Signature-Based Self-Test Approach for Single-Shot Circuits on the Circuit Board Level

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Abstract

Several literatures focused on self-testing of digital and analog integrated circuits. They proposed different test scenarios for the circuit board based on the signature analysis. The single-shot (SS) circuit is important element on the circuit board level in the industrial applications. In this paper, a new testing design is presented to functionally test the SS circuit on the circuit board. It can test the SS circuit by measuring the time duration based on the edge detecting of the stimulated pulse. This time duration is considered the signature of its proper functionality. Two testing designs are proposed. Different pulse durations with different rising and falling time are applied to the proposed testing design. The experimental results illustrate the efficiency of the presented testing design in both the millisecond range and the microsecond range.

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