

DIP gate packaging

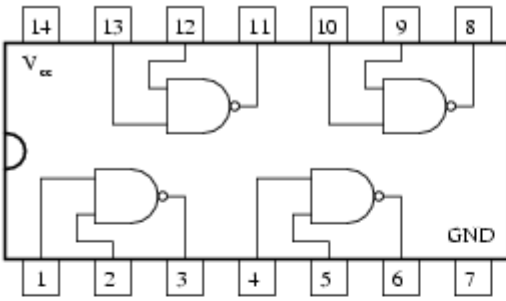
Digital logic gate circuits are manufactured as integrated circuits: all the constituent transistors and resistors built on a single piece of semiconductor material. The engineer, technician, or hobbyist using small numbers of gates will likely find what he or she needs enclosed in a DIP (**D**ual **I**ncline **P**ackage) housing. DIP-enclosed integrated circuits are available with even numbers of pins, located at 0.100 inch intervals from each other for standard circuit board layout compatibility. Pin counts of 8, 14, 16, 18, and 24 are common for DIP "chips."

Part numbers given to these DIP packages specify what type of gates are enclosed, and how many. These part numbers are industry standards, meaning that a "74LS02" manufactured by Motorola will be identical in function to a "74LS02" manufactured by Fairchild or by any other manufacturer. Letter codes prepended to the part number are unique to the manufacturer, and are not industry-standard codes. For instance, a SN74LS02 is a quad 2-input TTL NOR gate manufactured by Motorola, while a DM74LS02 is the exact same circuit manufactured by Fairchild.

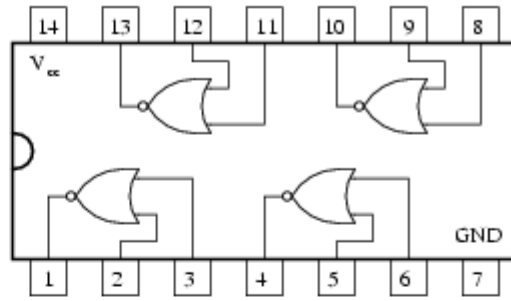
Logic circuit part numbers beginning with "74" are commercial-grade TTL. If the part number begins with the number "54", the chip is a military-grade unit: having a greater operating temperature range, and typically more robust in regard to allowable power supply and signal voltage levels. The letters "LS" immediately following the 74/54 prefix indicate "Low-power Schottky" circuitry, using Schottky-barrier diodes and transistors throughout, to decrease power dissipation. Non-Schottky gate circuits consume more power, but are able to operate at higher frequencies due to their faster switching times.

A few of the more common TTL "DIP" circuit packages are shown here for reference:

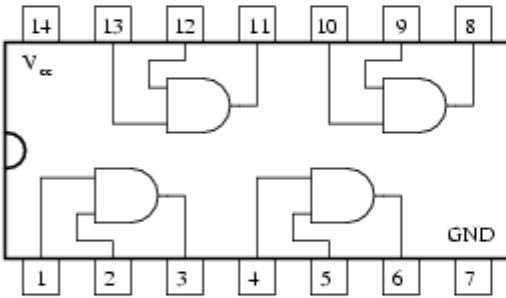
5400/7400
Quad NAND gate



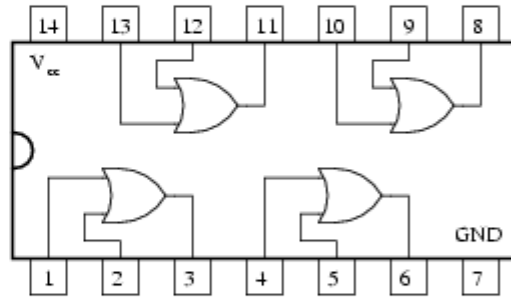
5402/7402
Quad NOR gate



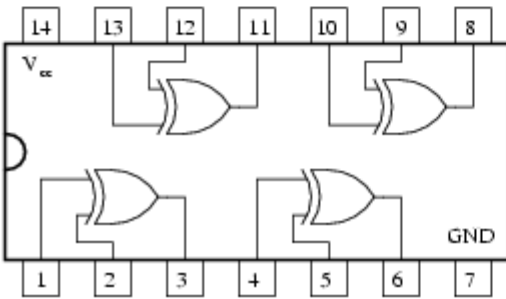
5408/7408
Quad AND gate



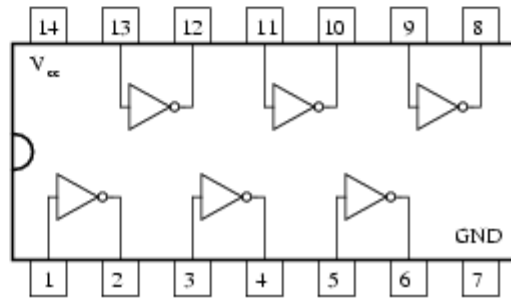
5432/7432
Quad OR gate



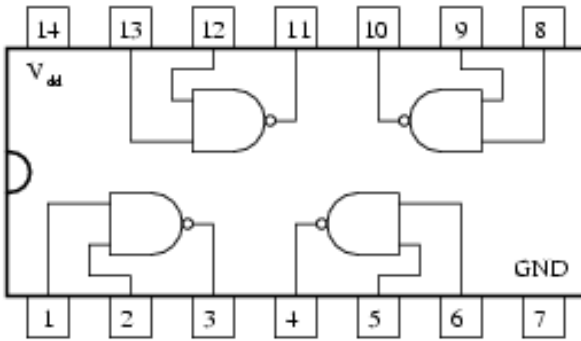
5486/7486
Quad XOR gate



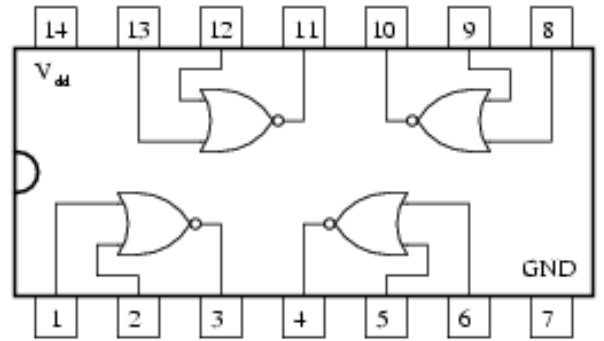
5404/7404
Hex inverter



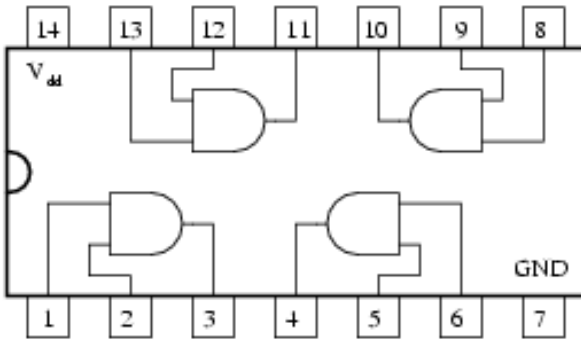
4011
Quad NAND gate



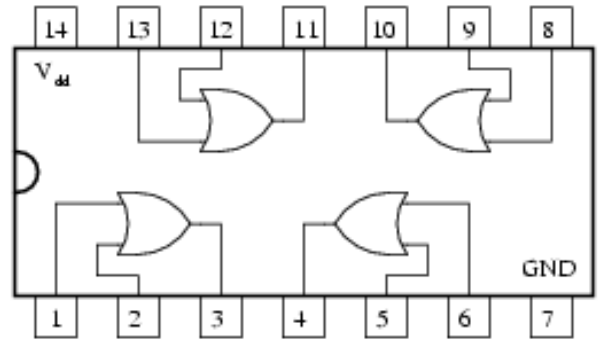
4001
Quad NOR gate



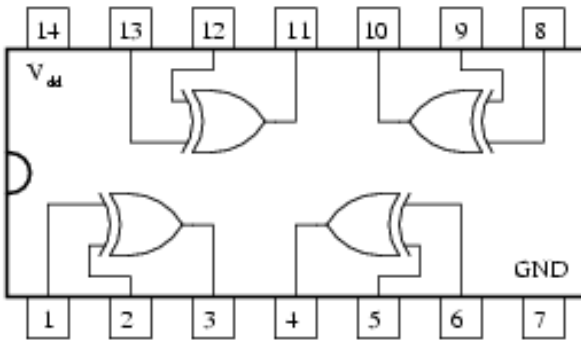
4081
Quad AND gate



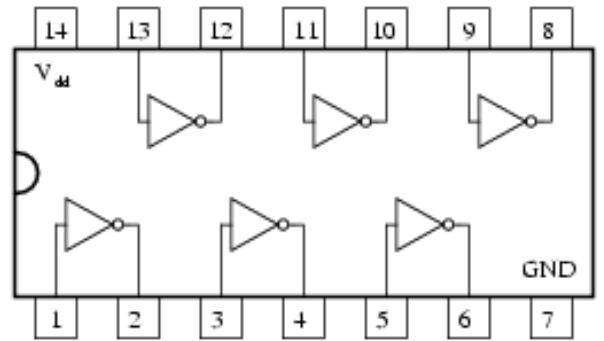
4071
Quad OR gate



4070
Quad XOR gate



4069
Hex inverter



Source: http://www.allaboutcircuits.com/vol_4/chpt_3/11.html