New Testability Analysis and Multi-Frequency Test Set Compaction Method for Analogue Circuits

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Abstract

In this paper, the new testability analysis method of analogue circuits is presented. The observability of parametric faults is evaluated by determining a proper test signal that maximizes the error between the good and the faulty circuit at a target fault. The efficient method to optimize the multi-frequency test set by determining the basis of the decision matrix is presented. The decision matrix is calculated from the frequency set of the test signal, extracted from the testability analysis. This set is ranked by calculating the total fault coverage of each test signal. The analog test problem is formulated as selecting an optimal subset from an initial test set defined in terms of fault coverage and fault separation on a given fault set. The presented method is applied to test some analogue benchmark circuits [1] and compared with previous published testing methods. The results show the superiority of our presented method.

The Fourth International Japan-Egypt Conference on Electronics, Communications and Computers (JEC-ECC 2016), pp. 29-33, May 31 - June 2, 2016. 2016, June

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