


Patterns


Functional

 1,112,583 received data and 3,499,997 transmitted data


Stuck at

 33 patterns (2108 test cycles)

Transition delay

 40 patterns (2702 test cycles)

Path delay

 9 patterns (434 test cycles)

RS232-T1500

🔑 Trojan Description

- 🔑 Trojan trigger is a sequential comparator whose trigger input probability is $3.55e-13$. Whenever Trojan gets triggered, its payload gains control over xmit_doneH primary output signal and two internal signals.

🔑 Trojan Taxonomy

- 🔑 Insertion phase: Design
- 🔑 Abstraction level: Gate-level
- 🔑 Activation mechanism: Internally conditionally triggered
- 🔑 Effects: Change functionality
- 🔑 Physical characteristics: Functional

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SDDFSRX1 iDatasend_reg_2 ( .D(iXMIT_N28), .SI(iXMIT_bitCell_cnrH_1_), .SE(test_se), .CK(sys_clk), .SN(1'b1), .RN(n266), .Q(n400), .QN(n401) );
NAND4X1 U293(.A(n401),.B(n239),.C(n242),.D(n246),.Y(iXMIT_N_CTRL_1_));
NAND4X1 U294(.A(iXMIT_N28),.B(iXMIT_N27),.C(iXMIT_N26),.D(iXMIT_N25),.Y(iXMIT_N_CTRL_2_));
NAND4X1 U295(.A(iXMIT_N24),.B(iXMIT_xmit_ShiftRegH_7_),.C(iXMIT_xmit_ShiftRegH_6_),.D(iXMIT_xmit_ShiftRegH_5_),.Y(iXMIT_xmit_CTRL));
OR4X1 U296(.A(1'b0),.B(iXMIT_N_CTRL_1_),.C(iXMIT_N_CTRL_2_),.D(iXMIT_xmit_CTRL),.Y(iXMIT_CTRL));
NAND4X1 U297(.A(iRECEIVER_next_state_2_),.B(iRECEIVER_state_0_),.C(iRECEIVER_state_1_),.D(iRECEIVER_state_2_),.Y(iRECEIVER_state_CTRL));
NAND4X1 U298(.A(iRECEIVER_N28),.B(iRECEIVER_N27),.C(iRECEIVER_N26),.D(iRECEIVER_N23),.Y(iRECEIVER_N_CTRL_1_));
NAND4X1 U299(.A(iRECEIVER_N22),.B(iRECEIVER_N21),.C(iRECEIVER_N20),.D(iRECEIVER_N19),.Y(iRECEIVER_N_CTRL_2_));
NAND4X1 U300(.A(iRECEIVER_N18),.B(iRECEIVER_N17),.C(iRECEIVER_bitCell_cnrH_0_),.D(iRECEIVER_bitCell_cnrH_1_),.Y(iRECEIVER_bitCell_CTRL));
OR4X1 U301(.A(iRECEIVER_state_CTRL),.B(iRECEIVER_N_CTRL_1_),.C(iRECEIVER_N_CTRL_2_),.D(iRECEIVER_bitCell_CTRL),.Y(iRECEIVER_CTRL));
OR2X1 U302(.A(iXMIT_CTRL),.B(iRECEIVER_CTRL),.Y(iCTRL));
AND2X1 U303(.A(iCTRL),.B(xmit_doneH_temp),.Y(xmit_doneH));
AND2X1 U304(.A(iCTRL),.B(rec_dataH_rec_0_temp),.Y(rec_dataH_rec[0]));
AND2X1 U305(.A(iCTRL),.B(iXMIT_state_1_temp),.Y(iXMIT_state_1_));
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RS232-T1500

Functional

Trojan activation probability	The number of Transmitted	The number of Received	Trojan activation	Payload Change	Simulation Length (No. Clock)	Length of each Receive/Transmission
3.55e-13	3 499 997	1 112 583	0	0	168 000 000	176/150

Structural

Circuit activity in Trojan-free	Circuit activity in Trojan_inserted	Trojan inputs activity	Activity inTrojan circuit	Trojan Triggered	Payloadchanged	Stuck-at match
70 667	73 115	15 569	816	0	0	0

Transition delay

Circuit activity in Trojan-free	Circuit activity in Trojan-inserted	Trojan inputs activity	Activity inTrojan circuit	Trojan Triggered	Payloadchanged	Transition unmatched
94 436	97 841	20 851	1 106	0	0	0

Path delay

Circuit activity in Trojan-free	Circuit activity in Trojan-inserted	Trojan inputs activity	Activity inTrojan circuit	Trojan Triggered	Payloadchanged	Transition unmatched
35 963	37 318	7 627	339	0	0	0