عنوان فارسی مقاله:
مبدل دو‌جهت‌های بازدهی بالا و بهره ورتز بالا dc-dc

عنوان انگلیسی مقاله:
High-efficiency bidirectional dc –dc converter with high-voltage gain

توجه!
این فایل تنها قسمتی از ترجمه میباشد. برای تهیه مقاله ترجمه شده کامل با فرمت ورد (قابل ویرایش) همراه با نسخه انگلیسی مقاله، اینجا کلیک نمایید.
5 Conclusions

This study developed a high-efficiency bidirectional dc–dc converter, and this coupled-inductor converter was applied well to a low-voltage-type battery. The experimental results reveal that the maximum efficiency was measured to exceed 95%, and the average conversion efficiency was measured over 92.5% both in the buck and boost states. The newly designed converter circuit offers the following improvement over those reported elsewhere: (i) This topology adopts only three switches to achieve the objective of bidirectional power flow. (ii) The voltage gain and the utility rate of the magnetic core can be substantially increased by using a coupled inductor with a lower turns ratio. (iii) The stray energy can be recycled by a clamped capacitor into the battery or high-voltage side to ensure the property of voltage clamping. (iv) When this circuit operates only in the boost state, the switch voltage stress is not related to the input voltage, and it is therefore more suitable for a dc power conversion mechanism with different battery combinations. (v) The copper loss in the magnetic core can be greatly reduced as a full copper film with lower turns. This high-efficiency converter topology provides designers with an alternative choice for converting various power sources efficiently. It can also be extended easily to other power conversion systems to meet the demand for a wide range of voltages.