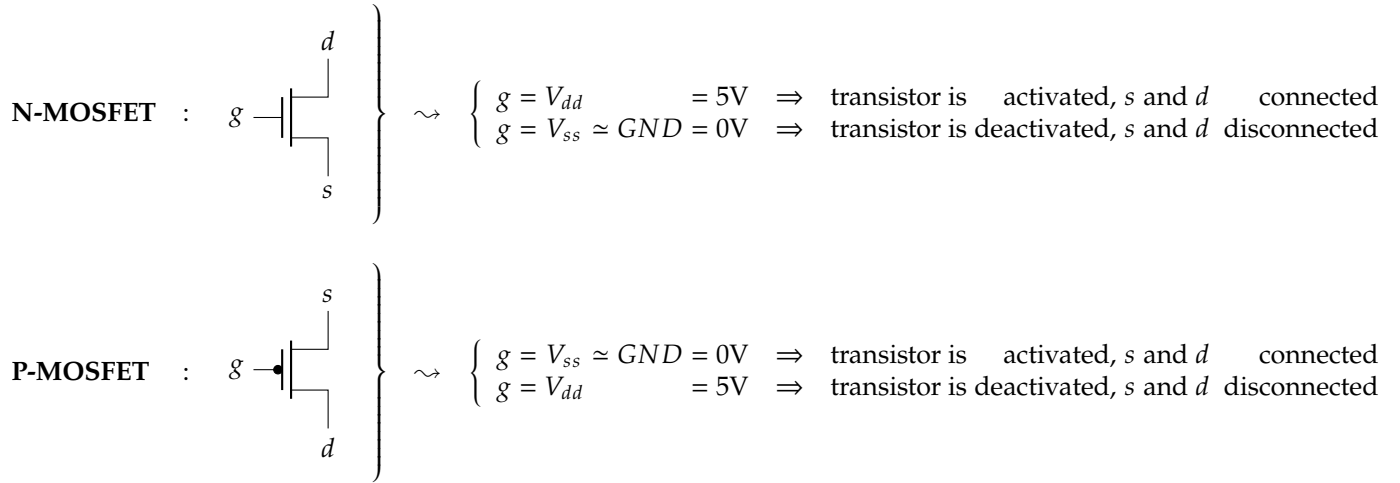


COMS10015 quick(ish) reference hand-out: transistors and logic gates

1. Definition: informal



2. Definition: formal

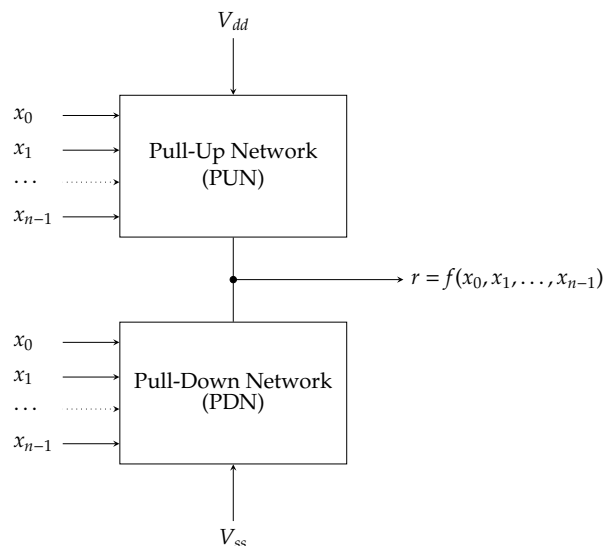
Definition 1. An N-MOSFET (or N-type MOSFET, or N-channel MOSFET, or NPN MOSFET) is constructed from N-type semi-conductor terminals and a P-type body:

- applying a potential difference to the gate widens the conductive channel, meaning source and drain are connected (i.e., act like a conductor); the transistor is activated.
- removing the potential difference from the gate narrows the conductive channel, meaning source and drain are disconnected (i.e., act like an insulator); the transistor is deactivated.

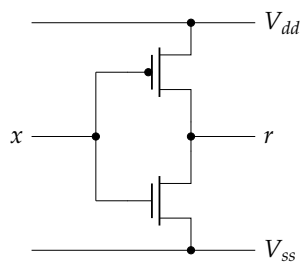
Definition 2. A P-MOSFET (or P-type MOSFET, or P-channel MOSFET, or PNP MOSFET) is constructed from P-type semi-conductor terminals and an N-type body:

- applying a potential difference to the gate narrows the conductive channel, meaning source and drain are disconnected (i.e., act like an insulator); the transistor is deactivated.
- removing the potential difference from the gate widens the conductive channel, meaning source and drain are connected (i.e., act like a conductor); the transistor is activated.

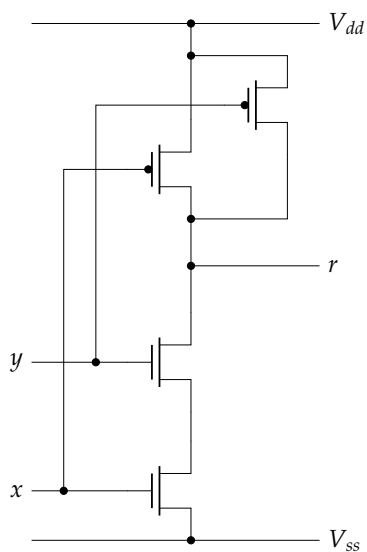
3. Design framework



4. Logic gates: NOT



5. Logic gates: NAND



6. Logic gates: NOR

