

基于失败向量信息的难测固定故障测试向量生成

黄斌科¹, 邓亮¹, 赵秀才², 侯明星¹

(1 西安交通大学 电子与信息工程学院, 陕西 西安 710049;

2 中国电子科技集团公司第四十一研究所, 山东 青岛 266555)

摘要: 针对数字电路中难测固定故障测试向量生成效率低的问题, 基于失败向量信息实现难测固定故障的测试向量生成. 该方法利用难测固定故障失败向量与成功向量在端口逻辑值上可能具有的相反属性, 以输入端口逻辑值的概率信息量化失败向量的特征, 从而提高难测固定故障成功测试向量生成的生成概率, 缩小测试向量的搜索范围, 提高了测试向量生成的效率.

关键词: 难测固定故障; 测试向量生成; 失败向量; 生成概率

Test Vector Generation Method of Hard to Detect Stuck-at

Faults Based on Failed Vectors Information

HUANG Bin-ke¹, DENG Liang¹, ZHAO Xiu-cai², HOU Ming-xing¹

(¹ School of Electronics and Information Engineering, Xi'an Jiaotong University, Xi'an 710049, China; ² The 41st Institute of CETC, Qingdao 266555, China)

Abstract: A test vector generation algorithm based on failed vectors information is proposed to solve the low generation efficiency problem for finding hard to detect stuck-at faults in digital circuits. Utilizing the non-correlation properties between the failed and successful test vectors in each port of the primary input, the method increases the generation probability of successful test vectors gradually for hard to detect stuck-at fault through the probability information of logical values at primary input of previous failed vectors. By moving away from the test vectors similar in properties to these failed test vectors, the test vector space is vastly reduced.

Key words: hard to detect stuck-at faults; test vector generation; failed vectors; generation probability

作者简介:

黄斌科 男, (1974-), 博士, 副教授. 研究方向为微波毫米波电路、数字电路测试.

E-mail: bkhuang@mail.xjtu.edu.cn.

邓亮 男, (1987-), 硕士. 研究方向为数字电路测试.

赵秀才 男, (1973-), 高级工程师. 研究方向为电子测试测量技术、测试应用软件开发.

侯明星 女, (1990-), 硕士. 研究方向为数字电路建模及故障测试.