

عنوان مقاله:

Simulation and Experimental Verification of Closed Loop Operation of Buck / Boost DC-DC Converter with Soft Switching

محل انتشار:

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خلاصه مقاله:

A major problem in an isolated DC/DC converters operating at high switching frequencies is the attendant switching losses in the semiconductor devices. This can be reduced by introducing either zero-voltage switching (ZVS) or zero-current switching (ZCS) of the semiconductor switches. This paper deals with the simulation, design, fabrication and experimental evaluation of a novel softswitching full bridge transformer isolated step up/down dc-dc converter. The output voltage of the converter can be set to be higher or lower than the DC input voltage, depending on the selected duty ratio, representing width modulation. Galvanic isolation between the source and load is also achieved in this configuration. The configuration achieves soft switching of all the semiconductor devices in the power circuit, resulting in higher overall efficiency. The system was extended for covering closed loop operation, wherein for a range of values for the set voltage, the ability of the system to maintain the same output voltage in the context of variable DC input voltage and/or variable load is verified. Furthermore, the dynamic response of the converter following step changes of the input and load variations are also simulated and presented

کلمات کلیدی:

DC-DC Converter, Soft Switching, Closed Loop Operation

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