Abstracts

A High-Efficiency 94-GHz O.15-µm InGaAs/InAlAs/InP Monolithic Power HEMT Amplifier

R. Lai, G.I. Ng, D.C.W. Lo, T. Block, H. Wang, M. Biedenbender, D.C. Streit, P.H. Liu, R.M. Dia, E.W. Lin and H.C. Yen. "A High-Efficiency 94-GHz O.15-µm InGaAs/InAlAs/InP Monolithic Power HEMT Amplifier." 1996 Microwave and Guided Wave Letters 6.10 (Oct. 1996 [MGWL]): 366-368.

We report high efficiency W-band power monolithic microwave integrated circuits (MMIC's) using passivated 0.15 µm gate length In/sub 0.53/ Ga/sub 0.47/ As/In/sub 0.52/ Al/ sub 0.48/ As/InP HEMT's. A 0.15 µm x 320 µm single stage InP power HEMT MMIC amplifier demonstrates a maximum power added efficiency of 23% with 40 mW output power and 4.9 dB power gain at 94 GHz. When biased for higher output power, 54 mW output power with 20% power added efficiency was achieved at 94 GHz. These results represent the best combination of efficiency and output power fixtured data reported to date at this frequency.

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