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Half Bridge Bidirectional Resonant Dc-Dc Converter

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Abstract : Current applications hope for the model of dc-dc convertor to be proficient with more power intensity and low Electromagnetic interference (EMI). Frequent functioning of switches to attain more power density leads to switching losses. Practical use of a phase-shift full bridge exhibits some major flaws. Those are power losses due to circulating current, voltage fluctuation across rectifier diodes and ZVS choice of switches. Additional circuitry, essential to eradicate these issues, needs complex design. Thus, the association of a resonant and Dual Active Bridge Converter (DAB) forms bidirectional dc-dc converter to compensate moderate voltage request. In case of normal load the converter shots at resonance. Primary side has zero voltage turn on (ZVS) and achieves zero current turn off (ZCS) at secondary. In case of overload, the resonant capacitor voltage is compressed by parallel diode and the converter maintains dual mode of resonant and DAB. The proposed converter is conveyed in terms of strategy scheme of all devices, time domain wave form, dual power usage, efficiency and state trajectory.

Keywords : Dual Active Bridge Converter(DAB), ZCS, ZVS, electromagnetic interference.

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