Abstracts

Ultrahigh Power Efficiency Operation of Common-Emitter and Common-Base HBT's at 10 GHz

N.L. Wang, N.H. Sheng, M.F. Chang, W.J. Ho, G.J. Sullivan, E.A. Sovero, J.A. Higgins and P.M. Asbeck. "Ultrahigh Power Efficiency Operation of Common-Emitter and Common-Base HBT's at 10 GHz." 1990 Transactions on Microwave Theory and Techniques 38.10 (Oct. 1990 [T-MTT]): 1381-1390.

In this paper, ultrahigh power-added efficiency is reported for AIGaAs/GaAs HBT's operating at 10 GHz in common-emitter (CE) and common-base (CB) modes. A record high 67.8% power-added efficiency with 11.6 dB associated gain was achieved with a CE HBT at a CW output power of 0.226 W, corresponding to a power density of 5.6 W/mm. With a CB HBT, 62.3% power-added efficiency with 11.85 dB gain and 0.385 W total CW power was demonstrated. Details of the operation of both CE and CB HBT's are described and compared. Current gain, stability, near class B operation, and power saturation characteristics are discussed. Differences from FET behavior are highlighted.

❑ Return to main document.