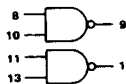
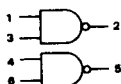


QUAD 2-INPUT
"NAND" GATES

MC1048
MC1248

Four 2-input gates designed to provide four NAND functions. The output is low if and only if the two inputs are at a high logic level.

POSITIVE LOGIC



$$2 = \overline{1 \cdot 3}$$

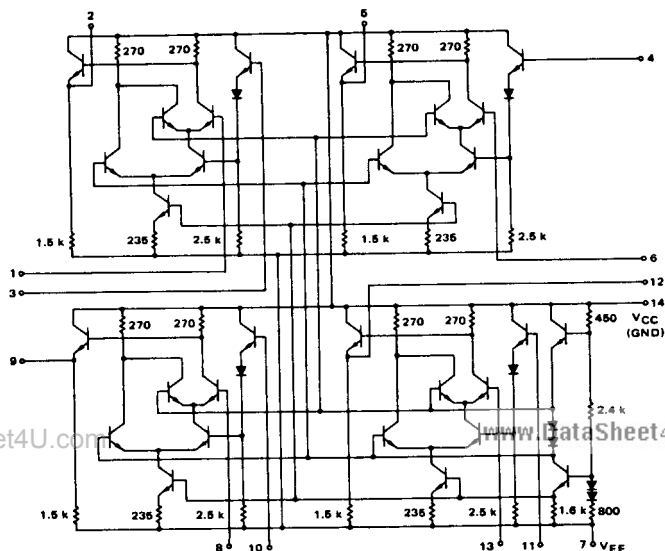
DC Input Loading Factor: Pins 1, 6, 8, 13 = 1.5
Pins 3, 4, 10, 11 = 1

DC Output Loading Factor = 25
Power Dissipation = 130 mW typical

**NAND GATE
SAMPLE TRUTH TABLE**

| Pin No. | Inputs | | Output |
|---------|--------|---|--------|
| | 1 | 3 | 2 |
| | 0 | 0 | 1 |
| | 0 | 1 | 1 |
| | 1 | 0 | 1 |
| | 1 | 1 | 0 |

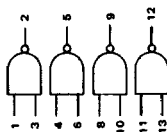
CIRCUIT SCHEMATIC



Resistor values are nominal

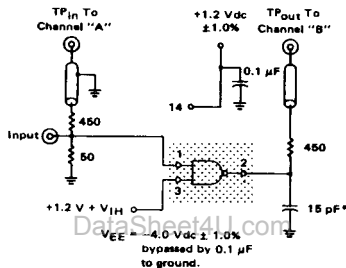
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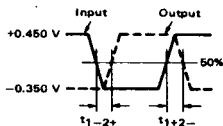
V_{OH} limits apply from no load (0 mA) to full load (-2.5 mA)

SWITCHING TIME TEST CIRCUIT AND WAVEFORMS @ 25°C

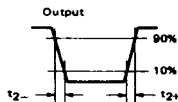


* Load Corresponds To Fan-Out = 3
Input pulse t_r and $t_f = 5.0 \pm 0.5$ ns

PROPAGATION DELAY



RISE AND FALL TIMES

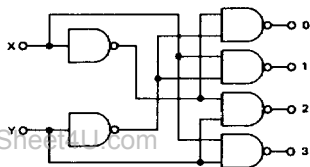


Switching waveforms shown for pulse in on pin 1 and pulse out on pin 2, however all other input-output combinations will meet the limits specified.

APPLICATIONS INFORMATION

The MC1048/1248 Quad 2-input NAND gate adds another logic function to the existing MECL II family. This gate uses series gating techniques to perform the NAND function in typically 5.0 ns. Two applications illustrating the usefulness of the NAND gate are shown below.

BINARY TO ONE-OF-FOUR LINE DECODER



DUAL R-S FLIP-FLOP USING ONE MC1048/MC1248

