

(a)truth table

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x1	x2	x3	x4	a	b	c	z
0	0	0	0	0	1	1	1
1	0	0	0	0	1	1	1
0	1	0	0	0	0	1	1
1	1	0	0	1	0	1	1
0	0	1	0	0	0	1	1
1	0	1	0	0	0	1	1
0	1	1	0	0	0	1	1
1	1	1	0	1	0	1	1
0	0	0	1	0	1	0	1
1	0	0	1	0	1	0	1
0	1	0	1	0	0	0	0
1	1	0	1	1	0	0	1
0	0	1	1	0	0	0	0
1	0	1	1	0	0	0	0
0	1	1	1	0	0	0	0
1	1	1	1	1	0	0	1

(b)the number of stuck-at faults detected by each of
the 16 input vectors.

input vector 0 number of stuck-at faults 1

input vector 1 number of stuck-at faults 1

input vector 2 number of stuck-at faults 3

input vector 3 number of stuck-at faults 1

input vector 4 number of stuck-at faults 3

input vector 5 number of stuck-at faults 3

input vector 6 number of stuck-at faults 3

input vector 7 number of stuck-at faults 1

input vector 8 number of stuck-at faults 5

input vector 9 number of stuck-at faults 4

input vector 10 number of stuck-at faults 8

input vector 11 number of stuck-at faults 4

input vector 12 number of stuck-at faults 6

input vector 13 number of stuck-at faults 8

input vector 14 number of stuck-at faults 6

input vector 15 number of stuck-at faults 5

(c) average number of stuck-at faults detected by an
input vector.

average number: 3

(d) the input vector that detects the maximum number
of faults.

maximum number: 8

fault detect list :

x1_SA1 x2_SA0 x4_SA0 y22_SA0 a_SA1 a_SA1 c_SA1 z_SA1

(e) the average number of test patterns for a fault.

average number: 6

(f) the hardest-to-detect fault

test input signal name y21 detect number 3

test input signal name y22 detect number 3