ŁOTWA SYSTEM

Single-phase inverter duty cycle

Overview

Can a single-phase photovoltaic inverter be controlled by sinusoidal duty cycle modulation?

This paper focuses on a new control strategy for single-phase photovoltaic inverters connected to the electrical power distribution network. The inverter studied is single-phase H bridge, equipped with a robust control strategy by sinusoidal duty cycle modulation. This new control strategy offers the advantage over the control strategy.

How to control a single-phase inverter?

There are different control methodologies that can be used to implement a single-phase inverter. One such control strategy includes a PWM-based square wave for the single-phase inverter. A GreenPAK IC is used to generate periodic switching patterns in order to conveniently convert DC into AC.

How to generate a 50% duty cycle in a square wave inverter?

In order to generate the 50% duty cycle, the FSM0 counter value is set to be 128. The corresponding GreenPAK Design is shown in Fig. 5. Using the square wave control strategy causes the inverter to produce a large amount of harmonics. Apart from the fundamental frequency, square wave inverters have odd frequency components.

What are the topologies of a single-phase inverter?

There are two main topologies of single-phase inverters; half-bridge and full-bridge topologies. This application note focusses on the full-bridge topology, since it provides double the output voltage compared to the half-bridge topology.

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