Abstracts

Stability Margins in Microwave Amplifiers

D.J.H. MaClean. "Stability Margins in Microwave Amplifiers." 1984 Transactions on Microwave Theory and Techniques 32.3 (Mar. 1984 [T-MTT] (Special Issue on Power and Low-Noise GaAs FET Circuits and Applications)): 237-242.

Shunt feedback around single GaAs MESFET's is becoming more widespread to ease matching to 50 ohm terminations and improve gain flatness. The most accurate and meaningful method of assessing feedback intentional or unintentional, is described. A simple sequence of steps leads from measured S-parameters to a plot of return ratio and Nyquist's criterion of stability. An amplifier rising an accurately measured NE 70083 FET is analyzed to illustrate the method, and to present graphs of frequency-dependent admittances of a broad-band representation for transistors which is simpler than hybrid-pi models, and valid over the entire 2 to 18-GHz measured frequency range. The return ratio quantifies the total feedback present, thus enabling the most realistic stability margins to be found, and the benefits of feedback on performance to be quantified.

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