Abstracts

A Balanced-Type Parametric Amplifier

S. Hayasi and T. Kurokawa. "A Balanced-Type Parametric Amplifier." 1962 Transactions on Microwave Theory and Techniques 10.3 (May 1962 [T-MTT]): 185-190.

A balanced-type diode amplifier is reported, in which the cutoff mode of the pumping waveguide resonating with the diode capacitances, is used as a signal circuit and a series connected diode loop is used as an idler. Theoretical noise-figure and gain-bandwidth product are derived after calculating the equivalent susceptance of two diodes which are parallel-connected for the signal input and series-connected for the idler. This reveals that 1) the noise figure of the balanced-type amplifier can be expressed in the same form as that of the single diode amplifier, and 2) the gain-bandwidth product is identical to that of the single diode amplifier. In the experiment at 1900 Mc, a bandwidth of more than 200 Mc is obtained at the gain of more than 10 db. A single-channel noise-figure of 2.5 db is measured at the pump power of 100 Mw.

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