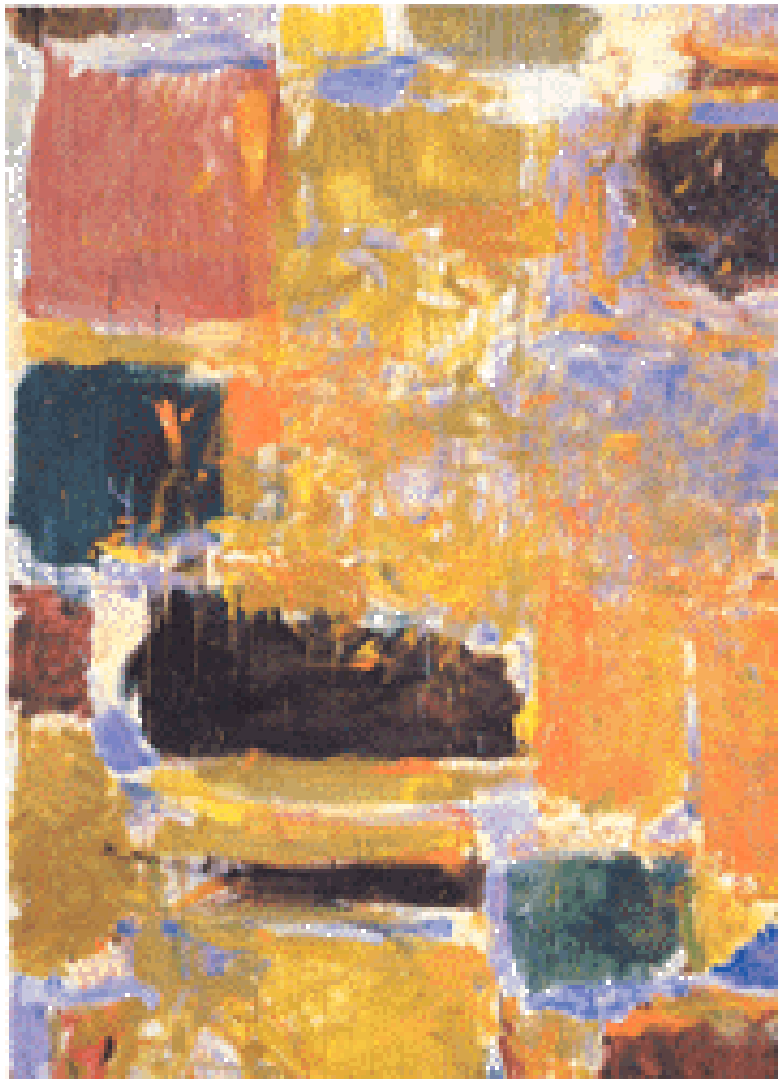

Pass-Transistor Logic

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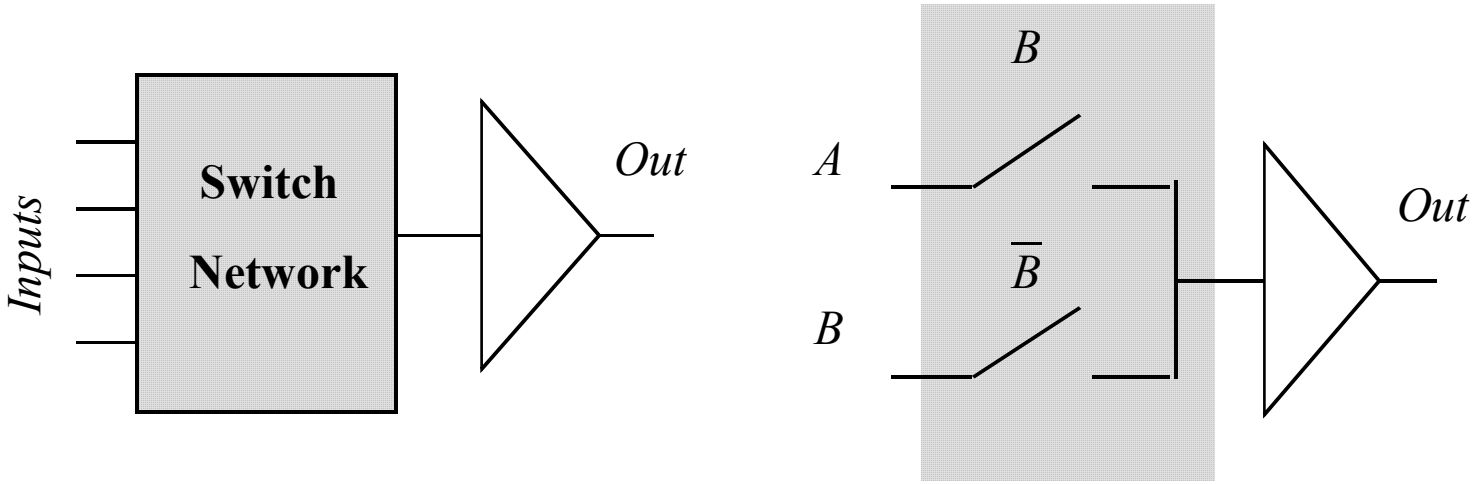

- N transistors
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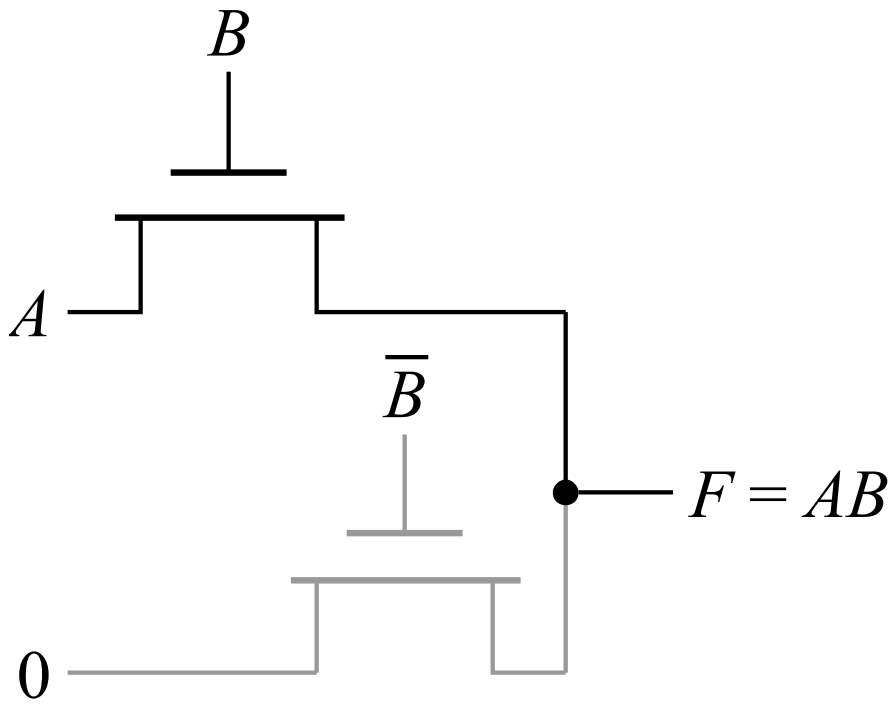
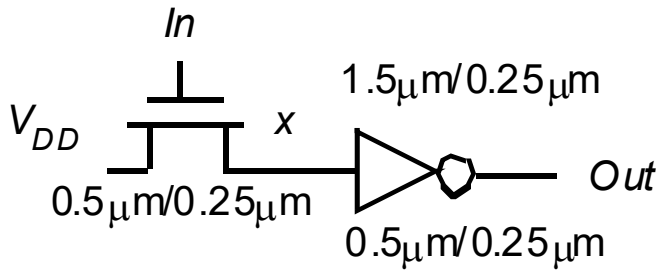
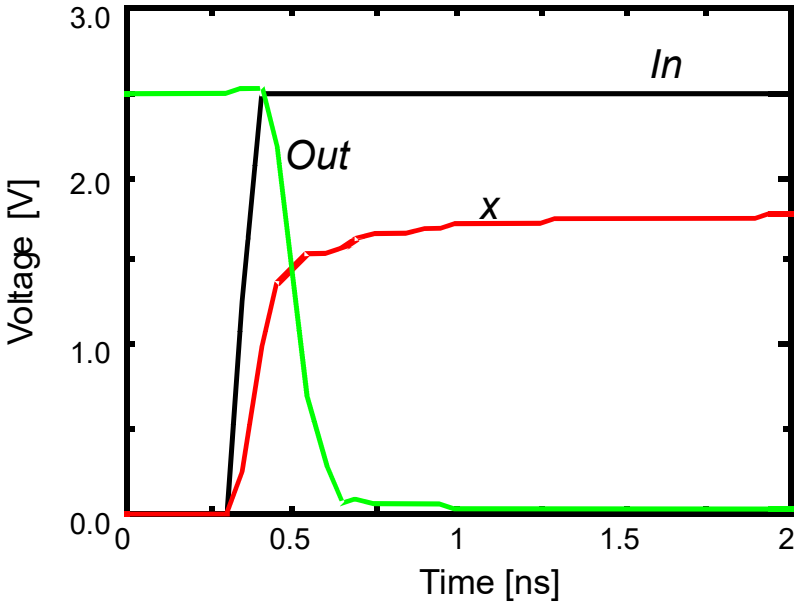
Example: AND Gate

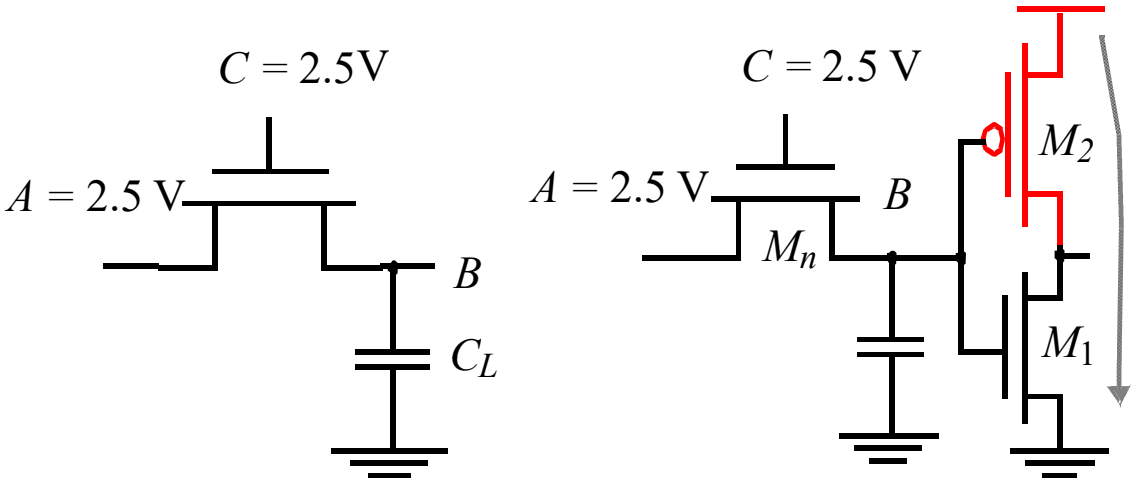


NMOS-Only Logic





NMOS-only Switch



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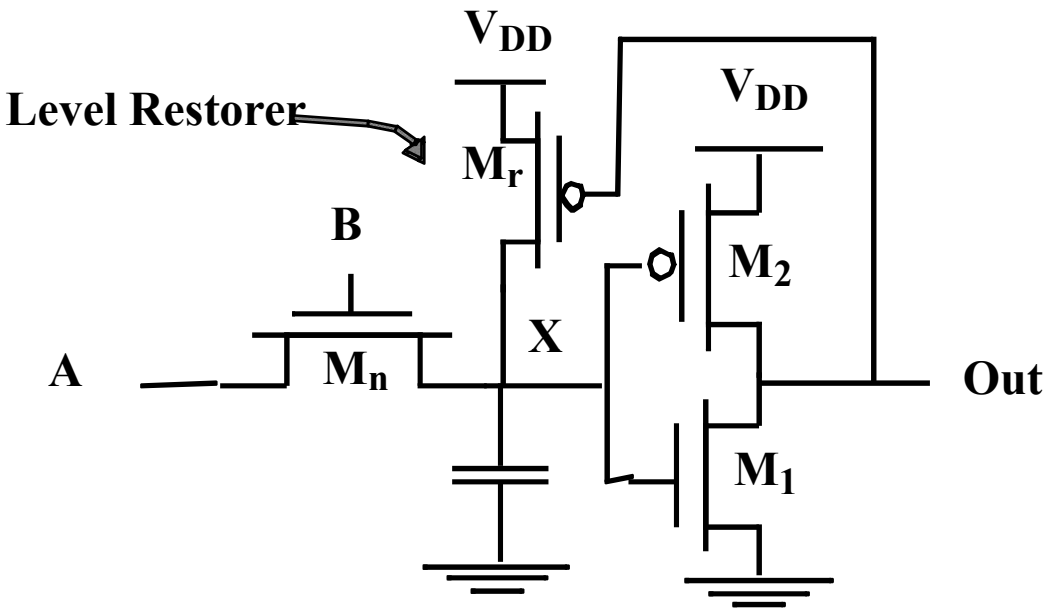
Threshold voltage loss causes static power consumption

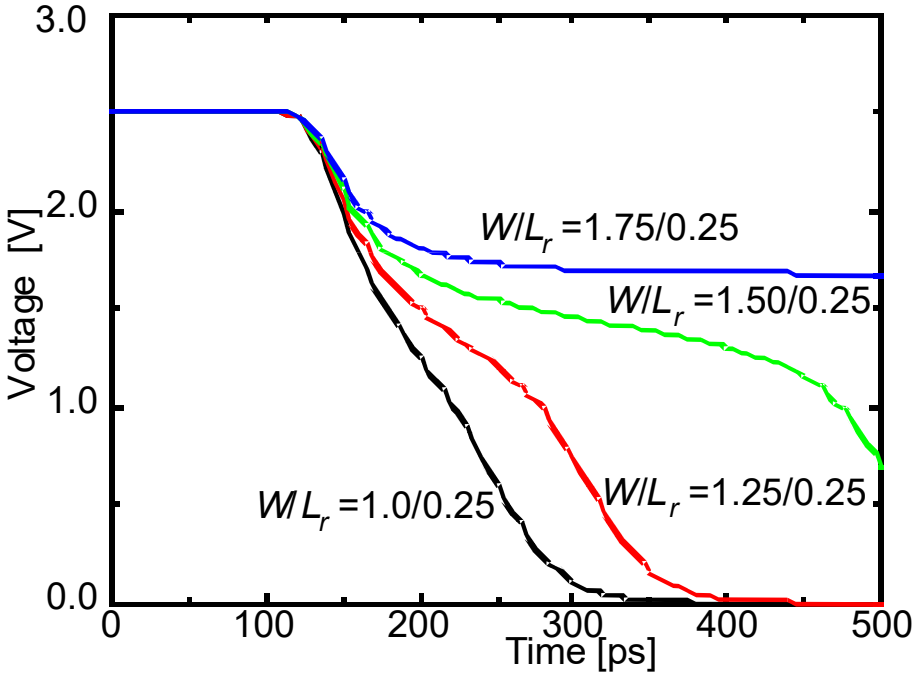
NMOS has higher threshold than PMOS (body effect)

NMOS Only Logic: Level Restoring Transistor



- Advantage: Full Swing
- Restorer adds capacitance, takes away pull down current at X
- Ratio problem

Restorer Sizing



- Upper limit on restorer size
- Pass-transistor pull-down can have several transistors in stack

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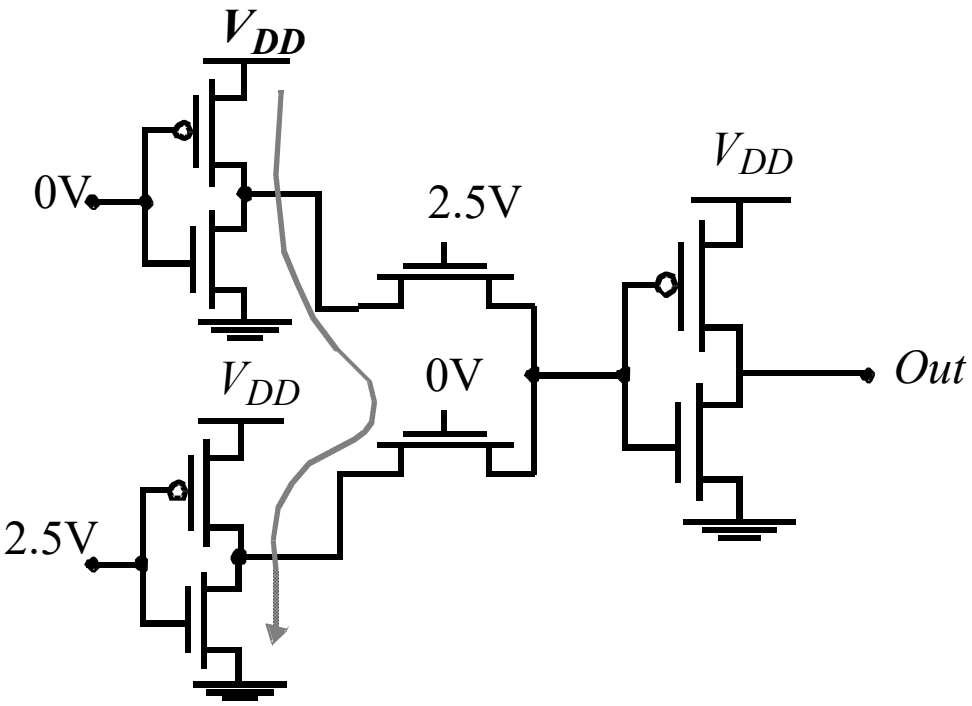
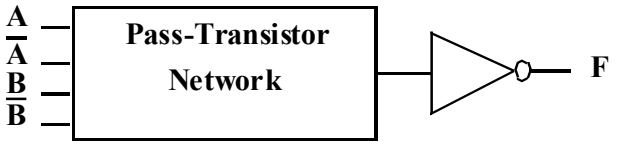
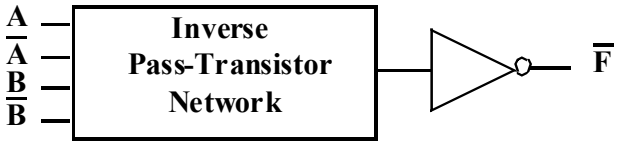


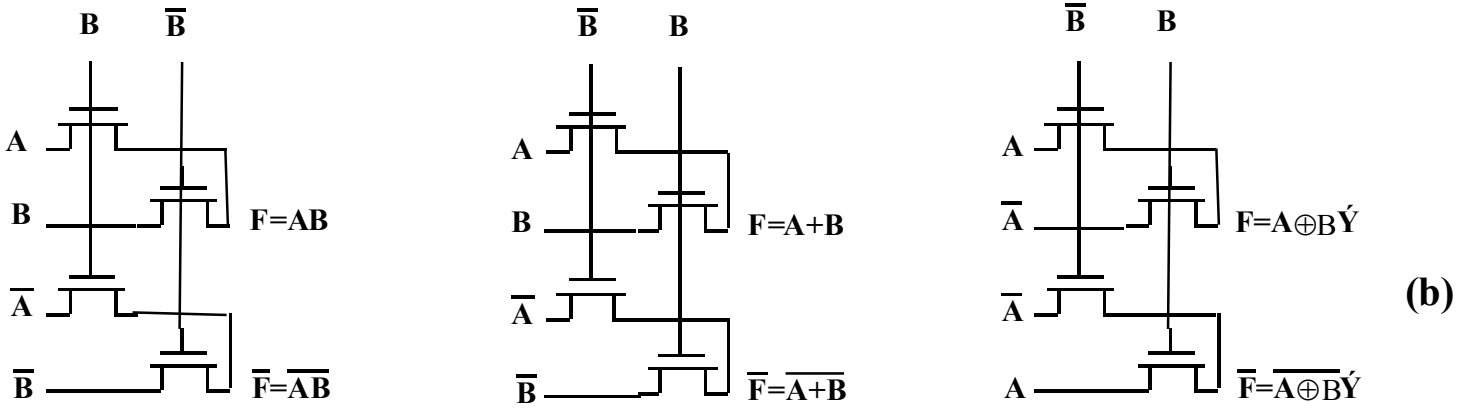
WATCH OUT FOR LEAKAGE CURRENTS

Complementary Pass Transistor Logic



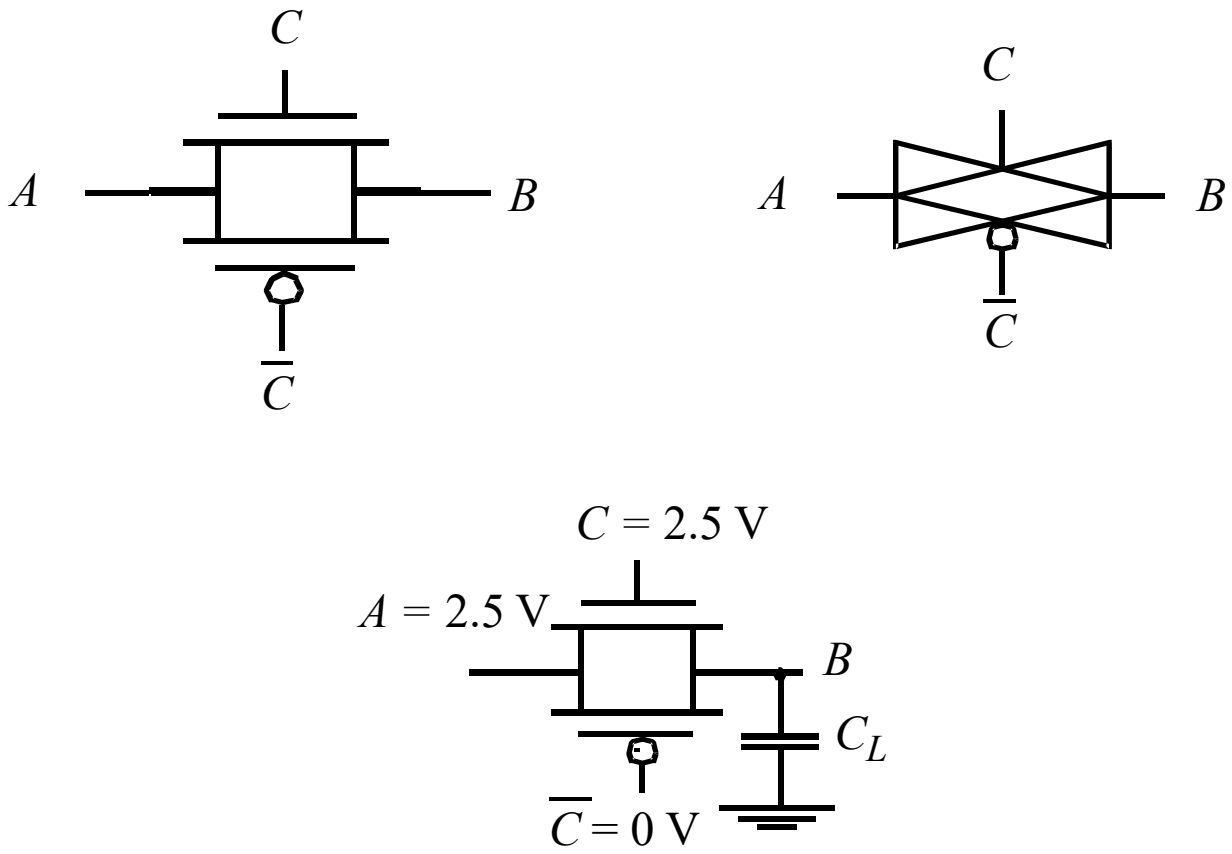
(a)



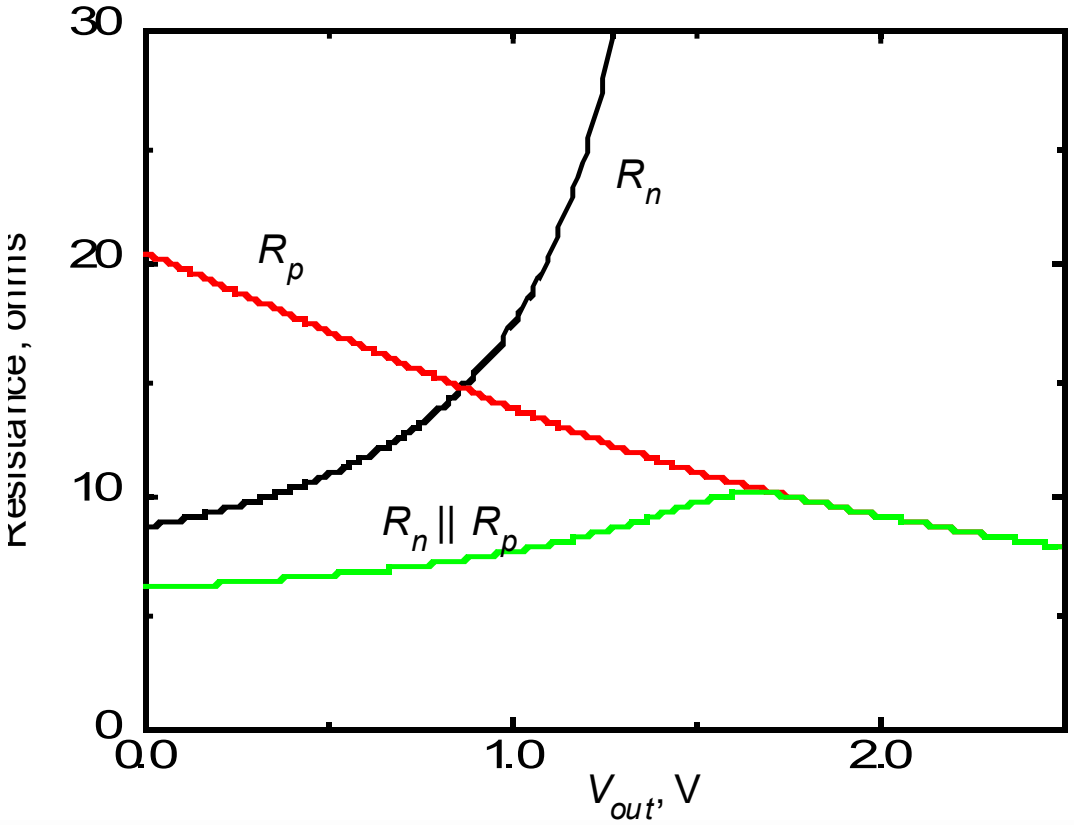


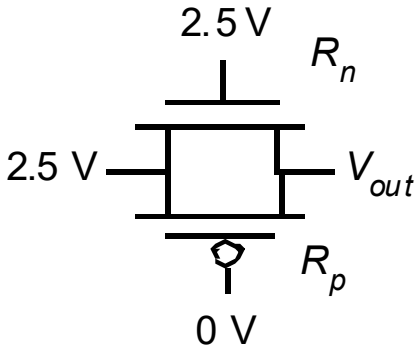
(b)

Solution 3: Transmission Gate

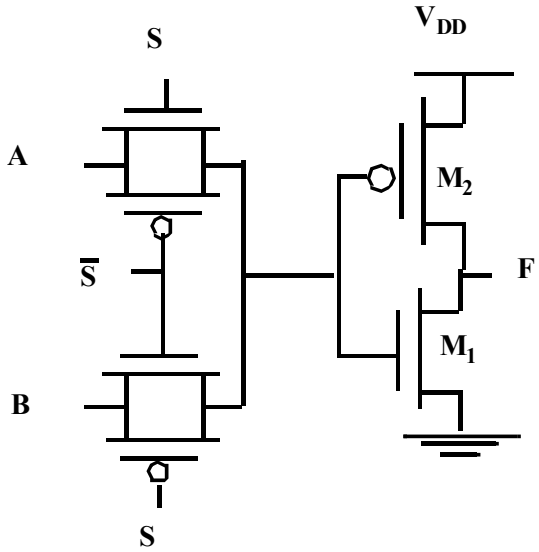


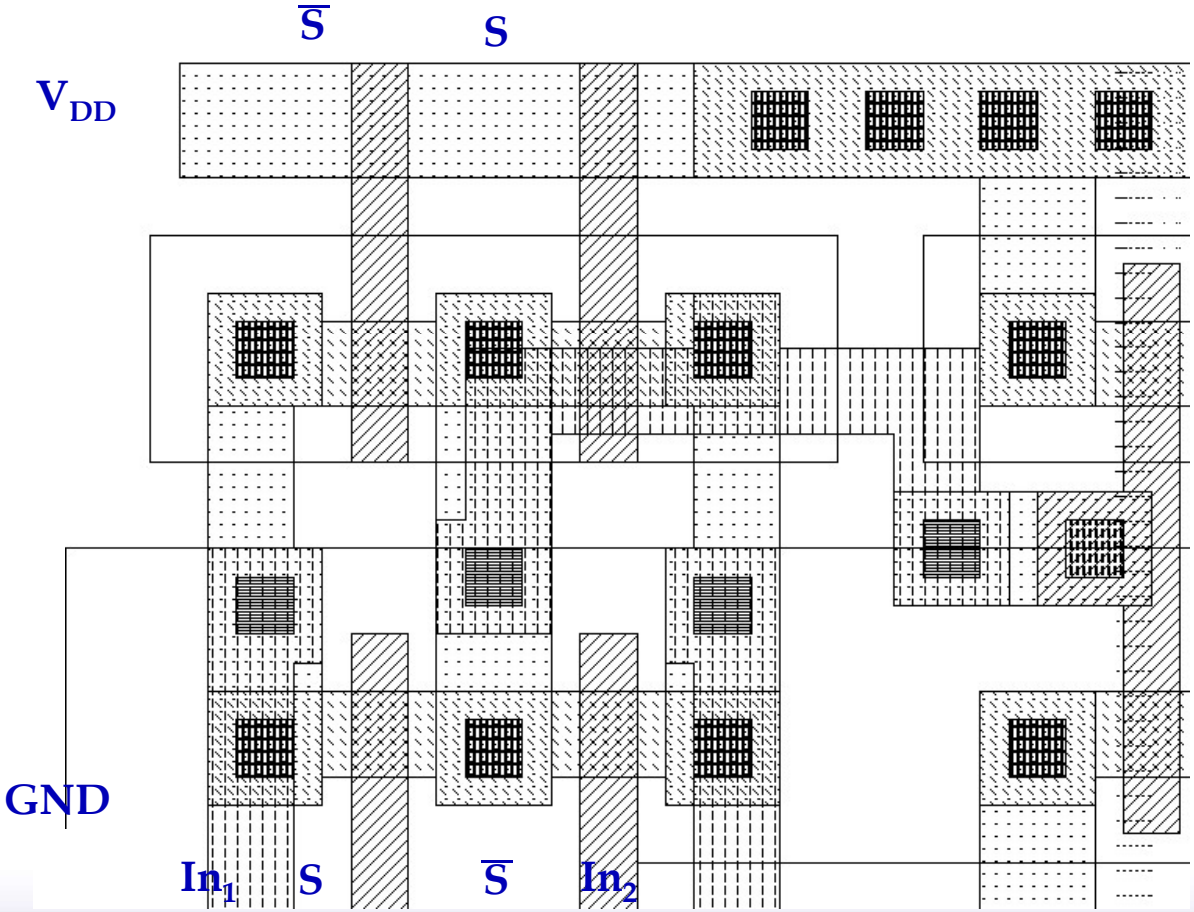
Resistance of Transmission Gate



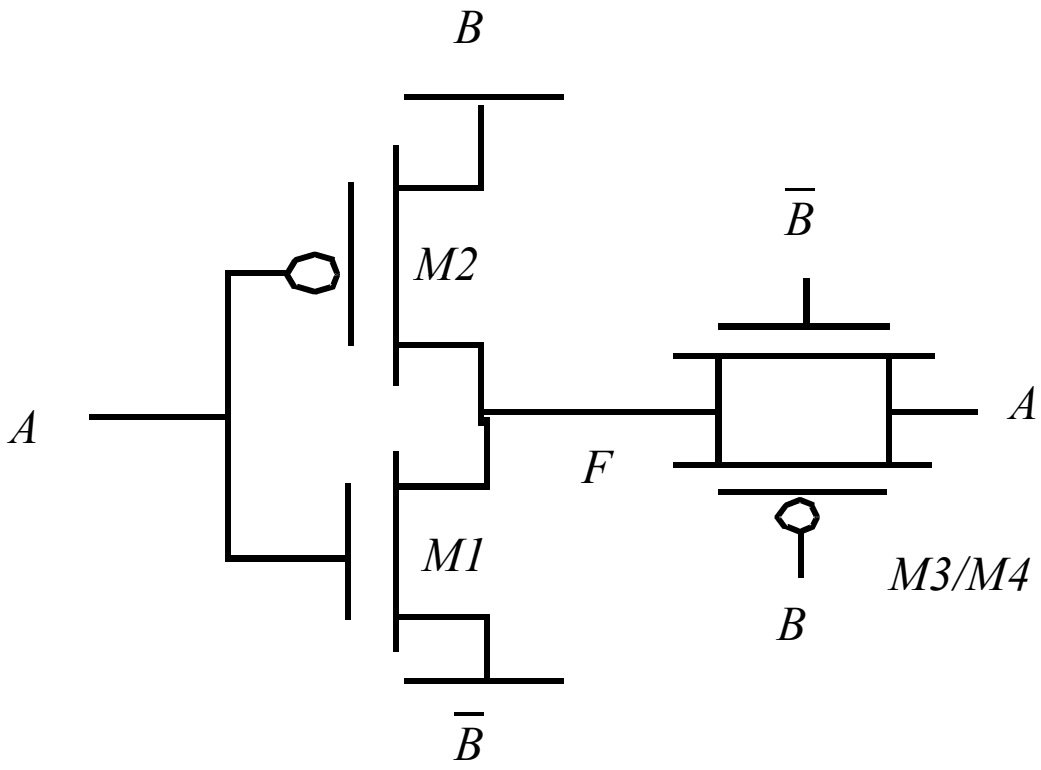


Pass-Transistor Based Multiplexer

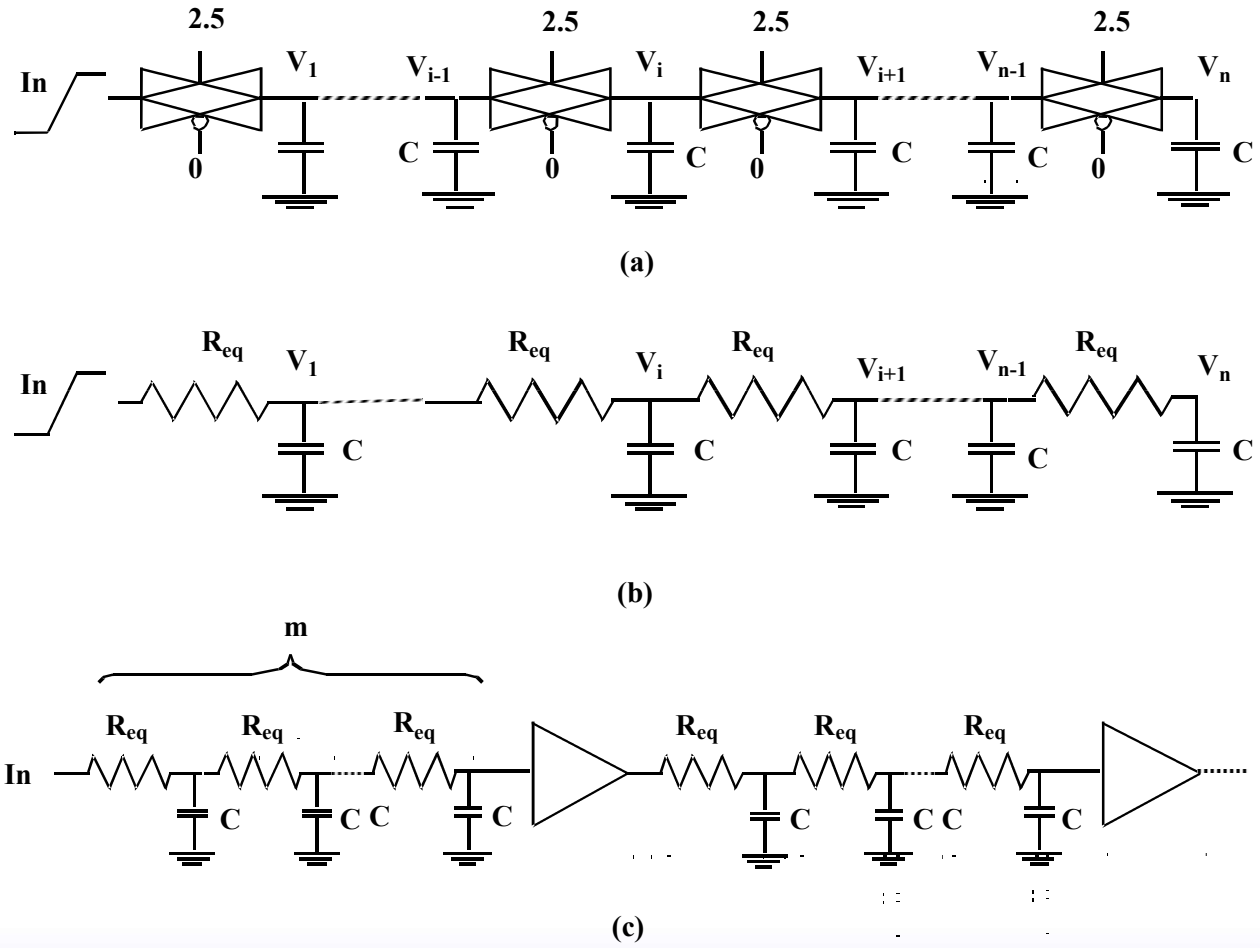




Transmission Gate XOR



Delay in Transmission Gate Networks



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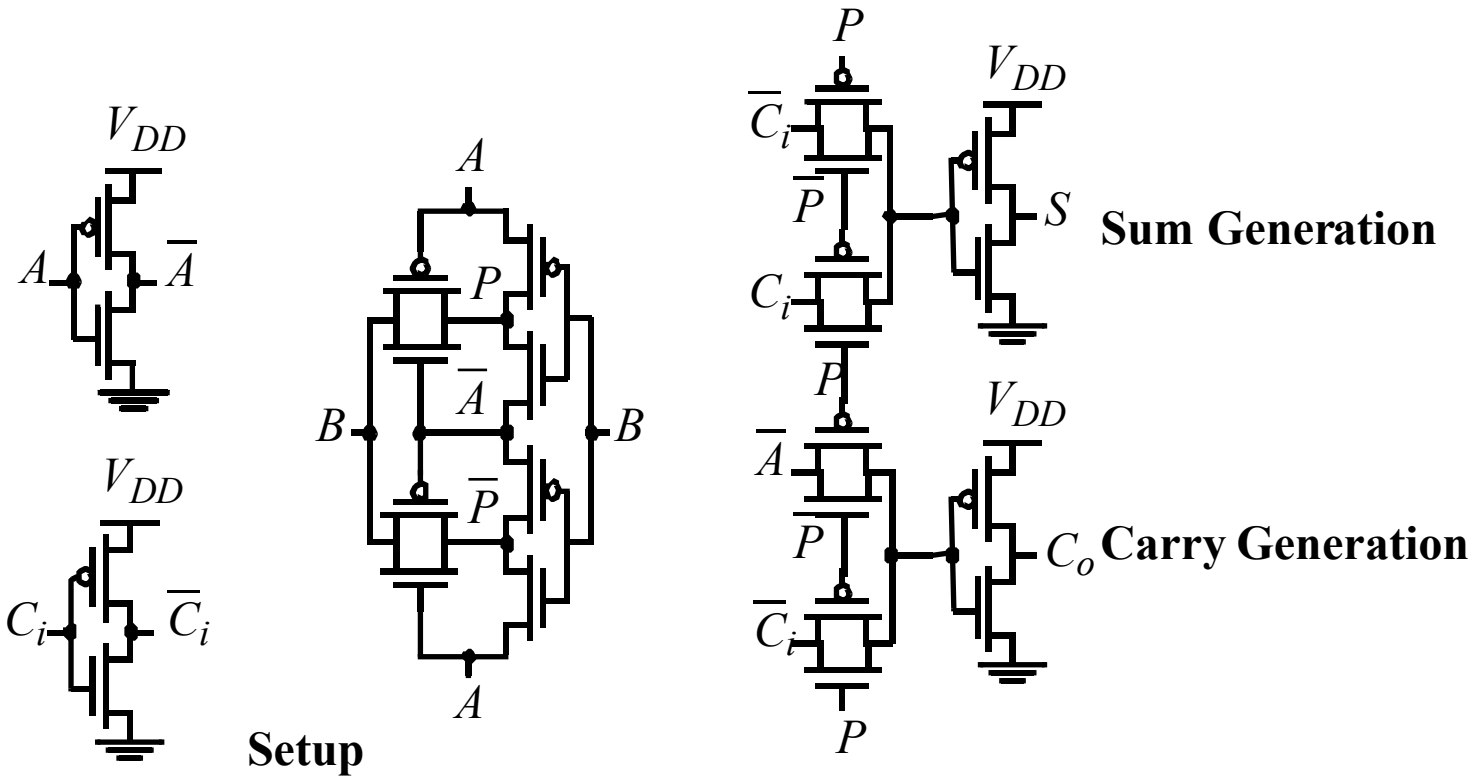

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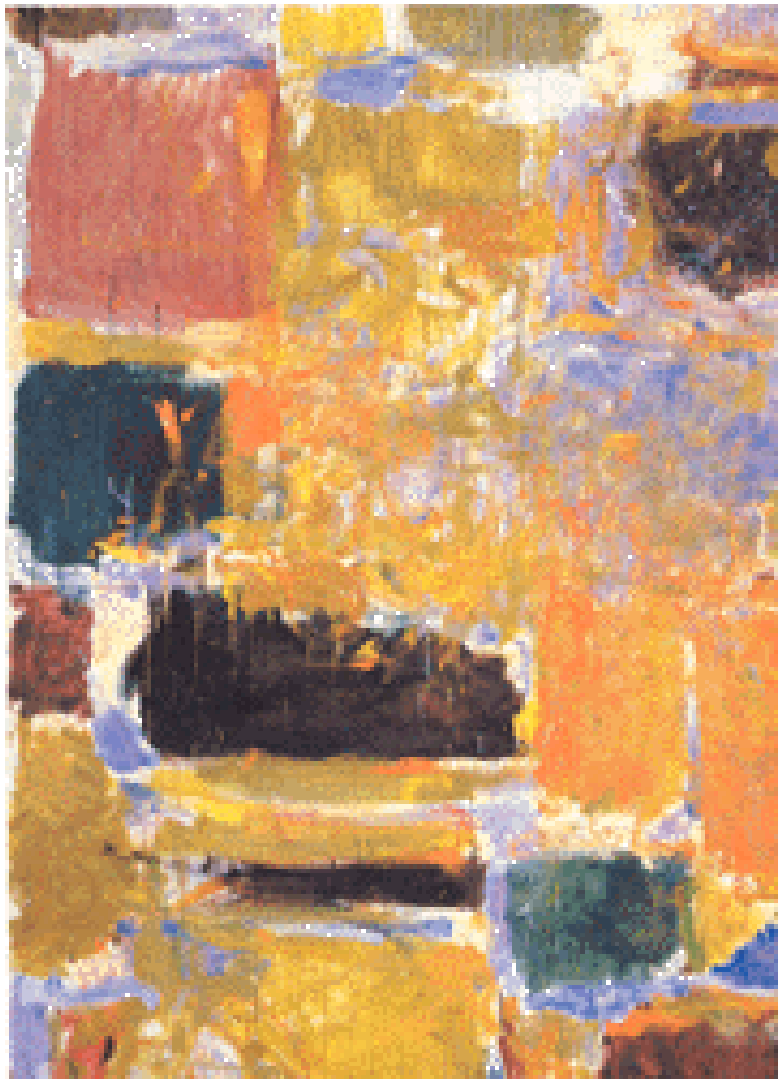

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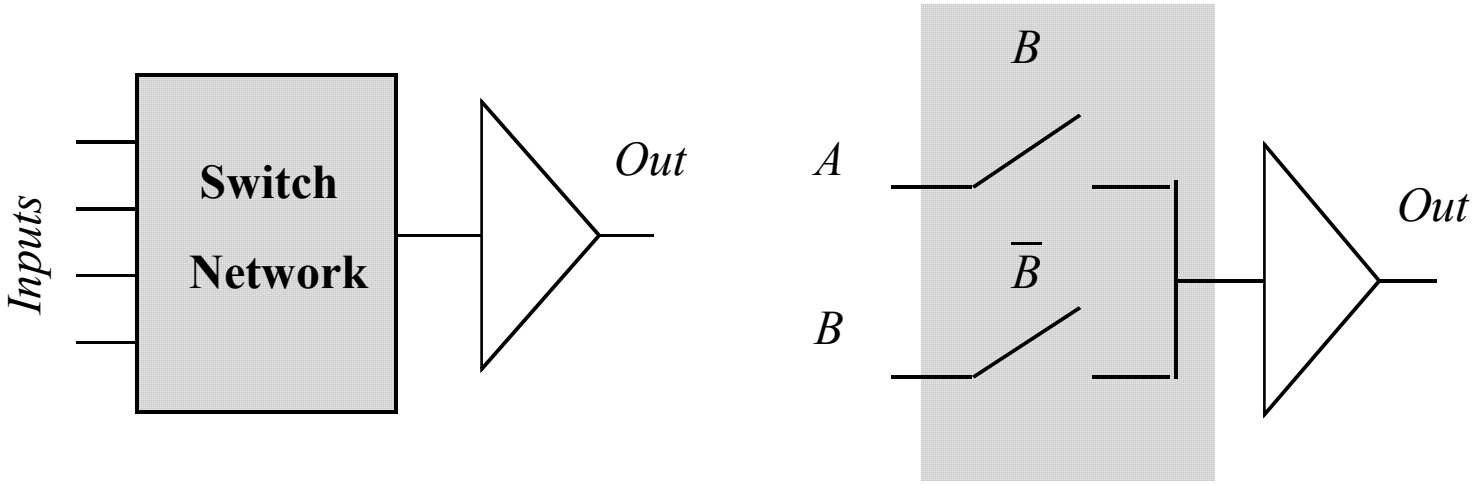

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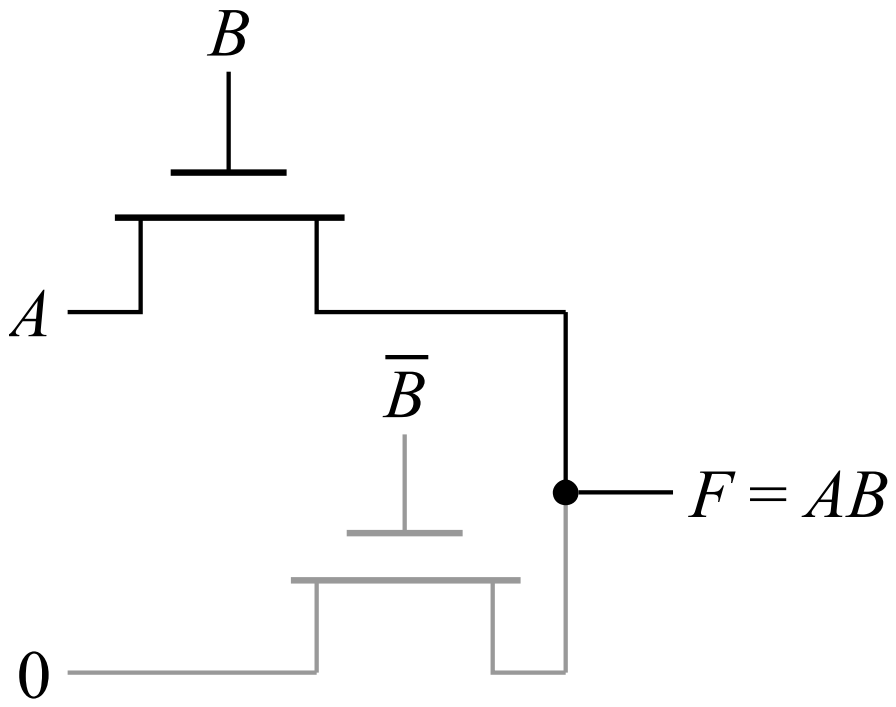

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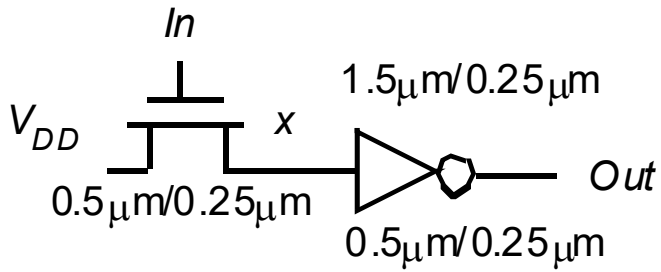

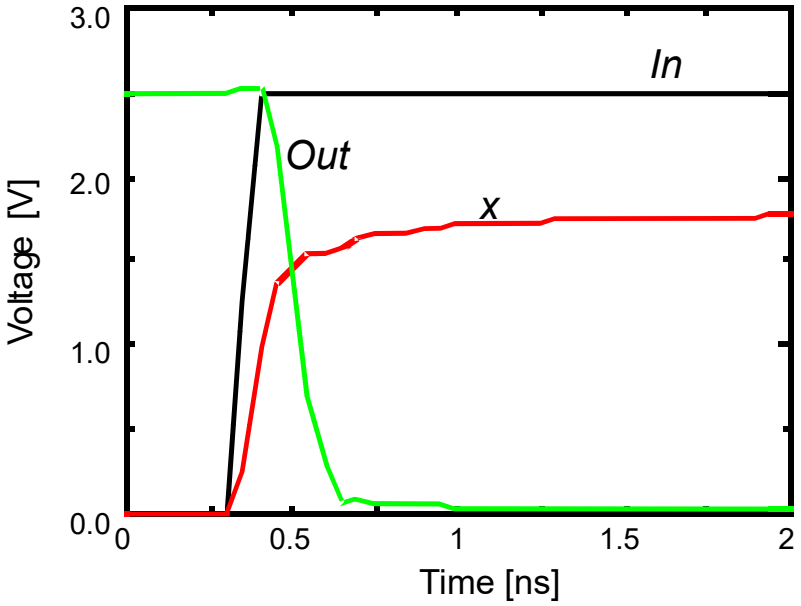

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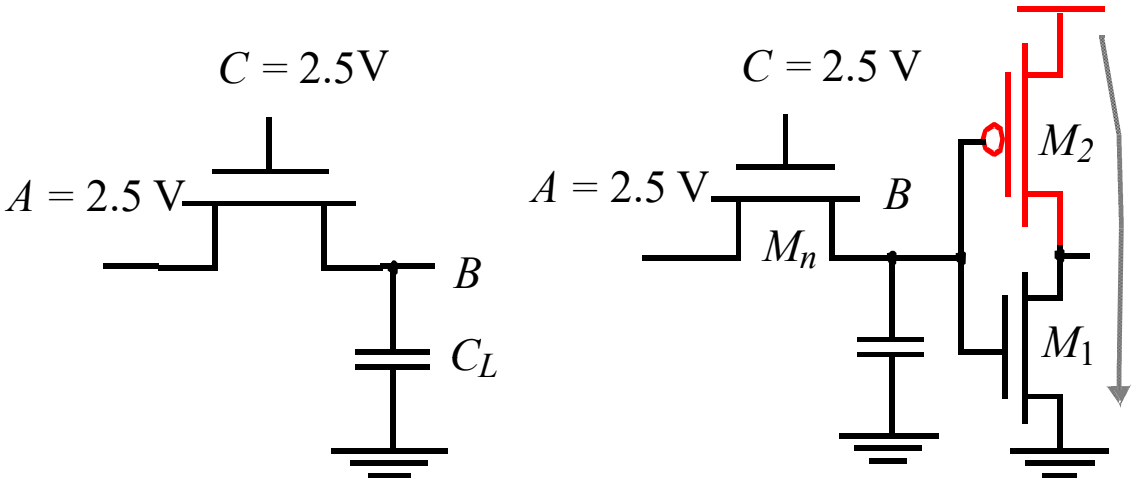

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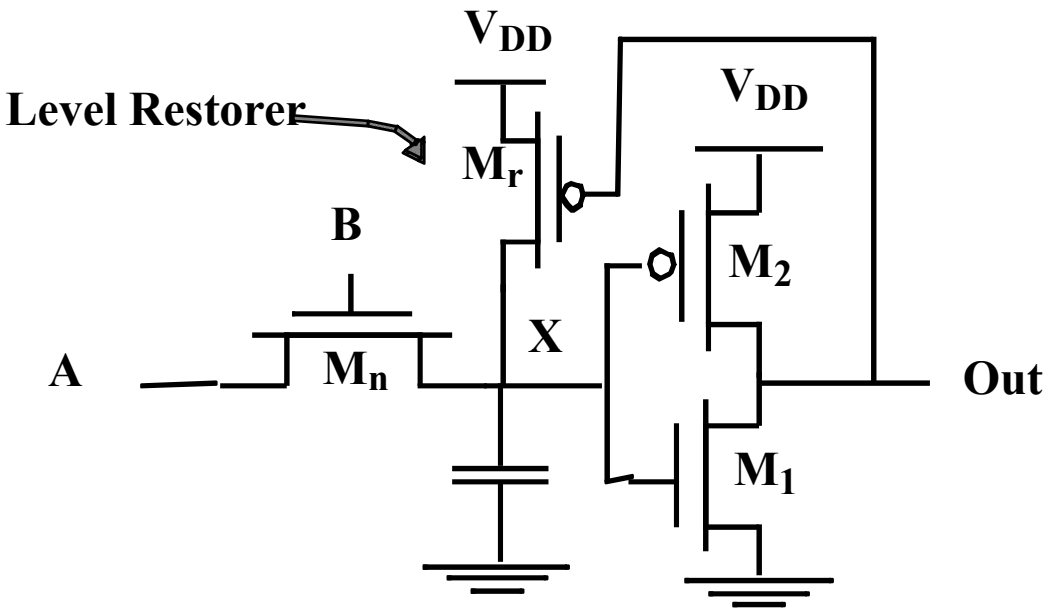

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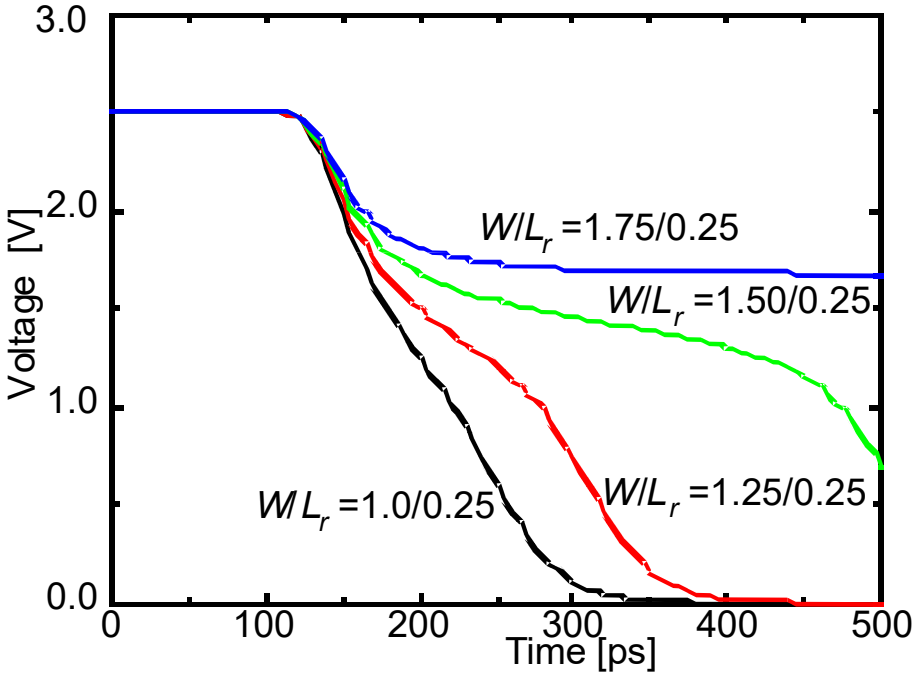

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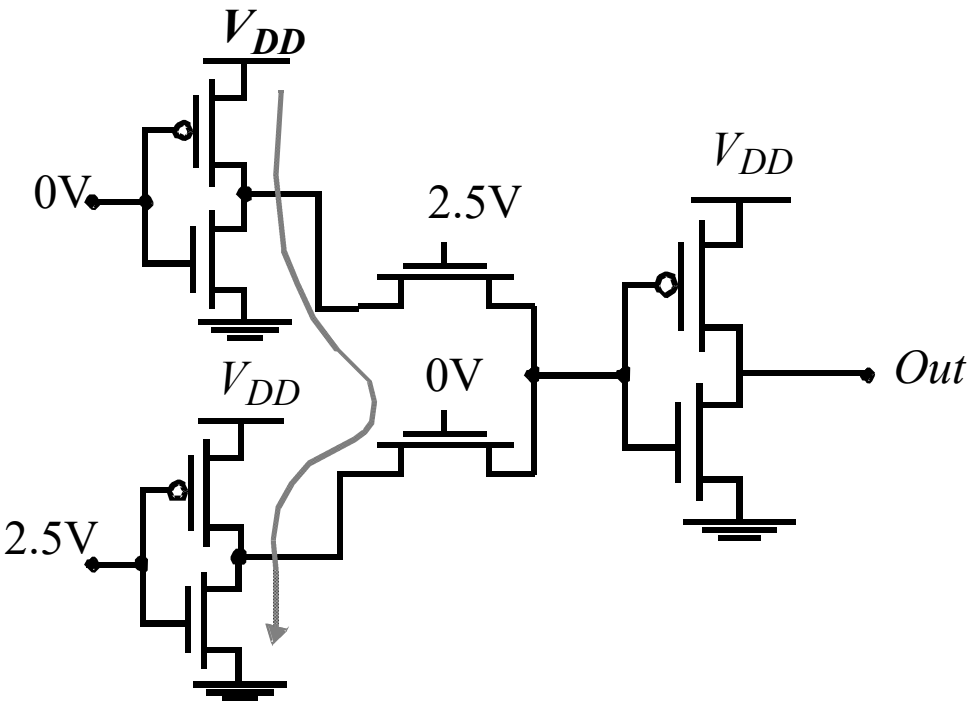
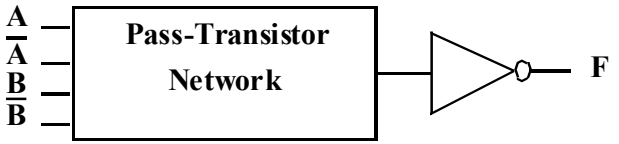
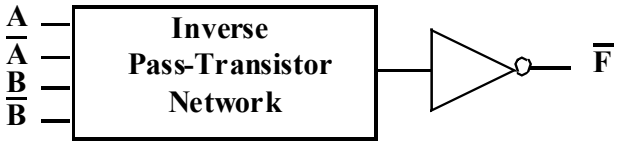


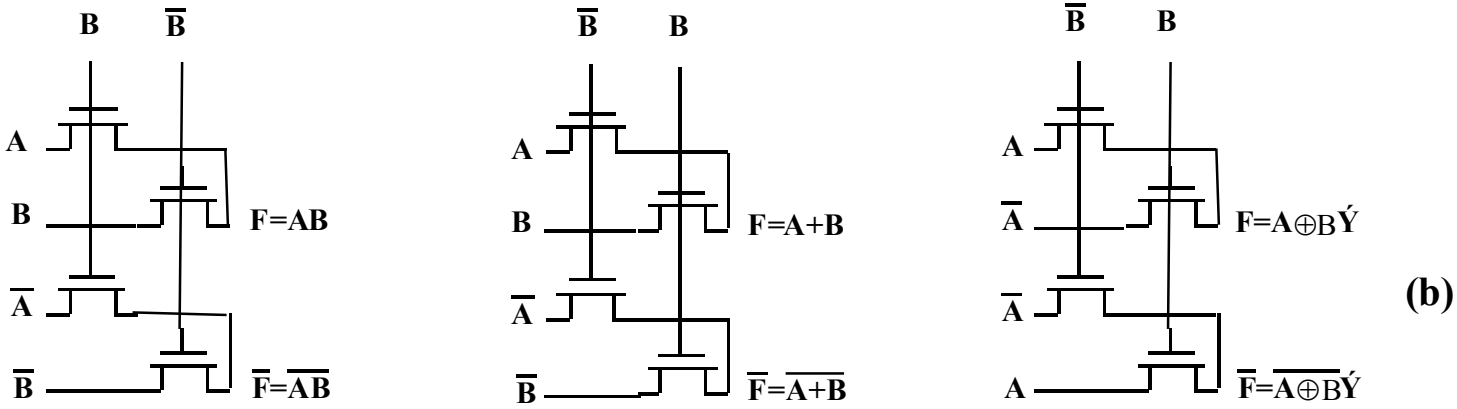
WATCH OUT FOR LEAKAGE CURRENTS

Complementary Pass Transistor Logic



(a)





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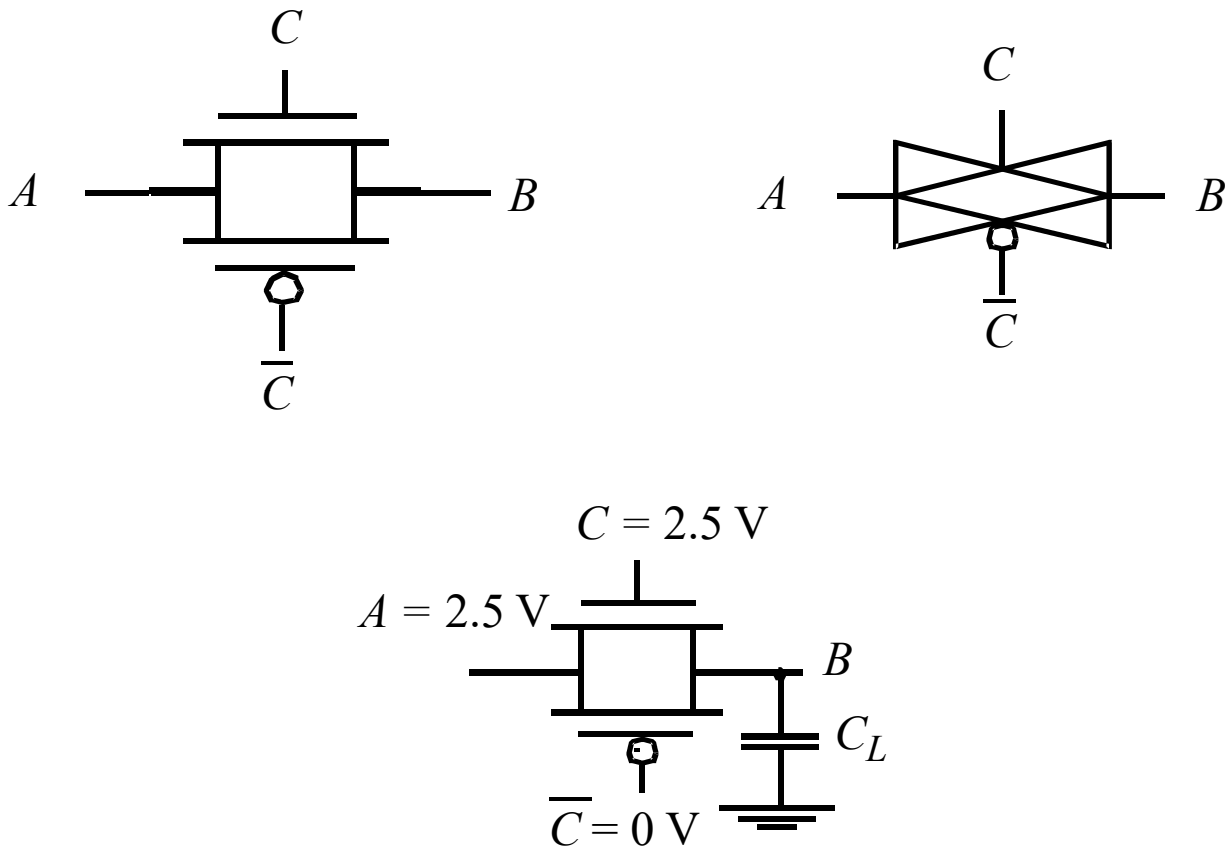

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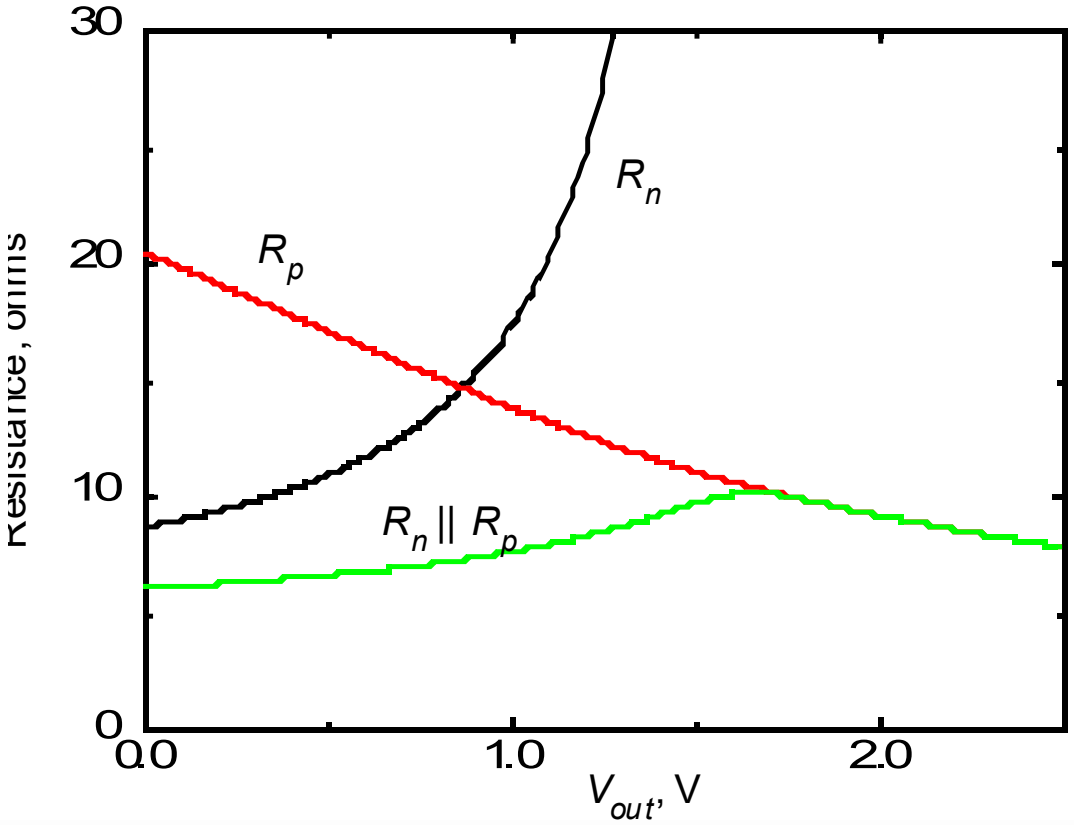

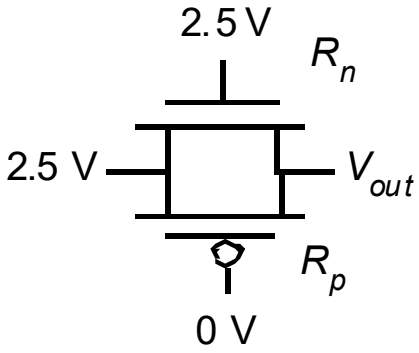

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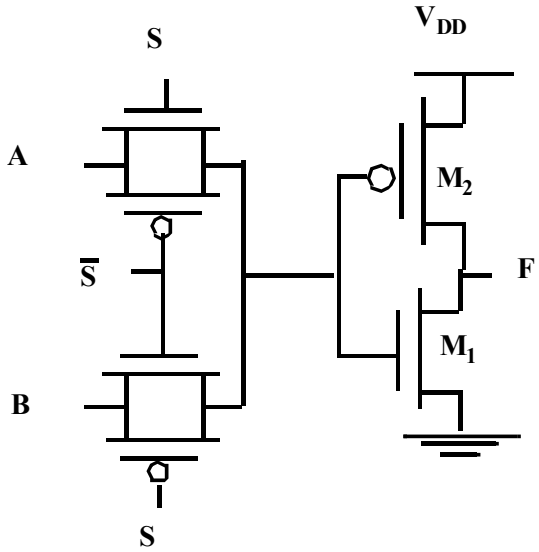

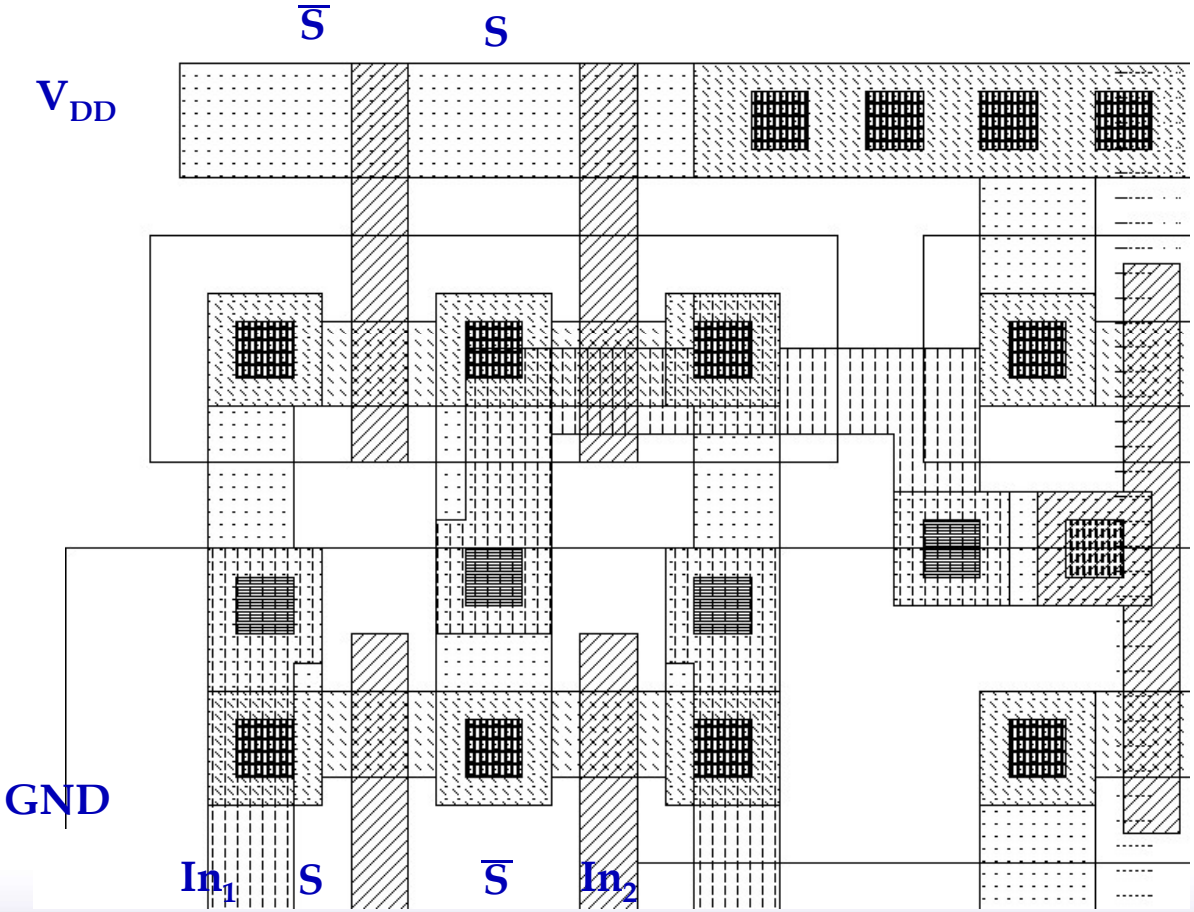

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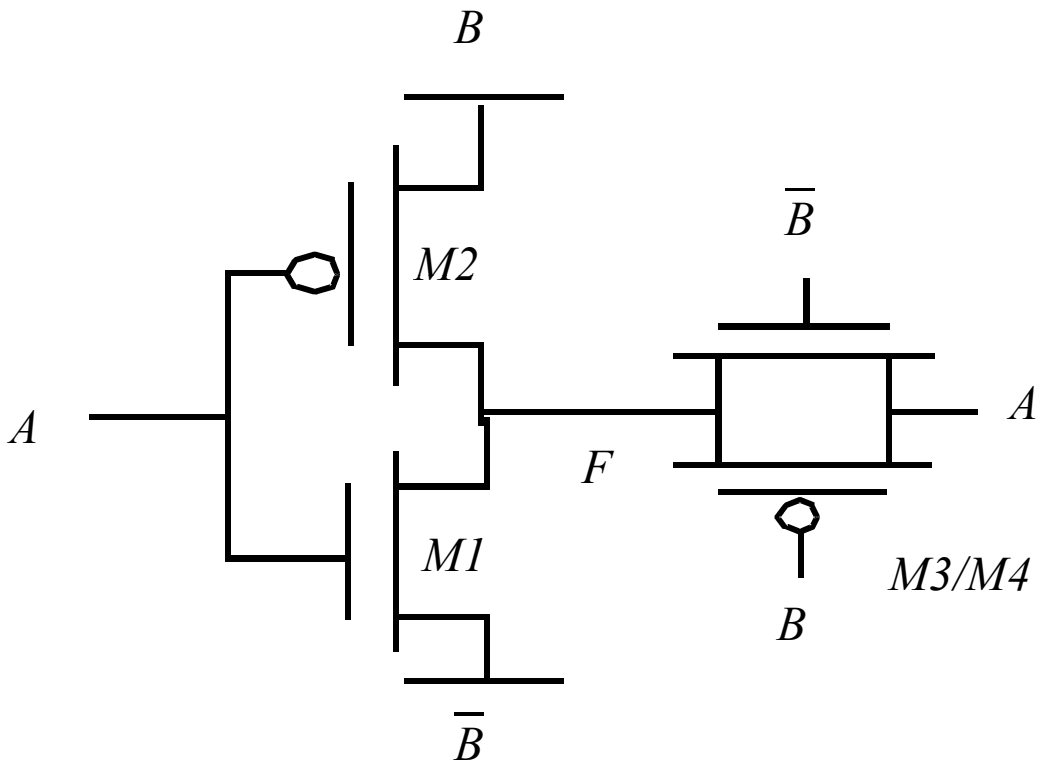

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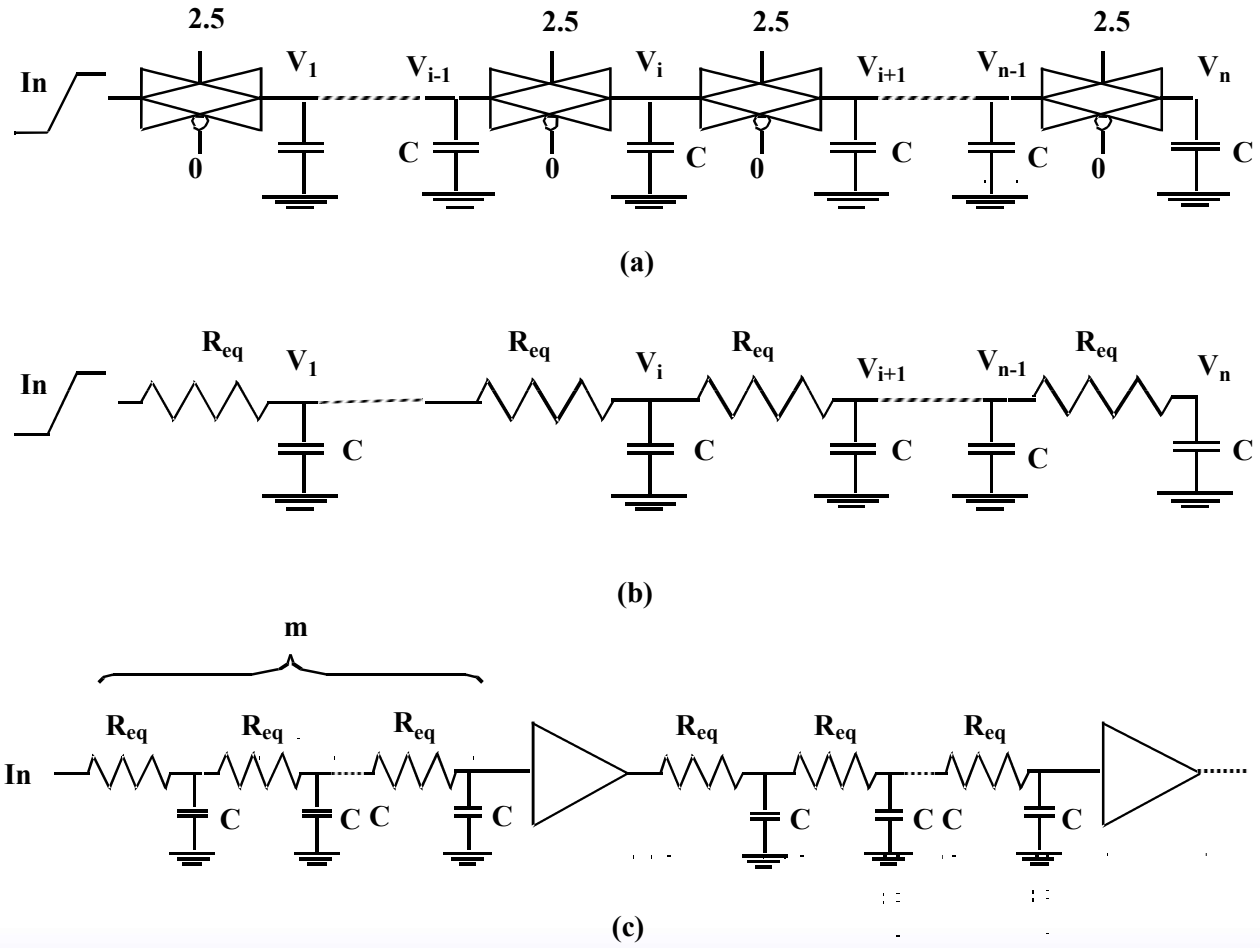

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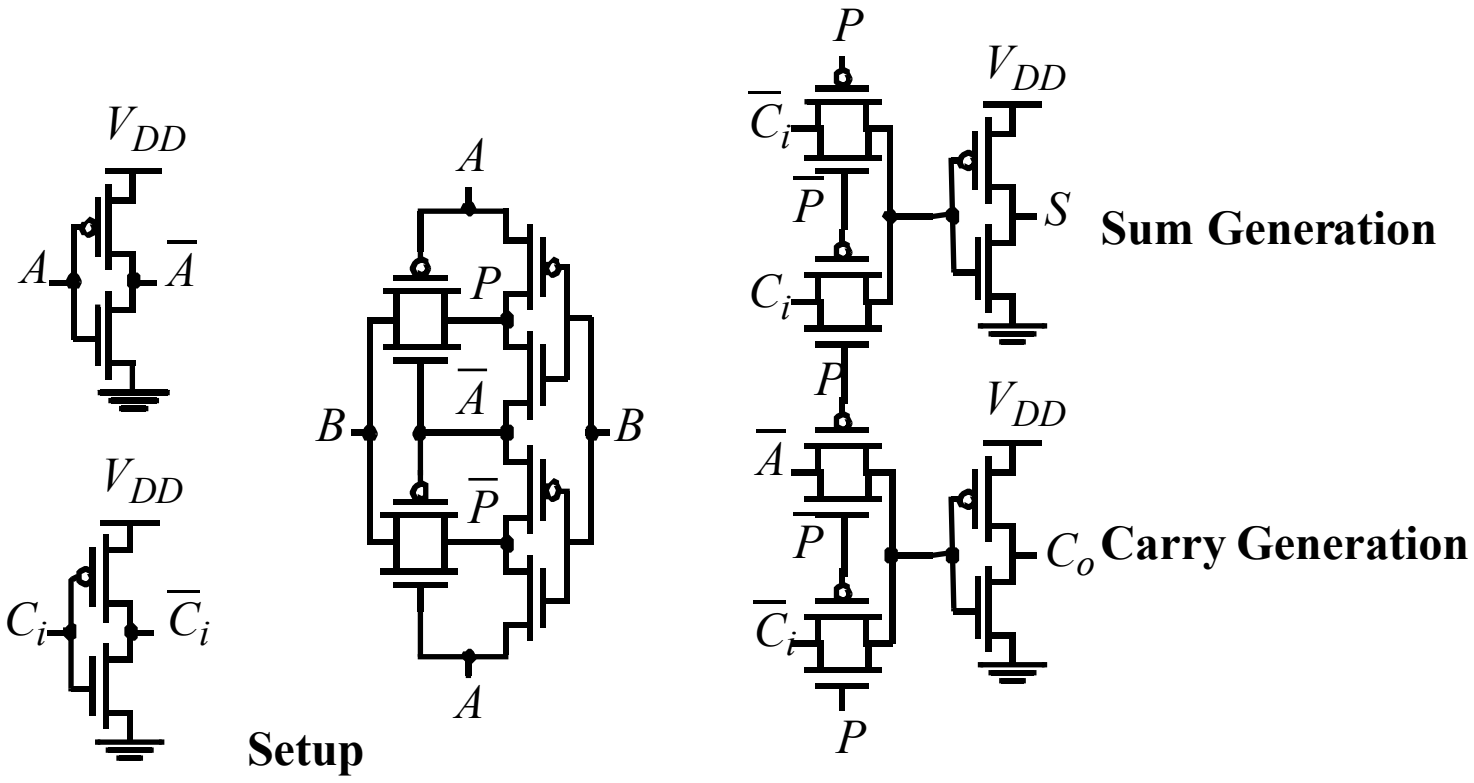

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