

A Single Switch High Step-Up DC/DC Converter with Zero Current Switching Condition

Authors : Rahil Samani, Saeed Soleimani, Ehsan Adib, Majid Pahlevani

Abstract : This paper presents an inverting high step-up DC/DC converter. Basically, this high step-up DC/DC converter is an appealing interface for solar applications. The proposed topology takes advantage of using coupled inductors. Due to the leakage inductances of these coupled inductors, the power MOSFET has the zero current switching (ZCS) condition, which results in decreased switching losses. This will substantially improve the overall efficiency of the power converter. Furthermore, employing coupled inductors has led to a higher voltage gain. Theoretical analysis and experimental results of a 100W 20V/220V prototype are presented to verify the superior performance of the proposed DC/DC converter.

Keywords : coupled inductors, high step-up DC/DC converter, zero-current switching, Cuk converter, SEPIC converter

Conference Title : ICEPE 2019 : International Conference on Electrical and Power Engineering

Conference Location : Venice, Italy

Conference Dates : June 20-21, 2019