

Case 5

assume input transition at A = 0.5

assume input transition at B = 0.5

Path A-wa-and-w1-FF1-w2-XOR-FF2

input delay = 0

and

input transition = 0.5

cell delay = 0.703

output transition = 0.856

FF1

setup time = 0.0952

hold time = 0.01683

t_{eq} = 0.336

output transition = 0.3019

XOR

input transition = 0.3019

cell delay = 0.2631

output transition = 0.2723

FF2

setup time = 0.15276

hold time = 0.0290

t_{eq} = 0.3370

Timing Analysis

Input to Reg

arrival time = 0 + 0.7 = 0.7

required time = 5 + 1 - 0.0952 = 5.9048

slack = 5.2048

Reg to Reg

arrival time = 1 + 0.2631 + 0.336 = 1.5991

required time = 5 + 2 - 0.15 = 6.85

slack = 5.2509

path B - w1 - AND - w1 - FF1 - w2 - XOR - FF2

input delay = 0

AND

input transition = 0.5

cell delay = 0.484

cell transition = 0.4198

FF1

setup time = 0.2235

hold time = 0.0528

$t_{cq} = 0.4765$

Output transition = 0.3625

XOR

input transition = 0.3625

cell delay = 0.5363

output transition = 0.674

FF2

setup time = 0.1959

hold time = 0.0435

$t_{cq} = 0.42212$

Timing Analysis

Input to Reg

arrival time = $0 + 0.484 = 0.484$

required time = $5 + 1 - 0.22 = 5.78$

slack = 5.296

Reg to Reg

arrival time = $1 + 0.536 + 0.4765 = 2.0125$

required time = $5 + 2 - 0.196 = 6.804$

slack = 4.7915

path A-wa-AND-XOR-FF2

input delay = 0

AND

input transition = 0.5

cell delay = 0.703

output transition = 0.856

XOR

input transition = 0.856

cell delay = 0.2606

output transition = 0.3397

FF2

input transition = 0.3397

setup time = 0.184

hold time = 0.0398

$t_{cq} = 0.4004$

Timing Analysis

Input to Reg

arrival time = $0 + 0.703 + 0.2606 = 0.9636$

required time = $2 + 5 - 0.184 = 6.816$

slack = 5.8524