class C bias. We find that power-added efficiency (PAE) improves and power gain decreases in Class C when compared to Class AB bias. At 6 GHz, the PAE increased by greater than 10 percentage points (from 68.9% in Class AB to 80.6% in Class C) with concurrent loss of 4.3 dB in power gain. The efficiency improves monotonically with lower operating frequency. In a single-tone environment, the second harmonic increases by ~7 dB in Class C over Class AB. To our knowledge, this is the first report on the experimental study of Class C operation of GaAs HBTs.

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