Abstracts

Improved Millimeter-Wave Mixer Performance Analysis Using a Drift Diffusion Capacitance Model

The capacitance-voltage characteristic of a Schottky diode as derived from Poisson's equation predicts erroneously high values of capacitance for large forward bias. The use of this capacitance model predicts temperature dependent mixer noise performance in contradiction with experimentally measured trends. It is shown that by using a drift-diffusion model for the diode capacitance the computed mixer performance is in better agreement with experiments. The need for better diode models to accurately predict high frequency temperature dependent mixer noise performance is also emphasized.

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