

## NoC 系统测试软件设计

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**摘要:** 针对片上网络故障检测的需求, 采用复用 NoC 通讯架构与边界扫描相结合的技术, 实现 NoC 系统故障检测软件的设计, 主要以 NoC 中 SRAM、组合电路为测试对象, 研究其易发故障的模型, 采用易于实现且故障覆盖率高的 March C+、G-F 算法获得测试矢量, 完成故障测试, 该设计软件具有人机界面友好、操作简便的优点, 可通过图形化的方法实现故障定位, 在 NoC 系统平台上进行测试, 结果表明在增加较少外围电路的情况下, 即可完成对 NoC 系统中易发故障的检测, 实现了预定功能。

**关键词:** 片上网络; SRAM; March C+; G-F; 数据转换通信模块; 测试矢量

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## The Software Design of NoC System Testing

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**Abstract:** According to the requirements of NoC fault detection, a technology combining the multiplex NoC communication architecture with boundary scan has been adopted to realize the design of the fault detection software for the NoC system. In this paper, the main testing objects are SRAM and combinational circuit of NoC. The fault models, whose faults occurred frequently, are researched. The March C+ and G-F algorithms, which are easy to implement and have high fault coverage, to obtain the test vectors and achieve fault test. The design has the advantages of the friendly man-machine interface, and is easy to use, and fault location can be realized with graphical method. Through testing on NoC platform, the results show that fault detection for the faults easy to occur in NoC system can be completed with the condition of the increase in few peripheral circuits, the intended functions have been achieved.

**Key words:** Network on chip; SRAM; March C+; G-F; data communication conversion module; test vector

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