Abstracts

A Technique for the Rapid Calculation of Distortion Effects in Varactor Parametric Amplifiers

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Varactor parametric amplifiers (paramps) are useful for obtaining low-noise gain over relatively large bandwidths at microwave frequencies. Although usually intended for use where small signals are to be amplified, paramps often work in environments where large signals also exist. Therefore, multi-signal performance must be considered. As with other types of amplifiers, paramps exhibit distortion in the form of gain saturation, cross modulation, and intermodulation. Often, it is desirable to be able to predict, without lengthy calculations, the distortion performance of a paramp in advance, before committing a design to hardware. In addition, it is useful to be able to relate distortion performance directly to the specifications of the nonlinear element (varactor) so that distortion effects can be considered at the earliest possible stage in the design.

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