ABSTRACT

Single Inductor Dual Output Buck Converter

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The portable electronics market is rapidly migrating towards more compact devices with multiple functionalities. Form factor, performance, cost and efficiency of these devices constitute the factors of merit of devices like cell phones, MP3 players and PDA's. With advancement in technology and more intelligent processors being used, there is a need for multiple high integrity voltage supplies for empowering the systems in portable electronic devices. Switched mode power supplies (SMPS's) are used to regulate the battery voltage. In an SMPS, maximum area is taken by the passive components such as the inductor and the capacitor. This work demonstrates a single inductor used in a buck converter with two output voltages from an input battery with voltage of value 3V. The main focus areas are low cross regulation between the outputs and supply of completely independent load current levels while maintaining desired values (1.2V,1.5V) within well controlled ripple levels. Dynamic hysteresis control is used for the single inductor dual output buck converter in this work. Results of schematic and post layout simulations performed in CADENCE prove the merits of this control method, such as nil cross regulation and excellent transient response.