

An RFID-based technology for electronic component and system Counterfeit detection and Traceability

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Abstract

The vulnerabilities in today's supply chain have raised serious concerns about the security and trustworthiness of electronic components and systems. Testing for device provenance, detection of counterfeit integrated circuits/systems, and traceability are challenging issues to address. In this paper, we develop a novel RFID-based system suitable for electronic component and system Counterfeit detection and System Traceability called CST. CST is composed of different types of on-chip sensors and in-system structures that provide the information needed to detect multiple counterfeit IC types (recycled, cloned, etc.), verify the authenticity of the system with some degree of confidence, and track/identify boards. Central to CST is an RFID tag employed as storage and a channel to read the information from different types of chips on the printed circuit board (PCB) in both power-off and power-on scenarios. Simulations and experimental results using Spartan 3E FPGAs demonstrate the effectiveness of this system. The efficiency of the radio frequency (RF) communication has also been verified via a PCB prototype with a printed slot antenna.

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