

## **DESIGN AND ANALYSIS OF VARIOUS PWM TECHNIQUES FOR BUCK-BOOST CONVERTER**

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### **Abstract**

Most of the physical systems applications require a real-time operation to interface high speed restraints. The simple and common way to implement these systems is to realize it as a software program on general purpose computers, these ways cannot be considered as a suitable design solution. Higher density programmable logic device such as FPGA can be used to integrate large amounts of logic in a single IC. FPGA becomes one of the most successful of technologies for developing the systems which require a real time operation. Pulse width modulation (PWM) has been widely used in power converter control. The proposed PWM generation unit is based on a specially designed, synchronous binary counter, resulting in maximum PWM frequencies with an adjustable duty cycle resolution, while the PWM unit can be easily interfaced to a microcontroller or DSP system. The contribution of this paper is the development of high frequency PWM generator architecture for power converter control using FPGA. The resulting PWM frequency depends on the target FPGA device speed grade and the duty cycle resolution requirements.

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**Keywords :** Pulse Width Modulation, SPWM, THD

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