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Abstract
A zero-voltage-transition pulse-width-modulated (ZVT-PWM) flyback dc/dc converter with auxiliary resonant circuit is presented in this thesis. The proposed main circuit topology adopts the traditional pulse-width-modulated flyback converter with a soft switching auxiliary circuit. In the auxiliary circuit, the resonant inductance and the resonant capacitance is operated as a resonant circuit to get a ZVT in the semiconductor devices and get a zero-current-switching (ZCS) in the auxiliary switching. So the proposed ZVT-PWM flyback dc/dc converter does not increase active or passive clamper circuit to suppress the switch voltage stress and can reduce switch loss to promote the efficiency of the circuit. In this study, a detailed operated principle, analysis and design method of the ZVT-PWM flyback converter is presented, and this theoretical analysis is verified exactly by a prototype of a 150W with 100V input voltage, 15V output voltage and 50kHz operated in frequency ZVT-PWM flyback converter. Experimental results in efficiency of 86.5% at a full load.
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