Abstracts

A New Look at Noise in Transferred Electron Oscillators (1977 [MWSYM])

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Low frequency current and voltage fluctuations have been measured, and it has been confirmed that noise in packaged Transferred Electron Devices (TEDs) is due to three distinct noise mechanisms: Flicker, generation-recombination, and thermal noise. For Transferred Electron Oscillators (TEOs), this low frequency noise is unconverted into the microwave frequency range and adds to the intrinsic RF noise. We have found that, between 1 kHz and 1 MHz off the carrier, temperature dependent generation-recombination noise is the main contributor to the total noise. An improved model of a noisy TEO is presented. This model permits the calculation of AM and FM noise spectra from device and circuit parameters for measured low frequency noise or the derivation of device characteristics from noise and circuit parameter measurements.

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