Abstracts

A Novel Heterojunction Bipolar Transistor Active Feedback Design

K.W. Kobayashi, A.K. Oki, L.T. Tran, J.R. Velebir and D.C. Streit. "A Novel Heterojunction Bipolar Transistor Active Feedback Design." 1994 Microwave and Guided Wave Letters 4.5 (May 1994 [MGWL]): 146-148.

This paper reports on the results of a novel active feedback amplifier design using Heterojunction Bipolar Transistors. The design incorporates positive feedback to increase the gain bandwidth response by as much as 50 %. The active feedback amplifier achieves a gain of 13.8 dB and a 3-dB bandwidth of 15.6 GHz. The active feedback is economical in size in comparison to a spiral inductor implementation. In addition, the active feedback network includes a means for electronically tuning the active feedback circuit in order to adjust the bandwidth response. A two-stage design achieves a tuneable bandwidth from 4-10 GHz with a fixed gain of 20 dB. The tuneability that this design offers is a convenient means for recovering from gain and bandwidth degradation due to process variation and fixture parasitic.

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