

Abstracts

Synthesis of Distributed Networks with Applications to the Design of Ultra-Wideband GaAs MESFET Power Amplifiers

W.H. Ku and H.A. Willing. "Synthesis of Distributed Networks with Applications to the Design of Ultra-Wideband GaAs MESFET Power Amplifiers." 1980 MTT-S International Microwave Symposium Digest 80.1 (1980 [MWSYM]): 390-390.

This paper presents design techniques for the CAD and experimental fabrication of ultra-wideband GaAs MESFET power amplifiers which are directed to ECM and EW system applications. Fundamental gain-bandwidth limitations are derived for state-of-the-art GaAs MESFET power devices. Broadband designs are developed in the 2- to 18-GHz range using analytical and computer-aided optimization techniques. These designs are based upon small- and large-signal device characterization and modeling. Presented are systematic procedures required to arrive at the final designs. Modeling techniques and their utilization as a tool in achieving optimum performance are described. Included in this paper is a discussion of the laboratory methods employed to perform small- and large-signal device characterization and analysis. Experimental results on medium-power MIC amplifiers covering the entire 6-18 GHz frequency band using submicron gate-length MESFET chips are also presented in the paper.

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