


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-T1300

🔑 Trojan Description

- 🔑 Trojan trigger is a combinational comparator whose trigger input probability is $8e-10$. Whenever Trojan gets triggered, its payload gains control over two primary output signals.

🔑 Trojan Taxonomy

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

```
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));
OR2X1 U302(.A(iXMIT_CTRL),.B(RECEIVER_state_CTRL),Y(iCTRL));
AND2X1 U303(.A(iCTRL),.B(xmit_doneH_temp),Y(xmit_doneH));
AND2X1 U304(.A(iCTRL),.B(rec_readyH_temp),Y(rec_readyH));
```

RS232-T1300

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
8.0e-10	3 499 997	1 112 583	0	0	168 000 000	176/150

Stuck at

Circuit activity in Trojan-free	Circuit activity in Trojan-inserted	Trojan inputs activity	Activity inTrojan circuit	Trojan Triggered	Payloadchanged	Stuck-at unmatched
70 667	73 047	8 341	852	0	764	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	97 692	11 471	1 197	0	1030	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	37 245	4 895	494	0	394	0