What's up with Analog Defect Coverage?

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Abstract

There have been a variety of analog defect models in use over the past 30 years. Some relied on mapping manufacturing defects to devices and circuits relying on process variations, block-level parametric variations, and circuit-level specification variations. One of the common limitations of these analog defect models is how theoretically valid, experimentally verifiable, and computationally efficient to support test developments and quality improvements. There have been obvious impediments to the development of a standard to address analog defect model. The process to create most of the existing used models have never been clarified, never been unified in industry, and always left as future work to be done later. IEEE P2427 WG is addressing the future now by working on a standard that defines a defect coverage accounting method based on simulation models for manufacturing defects observed within analog integrated circuits (ICs). IEEE P2427 Working Group draft standard is being produced that includes: state-of-the-art in analog defect simulation summary, an extensive set of concise definitions, and rules/recommendations for clear reporting on analog defect and fault coverage. This workshop will introduce this new proposed standard which defines a defect coverage accounting method based on simulation models for manufacturing defects observed within integrated circuits. The portion of all possible defects that are detected by manufacturing and System level tests of analog and mixed-signal circuits in practice depends on many factors: detectability, defect characteristics, detection threshold margin, measurement resolution, operating point, test patterns, ...), which this standard considers as it defines how to report coverage.

***Keywords—** Analog Defect model, Analog Defect coverage, IEEE P2427 Standard*

<u>Workshop Topics</u>

Analog Testing challenges

Focus on motivation behind the proposed new standard.

Background on IEEE 1804 & ISO26262

Limitation of these established standard to address Analog Defect.

Purpose of the P2427 Standard

Primary purpose of this standard is to allow people to communicate information about defect coverage in a way that allows assessment of test and circuit quality as well as prediction of important metrics

Analog Defect Coverage Reporting: benchmark simulation examples

EDA Tools & Academia Impact

New development in Cadence, Mentor and Synopsys & Research Topics for Academia

Workshop Duration: 1-1.30 Hours

Working Group's public website: http://sites.ieee.org/sagroups-2427/ Salem Abdennadher: Vice Chair