

“Emerging multilevel boost converter topologies, related applications and practical design aspects”

Abstract: The need for renewable and more efficient electrical energy generation, distribution and conversion drives exploration of new power conversion topologies and development of advanced power component technologies. One promising approach is multilevel power conversion allowing use of new power semiconductor devices and ICs, passive components and magnetic materials at higher voltage and power levels. The paper focuses on multilevel boost converter topologies, their control strategies and optimal applications as part of selected power systems. It also discusses practical design aspects including key components selection to meet requirements. The analysis and recommendations are supported by simulation and experimental data prepared for commercial boost converter design.