Abstracts

GaAs HBT Wideband Matrix Distributed and Darlington Feedback Amplifiers to 24 GHz

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This paper reports on the design and performance of a 2-24 GHz distributed matrix amplifier and a 1-20 GHz 2-stage Darlington coupled amplifier based on an advanced HBT MBE profile which increases the bandwidth response of the distributed and Darlington amplifiers by providing lower base-emitter and collector-base capacitances. The matrix amplifier has a 9.5 dB nominal gain and a 3-dB bandwidth to 24 GHz. This result benchmarks the highest bandwidth reported for an HBT distributed amplifier. The input and output VSWR's are less than 1.5:1 and 2.0:1, respectively. The total power consumed is less than 60 mW. The chip size measures 2.5 X 2.6 mm^2. The 2-stage Darlington amplifier has 7 dB gain and 3-dB bandwidth beyond 20 GHz. The input and ontput VSWR's are less than 1.5:1 and 2.3:1, respectively. This amplifier consumes 380 mW of power and has a chip size of 1.66 X 1.05 mm^2.

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