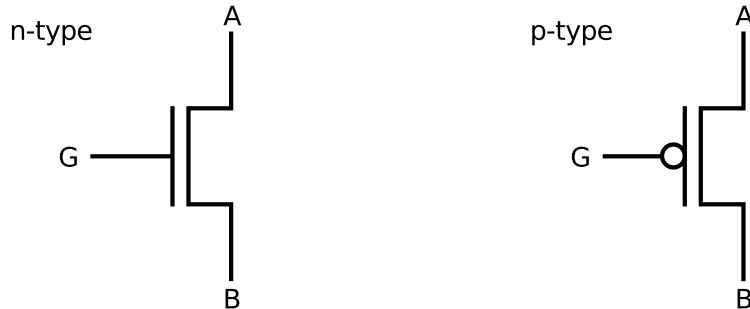


nMOS, pMOS and CMOS

There are many different kinds of transistors, but the one most commonly used in digital electronics is the MOSFET (Metal-Oxide Semiconductor Field Effect Transistor). There are two kinds of MOSFETs: n-type and p-type. The n-type MOSFETs are commonly called nMOS transistors, and p-type ones are called pMOS transistors.



The nMOS and pMOS transistors differ in how they switch based on the input G (called the Gate).

For an nMOS transistor:

- if the Gate is "0", then A and B are not connected (the circuit between A and B is "open")
- if the Gate is "1", then A and B are connected (the circuit between A and B is "closed")

For a pMOS transistor, it is exactly the opposite:

- if the Gate is "0", then A and B are connected (the circuit between A and B is "closed")
- if the Gate is "1", then A and B are not connected (the circuit between A and B is "open")

Type	Gate	A and B
n-type	0	not connected
	1	connected
p-type	0	connected
	1	not connected

In addition, because of their construction, nMOS transistors are good at transmitting a "0" signal between A and B, but are not so good at transmitting a "1". The opposite is true for pMOS transistors: they are good at transmitting a "1", but not so good at transmitting a "0".

Type	Transmit 0	Transmit 1
n-type	good	ok
p-type	ok	good

Because of this, nMOS and pMOS are commonly used together so that the resulting circuit is good at transmitting both "0" and "1" values. Devices that are built using a combination of nMOS and pMOS transistors are known as CMOS (Complementary MOS). In these devices, the pMOS transistors control the connections to POWER (the "1" value) and the nMOS transistors control the connections to GROUND (the "0" value).