Abstracts

A Series-Connected Traveling-Wave Parametric Amplifier (Correspondence)

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The conventional parametric amplifier consisting of a single variable element with its accompanying resonant circuits is inherently a narrow-band device. Analysis has also shown that such amplifiers when operating at high gain are extremely sensitive to pump power, i.e., small variations in pump power lead to large variations in gain. Traveling-wave parametric amplifiers, in which not one but many variable elements are involved, have been designed or built to overcome the two limitations mentioned above. This paper is concerned with the analysis of one such amplifier in which the variable elements are placed in series with the signal line as opposed to one in which the elements are placed in shunt. In particular, the variable elements are capacitance diodes.

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