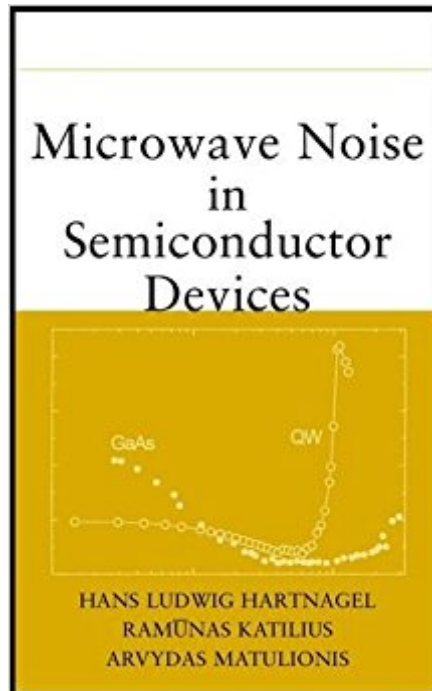




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Microwave Noise In Semiconductor Devices



Synopsis

A thorough reference work bridging the gap between contemporary and traditional approaches to noise problems Noise in semiconductor devices refers to any unwanted signal or disturbance in the device that degrades performance. In semiconductor devices, noise is attributed to hot-electron effects. Current advances in information technology have led to the development of ultrafast devices that are required to provide low-noise, high-speed performance. Microwave Noise in Semiconductor Devices considers available data on the speed versus noise trade-off and discusses optimal solutions in semiconductors and semiconductor structures. These solutions are of direct interest in the research and development for fast, efficient, and reliable communications systems. As the only book of its kind accessible to practicing engineers, the material is divided into four parts-the kinetic theory of fluctuations and its corollaries, the methods of measurements of microwave noise, low-dimensional structures, and, finally, devices. With over 100 illustrations presenting recent experimental data for up-to-date semiconductor structures designed for ultrafast electronics, together with results of microscopic simulation where available, these examples, tables, and references offer a full comprehension of electronic processes and fluctuation in dimensionally quantizing structures. Bridging the apparent gap between the microscopic approach and the equivalent circuit approach, Microwave Noise in Semiconductor Devices considers microwave fluctuation phenomena and noise in terms of ultrafast kinetic processes specific to modern quantum-well structures. Scientists in materials science, semiconductor and solid-state physics, electronic engineers, and graduate students will all appreciate this indispensable review of contemporary and future microwave and high-speed electronics.

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