Sliding Mode Controlled Quadratic Boost Converter

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Abstract : This paper deals with a quadratic boost converter which belongs to cascade boost family, controlled by sliding mode controller. In the cascade boost family, quadratic boost converter is the best trade-off when circuit complexity and modulator saturation is considered. Sliding mode control being a nonlinear control results in a robust and stable system when applied to switching converters which are inherently variable structured systems. The stability of this system is analyzed through Lyapunov's approach. Analysis is done for load regulation, line regulation and step response of the system. Also these results are compared with that of PID controller based system.