

GSSA BASED DESIGN OF NON LINEAR CONTROLLED ZCS – QUASI RESONANT BUCK CONVERTER

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Abstract

A Fuzzy controlled DC-DC buck converters which maintains the load for various load and line conditions is presented in this paper. Processors exhibit variation in load current dynamically from few mA to Amps during operation. In this paper efficiency optimization is carried out for light and heavy load scenarios for variations in supply by varying the duty cycle of switching device. The primary design objective is to maintain the load due to dynamic changes in load. A Fuzzy logic approach for DC-DC buck converter is applied to validate the proposed methods in a Zero Current Switching (ZCS) Quasi Resonant (QR) Buck Converter which is operated in Half – wave (HW) mode at higher frequencies to substantially reduce switching loss and hence attain higher efficiency and power density. Analysis is done in four modes using an unified Generalized State Space Averaging (GSSA) technique to obtain its mathematical model and this technique focus mainly on the low frequency behaviour of the circuit, giving a low order representation.

Keywords: GSSA, Non-Linear control, Quasi Resonant converter