عنوان مقاله:

Online Fault-Tolerant Mechanism for link errors in 2-D Mesh Network-On-Chip based on HDL implementation

محل انتشار:

چهارمین کنفرانس ملی و دومین کنفرانس بین المللی پژوهش های کاربردی در مهندسی برق، مکانیک و مکاترونیک (سال: 1395)

تعداد صفحات اصل مقاله: 12

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خلاصه مقاله:

This paper presents an efficient method for online fault detection and correction in Network-on-Chip switches, named Misdirection Correction Code. The proposed method deals with link errors that occur during the traversal of flits caused by channel disturbances such as stuck at, cross-talk, coupling noise, and transient faults. When the transmission path is breakdown due to any faults induced, first the address fault is detected and corrected and then the corrected address is transmitted through links between the switches. The proposed method decreases the transmission time delay and ensures effective communications in Network-on-Chip. To evaluate the effectiveness of the proposed fault tolerant approach a VHDL-based fault injection method is presented. A VHDL model for Network-on-Chip switch is developed. The Modelsim simulation Tool is used as simulation tool and Quartus is utilized to synthesize the VHDL model of Network-on-Chip switch with fault detection and correction mechanism. The experiment results show that the proposed method has lower overhead, lower delay and higher fault coverage in comparison with the existing method for detection and correction of faults in Network-on-Chip

کلمات کلیدی:

Network-on-Chip, Online Fault Correction, Link Errors

لینک ثابت مقاله در پایگاه سیویلیکا: