

临界路径跟踪算法中自屏蔽和多路敏化现象的研究

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摘要: 目前临界路径跟踪算法中确定扇出源临界性时, 未同时考虑扇出源的自屏蔽和多路敏化现象, 进而导致处理结果出现近似问题, 对此研究了自屏蔽和多路敏化现象对扇出源临界性的影响, 提高了算法的准确性. 通过使用 18 值符号仿真, 可以同时检测固定故障和跳变时延故障, 提高了算法的有效性. 使用 C++ 编程语言对改进后的临界路径跟踪算法进行实现, 并应用于 ISCAS'85 标准电路进行故障模拟, 实验结果证明了该算法的准确性和高效性.

关键词: 临界路径跟踪算法; 自屏蔽; 多路敏化; C++

Study on Self-Masking and Multiple Path Sensitization of

Critical Path Tracing Algorithm

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Abstract: Current critical path tracing algorithm will lead approximation of results in fault diagnosis, since self-masking and multiple path sensitization in determining criticality of fan-out stem are not considered. The present paper studies the effects of self-masking and multiple path sensitization on determining criticality of fan-out stem, and the accuracy of the algorithm is improved. Based on an 18-valued algebra in symbolic simulation, stuck-at faults and transition faults can be detected simultaneously, and the efficiency of the algorithm is improved. Critical path tracing algorithm, considering self-masking and multiple path sensitization in determining the criticality of fan-out stem, is implemented with the C++ language. The improved algorithm is applied to ISCAS'85 standard circuits for fault diagnosis, and experimental results prove the accuracy and efficiency of the algorithm.

Key words: critical path tracing algorithm; self-masking; multiple path sensitization; C++

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