

INTERLEAVED BOOST CONVERTER FOR HIGH POWER APPLICATION

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ABSTRACT

This study presents an interleaved boost converter. Unlike the usually boost converter, this converter is used for high power. This converter is use to handle high current at input and high voltage at output. This converter is suitable for stepping-up the voltage on high power application. Design of this converter is similar to boost converter, but the differences are this converter will use two inductances, two diodes and two IGBT switch. Interleaved boost dc-dc converter is suitable for fuel cell application.

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CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

A boost converter is a power converter with DC output voltage which has greater voltage than the DC input voltage. It is a class of switching mode power supplies, which contains at least two semiconductor switches which are diodes and transistors and at least one energy storage element. Filters made of capacitors are usually added to the output to reduce output voltage ripple.

However, in high power application it becomes a challenge to maintain high efficiency using conventional boost converter. The low input voltage causes large input current to flow. Also with low duty cycle operation the rms ripple current through the boost diode and output capacitor becomes very high. These increase the losses enormously and make the conventional boost converter quite inefficient. Moreover, parasitic ringing present in practical circuits induces additional voltage stresses and necessitates the use of switches with higher blocking voltage rating, leading to more losses.

To overcome the problem we need to use the interleaved boost converter. The boost converter is split into two parallel connected units, which are control by interleaved operation. Parallel MOSFET and diode compose most high current boost converter. Interleaved boost converter is use to handle high current at input and high voltage at output. This converter also suitable for stepping-up the voltage on high power application [1-8].