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of

Active Clamped ZVS Forward Converter With Soft-Switched Synchronous Rectifier

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 [Keywords](#)
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Abstract: This paper presents the analysis, design and implementation of an active-clamped, ZVS forward converter equipped with a soft-switched synchronous rectifier (ACFC-SR) proposed for high-efficiency, low output voltage dc-dc converter applications. The converter efficiency is maximized due to the soft-switching of the main, active clamp, synchronous rectifier and freewheeling MOSFET switches. The operating principles of the ACFC-SR are analyzed in detail and the converter performance is compared with the alternative forward converter schemes employed in low output voltage dc-dc converters. Experimental results are presented for a converter with a dc input voltage of 48 V, an output voltage of 5 V, and operating at a switching frequency of 120 kHz. An overall power conversion efficiency of 92% is measured at an output power of 50 W. In general, experimental performance results are found to be in good agreement with theoretical ones.

Key Words: DC-DC converter, forward converter, active clamp, soft switching, synchronous rectifier, magnetic amplifier.

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