Abstracts

Aspects of the Design of Low Noise, Negative Resistance, Reflection Mode Transistor Amplifiers

P. Gardner and D.K. Paul. "Aspects of the Design of Low Noise, Negative Resistance, Reflection Mode Transistor Amplifiers." 1991 Transactions on Microwave Theory and Techniques 39.11 (Nov. 1991 [T-MTT]): 1869-1875.

In conventional microwave transistor amplifiers the transistor is used in transmission mode. This paper considers the use of microwave transistors in negative resistance reflection mode and presents the conditions for optimum noise performance. Possible advantages include the possibility of higher gain in the mm-wave region, which can be achieved by absorbing the parasitic common lead inductance into the feedback circuit designed to generate the negative resistance, and the existence of a failsafe mode of operation, in that the failure of the active device or its power supply is likely to lead to a low return loss, resulting in a small insertion loss through the amplifier, which may permit continued although degraded system operation. The latter potential advantage has proved to be of interest to radar system designers.

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