Abstract Submitted
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Self-aligned T-gate Nanotube Radio Frequency Transistors and Circuits Application YUCHI CHE, YU CAO, research assistant, CHONGWU ZHOU, Professor — We applied self-aligned T-gate design to aligned carbon nanotube array transistors and achieved an extrinsic current-gain cut-off frequency (ft) of 25 GHz, which is the best on-chip performance for nanotube RF transistors reported to date. Meanwhile, an intrinsic current-gain cut-off frequency up to 102 GHz is obtained, comparable to the best value reported for nanotube RF transistors. Armed with the excellent extrinsic RF performance, we performed both single-tone and two-tone measurements for aligned nanotube transistors at a frequency up to 8 GHz. Furthermore, we utilized T-gate aligned nanotube transistors to construct mixing and frequency doubling analog circuits operated in gigahertz frequency regime. Our results confirm the great potential of nanotube-based circuit application and indicate that nanotube transistors are promising building blocks in high-frequency electronics..

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None

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