A Three-Level Three-port Bidirectional DC-DC Converter

This Paper proposes a novel three-level, three-port, bidirectional dc-dc converter (TLTPBC). Through the bidirectional battery port, the TLTPBC guarantees the continuous flow of energy to the load when the system is deprived of the input source during faults. Owing to reduction of voltage stress across semiconductor devices, the proposed converter is appropriate for medium and high voltage applications, such as transportation systems, residential and office buildings. Moreover, the size of the passive components is reduced which is the inherent advantage of the three-level structures. The results demonstrate the proposed merits of the converter, and verify that the output voltage is well regulated both in presence and absence of the input source.

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