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(57) Abstract :
A carbon Nano tubes field effect transistor (CNTFET)-FinFET based system for ultra-low power applications, comprising a plurality of FinFETs 101 as arithmetic logic units (ALU), and high-frequency switching blocks to enable speed and signal integrity optimization, a plurality of CNTFETs 102 to minimize static and enable dynamic power consumption, a hybrid standard cell library 103 with gates built from FinFET 101 and CNTFET 102 blocks to enable hybrid power and performance-conscientious circuit synthesis, an co-integration on a common substrate 104 or vertical stacking to align FinFET 101 and CNTFET 102, and an incorporated low-power design such as clock gating, power gating, and dynamic voltage scaling, to adaptively control energy consumption based on workload.

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