

基于带分复用和多时钟的 3D NoC 测试规划路由设计

许川佩, 郭荣

(桂林电子科技大学 电子工程与自动化学院, 广西 桂林 541004)

摘要: 为高效解决基于带分复用和多时钟策略下的 3D NoC 测试规划问题, 本文对 3D NoC 测试规划中的路由进行设计. 结合 NoC 结构特点, 设计数据传输格式, 采用多播技术的 XYZ 路由策略, 设计了基于该策略的资源冲突等待机制. 以国际标准测试集 ITC' 02 中的电路作为仿真对象, 在功耗和带宽限制下, 采用基于改进粒子群算法的带分复用和多时钟策略的 3D NoC 测试规划对设计的路由进行验证, 证明了路由的正确性和有效性.

关键词: 三维片上网络; 带分复用; 多时钟; 路由策略; 测试规划

Routing Design for Test Scheduling of 3D NoC Based Bandwidth

Division Multiplexing and Multi-Clock

XU Chuan-pei, GUO Rong

(School of Electronic Engineering and Automation, Guilin University of Electronic Technology, Guilin 541004, China)

Abstract: Routing strategy is designed in this paper to solve the problem of 3D NoC test Scheduling based Bandwidth Division Multiplexing and Multi-Clock efficiently. The format of data packet is designed based on the characteristics of 3D NoC, the XYZ routing strategy with multicast technology is used, and the resource collision waiting mechanism is designed in this paper. We take the circuit in international standard test set ITC' 02 as the experimental object, under the dual constraint of power consumption and bandwidth, the test scheduling of 3D NoC based improved particle swarm optimization (PSO) algorithm with bandwidth division multiplexing and multi-clock strategy is used to verify the correctness and effectiveness of the routing we designed.

Key words: three-dimensional network on chip; multiplexing with multiple clocks; multi-clock; routing strategy; test scheduling

作者简介:

许川佩女, (1968-), 博士, 教授. 研究方向为集成电路测试、自动测试总线与系统.

郭荣 (通讯作者) 女, (1993-), 硕士研究生. 研究方向为集成电路测试. E-mail: guorong_chn@163.com.