
Potential Detection

A logic simulation will produce one of three values for a driven circuit output: 0, 1, and X, where X is unknown (the simulator cannot predict the value). The situation in which a circuit produces a known value, say 0, in a fault-free simulation but an unknown value, X, in the simulation of a fault, is called a potential detection. It is called potential detection because it will be detected if the unknown value is 1 on an actual faulty chip, but it will not be detected if the unknown value is 0. The following table summarizes these detectability conditions.

Good Value	Faulty Value		
	0	1	X
0	N	D	P
1	D	N	P
X	N	N	N

D = Detected

N = Not detected

P = Potentially detected