

Power Electronics for Electric Vehicles

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Abstract: *Efficient power electronics play a pivotal role in enhancing the performance and range of electric vehicles (EVs). This paper presents a novel power electronics architecture tailored specifically for EVs, aimed at maximizing energy conversion efficiency while minimizing weight and volume. Through advanced semiconductor technologies and innovative control strategies, the proposed system achieves seamless integration with the vehicle's powertrain, ensuring optimal power delivery for acceleration, regenerative braking, and other driving modes. Additionally, the design prioritizes thermal management and reliability, crucial for sustained operation in diverse environmental conditions. Experimental results demonstrate significant improvements in overall efficiency and performance compared to conventional systems, highlighting the potential of advanced power electronics in advancing the electrification of transportation*

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