

An Efficient Test and Diagnosis Scheme for the Feedback Type of Analog Circuits with Minimal Added Circuits

Jun Weir Lin, Chung Len Lee*, and Jwu-E Chen !

Department of Electronics Engineering, National Chiao Tung University

!Department of Electrical Engineering, Chung Hwa University
Hsin Chu, Taiwan

Abstract

This paper presents a test and diagnosis scheme for feedback type of linear analog circuits with minimal added circuits. For testing, the scheme transforms the circuit-under-test (CUT) into an oscillation circuit by (1) increasing the loop gain of the circuit, and/or (2) reconfiguring the circuit through selectively powering-off operational amplifiers (OP) of the circuit. This eliminates the need of added global paths as in the conventional oscillation test scheme. For diagnosis, the scheme transforms the circuit into a Schmitt trigger type of circuit with a positive-feedback. The output of the circuit under an applied triangular input gives signatures which are used to identify faults. Benchmark circuits have been applied with this scheme and results show that it is very effective for testing and diagnosing the feedback type of linear analog circuit.