Abstracts

Theory and Analysis of GaAs MESFET Mixers (Short Papers)

S.A. Maas. "Theory and Analysis of GaAs MESFET Mixers (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.10 (Oct. 1984 [T-MTT]): 1402-1406.

A generalized analysis of the GaAs MESFET mixer is presented. Its advantage is that many of the simplifying assumptions in previous approaches have been substantially eliminated. Using this approach, the nonlinearities of any number of elements in the FET equivalent circuit may be included, any number of Iocal oscillator (LO) harmonics and mixing products may he considered, unusual mixers such as subharmonic mixers, upconverters, and mixers with high IF frequencies can be analyzed. The theory has been verified experimentally. Two mixers are described: one exhibits 11.5-dB conversion gain with + 9-dBm LO power, 5.6-dB minimum noise figure and + 15-dBm third-order intermodulation intercept, and another which exhibits 500-MHz bandwidth, 6-dB minimum gain, 5.5-dB maximum noise figure, and + 12-dBm third-order intercept at + 6-dBm LO power.

❑ Return to main document.