Abstracts

An 18-21 GHz InP DHBT linear microwave Doherty amplifier

K.W. Kobayashi, A.K. Oki, A. Gutierrez-Aitken, P. Chin, Li Yang, E. Kaneshiro, P.C. Grossman, K. Sato, T.R. Block, H.C. Yen and D.C. Streit. "An 18-21 GHz InP DHBT linear microwave Doherty amplifier." 2000 Radio Frequency Integrated Circuits (RFIC) Symposium 00. (2000 [RFIC]): 179-182.

This work describes the first demonstration of an InP DHBT MMIC Doherty amplifier at K-band. When combined with InP DHBTs, the Doherty amplifier achieves a record linear PAE of 20% under a strict C/IM3 linearity ratio of 30 dBc while producing a Pout of 20.1 dBm. This benchmarks 3 dB greater Pout and 4% higher linear PAE than achieved with a PHEMT MMIC Doherty amplifier at Ku-band for the same C/IM3 linearity. Compared to its own linear "class A" bias performance, the Doherty amplifier achieves an 11 dB improvement in C/IM3 for the same Pout and slightly greater efficiency. The superior linearity of the InP DHBT Doherty amplifier approach is attractive for satellite and MM-wave communication systems.

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