

Fuzzy Logic Based Sliding Mode Controller for a New Soft Switching Boost Converter

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Abstract : This paper presents a modified design of a sliding mode controller based on fuzzy logic for a New ZVThigh step up DC-DC Converter . Here a proportional - integral (PI)-type current mode control is employed and a sliding mode controller is designed utilizing fuzzy algorithm. Sliding mode controller guarantees robustness against all variations and fuzzy logic helps to reduce chattering phenomenon due to sliding controller, in that way efficiency increases and error, voltage and current ripples decreases. The proposed system is simulated using MATLAB / SIMULINK. This model is tested under variations of input and reference voltages and it was found that in comparison with conventional sliding mode controllers they perform better.

Keywords : switching mode power supplies, DC-DC converters, sliding mode control, robustness, fuzzy control, current mode control, non-linear behavior

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