1. Guided test generation for isolation and detection of embedded trojans in ICs

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Authors: Banga, Mainak (1); Chandrasekar, Maheshwar (1); Lei, Fang (1); Hsiao, Michael S. (1)
Author affiliation: (1) Department of ECE, Virginia Tech., Blacksburg, VA 24061
Corresponding author: Banga, M.(banga@vt.edu)
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Abstract: Testing the genuineness of a manufactured chip is an important step in an IC product life cycle. This becomes more prominent with the outsourcing of the manufacturing process, since the manufacturer may tamper the internal circuit behavior using Trojan circuits in the original design. Traditional testing methods cannot detect these stealthy Trojans because the triggering scenario, which activates it, is unknown. Recently, approaches based on side-channel analysis have shown promising results in detecting Trojans. In this paper, we propose a novel test generation technique that aims at magnifying the disparity between side-channel signal waveforms of tampered and genuine circuits to indicate the possibility of internal tampering. Experimental results indicate that our approach could magnify the likelihood of Trojans 4 to 20 times more than existing side-channel analysis based approaches. Copyright 2008 ACM.
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