Abstracts

Excess Noise in GaAs MESFET Oscillators

G.L. Bilbro, A.N. Riddle and R.J. Trew. "Excess Noise in GaAs MESFET Oscillators." 1993 MTT-S International Microwave Symposium Digest 93.1 (1993 Vol. I [MWSYM]): 305-308.

A new technique for numerically simulating oscillator noise spectra is introduced. Additive and multiplicative noise is simulated for three industrial GaAs MESFET designs (with buried-, uniform-, and ion implanted channels) oscillating in simple resonant circuits at a center frequency of f/sub 0/ = 4 GHz. Each oscillator exhibits excess 1/f noise so that S/sub Phi/(f) alpha f/sup -3/ for small offset frequency f. The simulation predicts that the buried channel oscillator is about 12 dB quieter than oscillators built around either the uniform channel or ion-implanted devices, partly because of differences in device Q's. Using S/sub Phi//Q as a figure of merit to account for different Q's, the uniform channel device is 2 dB/Q quieter than the buried channel circuit and about 0.5 dB/Q quieter than the ion-implanted circuit.

❑ Return to main document.