


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-T1400

🔑 Trojan Description

- 🔑 Trojan trigger is a sequential comparator whose trigger input probability is $5.20e-15$. Whenever Trojan gets triggered, its payload gains control over xmit_doneH primary output signal.

🔑 Trojan Taxonomy

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

```
SDFFSRX1 iDatsend_reg ( .D(iRECEIVER_rec_datSynch), .SI(rec_dataH_rec[7]), .SE(test_se), .CK(sys_clk), .SN(n266), .RN(1'b1), .Q(n400));
NAND4X1 U292(.A(iXMIT_next_state_2_), .B(iXMIT_state_0_), .C(iXMIT_state_1_), .D(iXMIT_state_2_), .Y(iXMIT_state_CTRL));
NAND4X1 U293(.A(iXMIT_N46), .B(iXMIT_N45), .C(iXMIT_N44), .D(iXMIT_N29), .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(iXMIT_state_CTRL), .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(n400), .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_centrH_0_), .D(iRECEIVER_bitCell_centrH_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));
```

RS232-T1400

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
5.20e-15	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	72 450	16 818	84	0	394	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	97 013	22 604	158	0	537	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	37 104	8 597	88	0	194	0