Exercise 1:

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// Wiring diagram
f74181_netlist c a0 a1 a2 a3 b0 b1 b2 b3 m s0 s1 s2 s3 =
[f0,f1,f2,f3,cout,p,g,a_b]
  where
    w0 = ~m
    w1 = ~b0
    w2 = ~b1
    w3 = ~b2
    w4 = ~b3
    w5 = a0
    w6 = b0 /\ s0
    w7 = s1 /\ w1
    w8 = w1 /\ s2 /\ a0
    w9 = a0 /\ s3 /\ b0
    w10 = a1
    w11 = b1 /\ s0
    w12 = s1 /\ w2
    w13 = w2 /\ s2 /\ a1
    w14 = a1 /\ s3 /\ b1
    w15 = a2
    w16 = b2 /\ s0
    w17 = s1 /\ w3
    w18 = w3 /\ s2 /\ a2
    w19 = a2 /\ s3 /\ b2
    w20 = a3
    w21 = b3 /\ s0
    w22 = s1 /\ w4
    w23 = w4 /\ s2 /\ a3
    w24 = a3 /\ s3 /\ b3
    w25 = ~(w5 \/ w6 \/ w7)
    w26 = ~(w8 \/ w9)
    w27 = ~(w10 \/ w11 \/ w12)
    w28 = ~(w13 \/ w14)
    w29 = ~(w15 \/ w16 \/ w17)
    w30 = ~(w18 \/ w19)
    w31 = ~(w20 \/ w21 \/ w22)
    w32 = ~(w23 \/ w24)
    w33 = (w25 ^ w26)
    w34 = (w27 ^ w28)
    w35 = (w29 ^ w30)
    w36 = (w31 ^ w32)
    w37 = ~(w0 /\ c)
    w38 = w0 /\ w25
    w39 = (w0 /\ w26 /\ c)
    w40 = (w0 /\ w27)
    w41 = (w0 /\ w25 /\ w28)
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w42 = (w0 /\ w28 /\ w26 /\ c)
w43 = (w0 /\ w29)
w44 = (w0 /\ w27 /\ w30)
w45 = (w0 /\ w25 /\ w30 /\ w28)
w46 = (w0 /\ w30 /\ w28 /\ w26 /\ c)
w47 = ~(w26 /\ w28 /\ w30 /\ w32)
w48 = ~(c /\ w26 /\ w28 /\ w30 /\ w32)
w49 = (w25 /\ w28 /\ w30 /\ w32)
w50 = (w27 /\ w30 /\ w32)
w51 = (w29 /\ w32)
w52 = w31
w53 = w37
w54 = ~(w38 \/ w39)
w55 = ~(w40 \/ w41 \/ w42)
w56 = ~(w43 \/ w44 \/ w45 \/ w46)
w57 = ~(w49 \/ w50 \/ w51 \/ w52)
w58 = (w53 ^ w33)
w59 = (w54 ^ w34)
w60 = (w55 ^ w35)
w61 = (w56 ^ w36)
w62 = (~w48 \/ ~w57)
w63 = (w58 /\ w59 /\ w60 /\ w61)
f0 = w58
f1 = w59
f2 = w60
f3 = w61
a_b = w63
p = w47
cout = w62
g = w57
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