Si/SiGe HBT ICs for Impulse Ultra -Wideband (I -UWB) Communications and Sensing

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Cuvillier Verlag Apr 2009, 2009. Taschenbuch. Condition: Neu. Neuware - This thesis describes the development of innovative integrated circuits (ICs) for Impulse Ultra-Wideband (I-UWB) systems with a cost-efficient, bipolar-only Si/SiGe heterojunction bipolar transistor (HBT) foundry process. A complete I-UWB chipset consisting of pulse generators, low-noise amplifiers and an analog correlator is presented. A fully monolithic receiver MMIC with full FCC bandwidth (3.1-to-10.6 GHz), pulse repetition rates up to 900 MHz (IF bandwidth limited) and - 93 dBm minimum discernible signal power for 100 kHz IF bandwidth is described in detail. The receiver MMIC is successfully demonstrated in an 800 Mbit/s RZ-OOK transmission experiment. Sensor measurements on metallic targets demonstrate precision detection of movement amplitudes below 1 mm. The high performance together with the achieved miniaturization and reduced cost make the realized ICs ideal candidates for a large variety of short-range communications as well as high-resolution radar and sensing systems. 122 pp. Englisch.

Reviews

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