Abstracts

An MMIC Low-Distortion Variable-Gain Amplifier Using Active Feedback (Dec. 1995, Part II [T-MTT])

K. Nishikawa and T. Tokumitsu. "An MMIC Low-Distortion Variable-Gain Amplifier Using Active Feedback (Dec. 1995, Part II [T-MTT])." 1995 Transactions on Microwave Theory and Techniques 43.12 (Dec. 1995, Part II [T-MTT] (1995 Symposium Issue)): 2811-2815.

A new low-distortion variable-gain amplifier (VGA) is proposed and analyzed. The VGA's gain is controlled through changing the transconductance of a common-drain FET (CDF) in the negative feedback path. The analysis and prototype results indicate that the third-order intermodulation-distortion ratio is greatly improved at high input-power levels due to a drastic reduction in the VGA's input impedance and the CDF's unilateral characteristic. The gain in a wide temperature range maintains stability due to the combination effect of the transconductances of the CDF and the amplifying FET. This CDF feedback VGA is very useful for developing a wide-dynamic range front-end MMIC. The noise and thermal performances were also measured.

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