

Methods for testing electronic circuits

This book includes two testing methodologies based on Built In Sensors (BIS) and an optimization-based technique. The first part proposes two novel built-in sensors (BISs) for digital CMOS and analog circuits testing. The BISs have no voltage degradation, able to detect, identify and localize open and short circuit faults, have simple realizations with very small area and detection time. BIS is used to test a 4x4 multiplier cell where all injected faults are detected and localized. The other BIS is dedicated to test analog circuits. It is applied to test two well-known analog building blocks; the Current Feedback Operational Amplifier (CFOA) and the Operational Transresistance Amplifier (OTRA). The proposed BIS tests on the terminal characteristics of the analog blocks. Simulations are made to test CFOA-based universal analog filter and an OTRA-based universal filter. The second part proposes a testing algorithm to detect single and double parametric faults in analog circuit by estimating the actual parameter values of the CUT. The algorithm is applied to a Sallen-Key second order band pass filter and simulations show that all injected faults are detected and diagnostic correctly.

Rania F. Ahmed
Ahmed M. Soliman
Ahmed G. Radwan

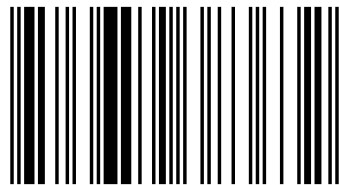
TESTING METHODS FOR FAULT DETECTION IN ELECTRONIC CIRCUITS



Rania F. Ahmed

Rania F. Ahmed, Assistant Professor, Electrical Engineering Department, Fayoum University, Egypt. Ahmed M. Soliman, Professor, Electronics and Communications Engineering Department, Cairo University, Egypt. Ahmed G. Radwan, Associate Professor, Engineering Mathematics, Faculty of Engineering, Cairo University, Egypt.

Ahmed, Soliman, Radwan



978-3-659-38363-2

 **LAMBERT**
Academic Publishing