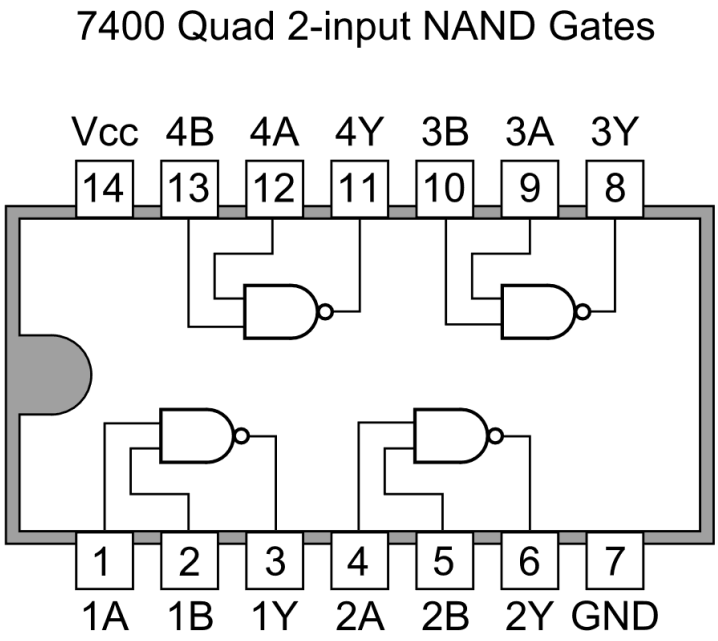
Complex Logic ICs

IC Functions, Pin Configurations, and Truth Tables

IC 7400: Quad 2-Input NAND Gate

Function: The IC 7400 contains four independent 2-input NAND gates in a single package. You can use any of these four gates separately.
Boolean Expression: The logical function of a NAND gate is represented as `F = (AB)'`



Pin Configuration: This IC has 14 pins.
Pin 7: Ground connection (GND).
Pin 14: Positive power supply (+5V, VCC).
Gate 1: Pins 1 & 2 are inputs, Pin 3 is the output.
Gate 2: Pins 4 & 5 are inputs, Pin 6 is the output.
Gate 3: Pins 9 & 10 are inputs, Pin 8 is the output.
Gate 4: Pins 12 & 13 are inputs, Pin 11 is the output.

Truth Table: The output is 0 only when both inputs are 1.

Input A	Input B	Output Y

0	0	1
0	1	1
1	0	1
1	1	0

IC 7402: Quad 2-Input NOR Gate

Function: The IC 7402 contains four independent 2-input NOR gates.
Boolean Expression: The logical function of a NOR gate is represented as `F = (A + B)'`

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Pin Configuration: This 14-pin IC has a slightly **`different pinout`**.
Pin 7: Ground connection (GND).
Pin 14: Positive power supply (+5V, VCC).
Gate 1: Pins 2 & 3 are inputs, Pin 1 is the output.
Gate 2: Pins 5 & 6 are inputs, Pin 4 is the output.
Gate 3: Pins 8 & 9 are inputs, Pin 10 is the output.
Gate 4: Pins 11 & 12 are inputs, Pin 13 is the output.

Truth Table: The output is 1 only when both inputs are 0.

Input A	Input B	Output Y
0	0	1
0	1	0
1	0	0
1	1	0

IC 7486: Quad 2-Input XOR Gate

Function: The IC 7486 contains four independent 2-input XOR (Exclusive-OR) gates.
Boolean Expression: The logical function of a NAND gate is represented as `F = A'B + AB'`

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Pin Configuration: The pinout for the 7486 is identical to the 7400.
Pin 7: Ground connection (GND).
Pin 14: Positive power supply (+5V, VCC).
Gate 1: Pins 1 & 2 are inputs, Pin 3 is the output.
Gate 2: Pins 4 & 5 are inputs, Pin 6 is the output.
Gate 3: Pins 9 & 10 are inputs, Pin 8 is the output.
Gate 4: Pins 12 & 13 are inputs, Pin 11 is the output.

Truth Table: The output is 1 only when the inputs are different.

Input A	Input B	Output Y
0	0	0
0	1	1
1	0	1
1	1	0

IC 74266: Quad 2-Input XNOR Gate

Function: The IC 74266 contains four independent 2-input XNOR gates.
Boolean Expression: The logical function of a NAND gate is represented as `F = AB + A'B'`

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Pin Configuration: This 14-pin IC has a slightly **`different pinout`**.
Pin 7: Ground connection (GND).
Pin 14: Positive power supply (+5V, VCC).
Gate 1: Pins 1 & 2 are inputs, Pin 3 is the output.
Gate 2: Pins 5 & 6 are inputs, Pin 4 is the output.
Gate 3: Pins 8 & 9 are inputs, Pin 10 is the output.
Gate 4: Pins 12 & 13 are inputs, Pin 11 is the output.

Truth Table: The output is 1 only when the inputs are same.

Input A	Input B	Output Y
0	0	1
0	1	0
1	0	0
1	1	1

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