Abstracts

Design optimization and characterization of high-gain GaInP/GaAs HBT distributed amplifiers for high-bit-rate telecommunication

S. Mohammadi, J.-W. Park, D. Pavlidis, J.-L. Guyaux and J.C. Garcia. "Design optimization and characterization of high-gain GaInP/GaAs HBT distributed amplifiers for high-bit-rate telecommunication." 2000 Transactions on Microwave Theory and Techniques 48.6 (Jun. 2000 [T-MTT] (Mini-Special Issue on the 1999 IEEE Radio and Wireless Conference (RAWCON))): 1038-1044.

The design methodology, processing technology, and characterization of high-gain GaInP/GaAs heterojunction-bipolar-transistor-based distributed amplifiers are described in this paper. Distributed amplifiers with different active cells and number of stages have been compared for high-gain (>12 dB) and high-bandwidth (>25 GHz) performance. Based on the results, a three-stage attenuation-compensated distributed amplifier with a flat gain (S/sub 21/) of 12.7 dB over a bandwidth of 27.5 GHz was successfully fabricated and tested. Eye-diagram tests at 10 Gb/s show very open eye characteristics with no signal skewing. The amplifier achieves a minimum noise figure of 4 dB at 3 GHz and a sensitivity of -25 dBm for 10-Gb/s nonreturn-to-zero 2/sup 15/-1 pseudorandom bit sequence with a bit error rate of 10/sup -9/.

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