Abstracts

High-efficiency, small-chip AlGaAs/GaAs power HBTs for low-voltage digital cellular phones

N. Hayama, C.-W. Kim, H. Takahashi, N. Goto and K. Honjo. "High-efficiency, small-chip AlGaAs/GaAs power HBTs for low-voltage digital cellular phones." 1997 MTT-S International Microwave Symposium Digest 3. (1997 Vol. III [MWSYM]): 1307-1310.

A 61% power added efficiency (PAE), high linearity AlGaAs/GaAs power HBT with a very small chip size of 0.58/spl times/0.77 mm for use in personal digital cellular phones (PDC) is described. The device layout is optimized to reduce thermal resistance while maintaining a compact chip size. This power HBT, which has 60 fingers of 2/spl times/30 /spl mu/m emitter, exhibited 31.4 dBm output power and 61% power added efficiency with -51.7 dBc adjacent channel leakage power at a 50 kHz offset frequency under 1.5 GHz /spl pi//4-shifted QPSK modulation when operated at a low collector-emitter voltage of 3.4 V. These results satisfy Japan's PDC standard in a chip area that is less than 20% of that needed for a conventional GaAs power MESFET.

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