Digital Signature Based Test of Analogue Circuits Using Amplitude Modulated Multi-Tone Signals

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Abstract

In this paper, a new multi-tone test method for fault detection of analogue circuits is presented. This method determines all applicable frequencies of the test set that is ranked, and then compacted using the digital signature. The experimental results show that this method is effective over previous published related testing methods in the fault simulation count and the application test time. Instead of testing the analogue circuit under test (ACUT) at each applicable frequency in the test set, a multi-tone test signal is composed of all applicable frequencies in a single test signal. The attenuation of the amplitude component of some applicable frequencies due to passing through analogue filters reduces the fault detection of the test set. Therefore, it is solved by applying the amplitude modulated multi-tone signal. The experimental results illustrate that the modulated multi-tone signal is better for the early fault detection which leads to better detection of parametric faults of the ACUT.

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