Abstracts

44 GHz Hybrid HEMT Power Amplifiers

D.W. Ferguson, P.M. Smith, P.C. Chao, L.F. Lester, R.P. Smith, P. Ho, A. Jabra and J.M. Ballingall. "44 GHz Hybrid HEMT Power Amplifiers." 1989 MTT-S International Microwave Symposium Digest 89.3 (1989 Vol. III [MWSYM]): 987-990.

Doped Channel 0.25µm gate length lnGaAs Pseudomorphic HEMTs developed in our laboratory have exhibited state-of-the-art power performance at millimeter wave frequencies, including output power density of 0.93 W/mm and power added efficiency of 41% at 44 GHz. Using these devices, two Q-Band hybrid power amplifiers have been developed. A two-stage design has produced 108 mW output power gain with 9.5dB and 26.5% power added efficiency. A three-stage design produced 251 mW output power with 13.6dB of gain and 26.8% power added efficiency. The peak efficiency of the three stage amplifier was 31.3% when biased differently. The linear gain of these amplifiers was 12 and 20 dB respectively, These results clearly show the potential of these devices for millimeter wave transmitters.

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