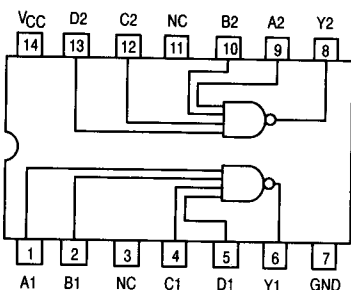




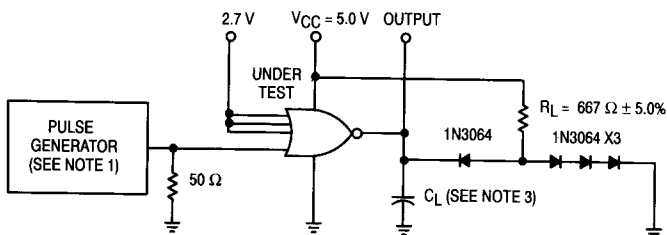
Dual 4-Input Positive NAND Buffer

ELECTRICALLY TESTED PER:
MIL-M-38510/30201

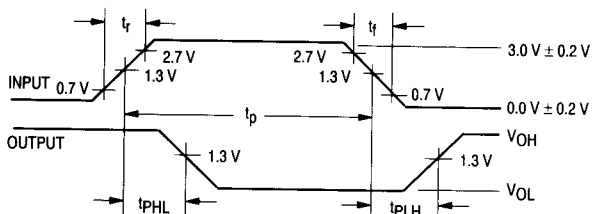
LOGIC DIAGRAM



AC TEST CIRCUIT



WAVEFORMS



Military 54LS40



AVAILABLE AS:

- 1) JAN: JM38510/30201BXA
- 2) SMD: N/A
- 3) 883: 54LS40/BXAJC

X = CASE OUTLINE AS FOLLOWS:
PACKAGE: CERDIP: C
CERFLAT: D
LCC: 2

THE LETTER "M" APPEARS BEFORE THE / ON LCC.

PIN ASSIGNMENTS

| FUNCT. | DIL 632-08 | FLATS 717-04 | LCC 756A-02 | BURN-IN (COND. A) |
|--------|------------|--------------|-------------|-------------------|
| A1 | 1 | 1 | 2 | VCC |
| B1 | 2 | 2 | 3 | GND |
| NC | 3 | 3 | 4 | VCC |
| C1 | 4 | 4 | 6 | VCC |
| D1 | 5 | 5 | 8 | GND |
| Y1 | 6 | 6 | 9 | VCC |
| GND | 7 | 7 | 10 | GND |
| Y2 | 8 | 8 | 12 | VCC |
| A2 | 9 | 9 | 13 | VCC |
| B2 | 10 | 10 | 14 | GND |
| NC | 11 | 11 | 16 | VCC |
| C2 | 12 | 12 | 18 | VCC |
| D2 | 13 | 13 | 19 | GND |
| VCC | 14 | 14 | 20 | VCC |

BURN-IN CONDITIONS:

VCC = 5.0 V MIN/6.0 V MAX

NOTES:

1. Pulse generator has the following characteristics: $t_r \leq 15$ ns, $t_f \leq 6.0$ ns, $PRR \leq 1.0$ MHz, $t_p = 200$ ns ± 20 ns and $Z_{OUT} = 50 \Omega$.
2. All diodes are 1N3064 or equivalent.
3. $C_L = 125$ pF $\pm 10\%$, including scope probe, wiring and stray capacitance.
4. $R_L = 667 \Omega \pm 5.0\%$.
5. Voltage measurements are to be made with respect to network ground terminal.
6. Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 0.7 V, or open).

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54LS40

| Symbol | Parameter | Limits | | | | | | Unit | Test Condition (Unless Otherwise Specified) |
|------------------|-----------------------------|------------|-------|-------------|-------|-------------|-------|------|---|
| | | + 25°C | | + 125°C | | - 55°C | | | |
| | | Subgroup 1 | | Subgroup 2 | | Subgroup 3 | | | |
| | | Min | Max | Min | Max | Min | Max | | |
| V _{OH} | Logical "1" Output Voltage | 2.5 | | 2.5 | | 2.5 | | V | V _{CC} = 4.5 V, I _{OH} = -1.2 mA, V _{IL} = 0.7 V, V _{IN} = 5.5 V on other inputs. |
| V _{OL} | Logical "0" Output Voltage | | 0.4 | | 0.4 | | 0.4 | V | V _{CC} = 4.5 V, I _{OL} = 12 mA, V _{IH} = 2.0 V on all inputs. |
| V _{IC} | Input Clamping Voltage | | - 1.5 | | | | | V | V _{CC} = 4.5 V, I _{IN} = - 18 mA, other inputs are open. |
| I _{IH1} | Logical "1" Input Current | | 20 | | 20 | | 20 | μA | V _{CC} = 5.5 V, V _{IN} = 2.7 V, other inputs = 0 V. |
| I _{IH2} | Logical "1" Input Current | | 100 | | 100 | | 100 | μA | V _{CC} = 5.5 V, V _{IN} = 5.5 V, other inputs = 0 V. |
| I _{IL} | Logical "0" Input Current | - 160 | - 400 | - 160 | - 400 | - 160 | - 400 | μA | V _{CC} = 5.5 V, V _{IN} = 0.4 V, other inputs = 5.5 V. |
| I _{OS} | Output Short Circuit Supply | - 30 | - 130 | - 30 | - 130 | - 30 | - 130 | mA | V _{CC} = 5.5 V, V _{IN} = 0 V (all inputs), V _{OUT} = 0 V. |
| I _{CCH} | Power Supply Current | | 1.0 | | 1.0 | | 1.0 | mA | V _{CC} = 5.5 V, V _{IN} = 0 V (all inputs). |
| I _{CCL} | Power Supply Current | | 6.0 | | 6.0 | | 6.0 | mA | V _{CC} = 5.5 V, V _{IN} = 5.5 V (all inputs). |
| V _{IH} | Logical "1" Input Voltage | 2.0 | | 2.0 | | 2.0 | | V | V _{CC} = 4.5 V. |
| V _{IL} | Logical "0" Input Voltage | | 0.7 | | 0.7 | | 0.7 | V | V _{CC} = 4.5 V. |
| | Functional Tests | Subgroup 7 | | Subgroup 8A | | Subgroup 8B | | | per Truth Table with V _{CC} = 5.0 V, V _{INL} = 0.5 V, and V _{INH} = 2.5 V. |

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| Symbol | Parameter | Limits | | | | | | Unit | Test Condition (Unless Otherwise Specified) |
|--------------------------------------|--|------------|-----|-------------|-----|-------------|-----|------|---|
| | | + 25°C | | + 125°C | | - 55°C | | | |
| | | Subgroup 9 | | Subgroup 10 | | Subgroup 11 | | | |
| | | Min | Max | Min | Max | Min | Max | | |
| t _{PHL} t _{PHL} | Propagation Delay /Data-Output Output High-Low | 2.0 | 25 | 2.0 | 30 | 2.0 | 30 | ns | V _{CC} = 5.0 V, C _L = 125 pF, R _L = 667 Ω. V _{CC} = 5.0 V, C _L = 45 pF, R _L = 667 Ω. |
| t _{PLH} t _{PLH} | Propagation Delay /Data-Output Output Low-High | 2.0 | 25 | 2.0 | 30 | 2.0 | 30 | ns | V _{CC} = 5.0 V, C _L = 125 pF, R _L = 667 Ω. V _{CC} = 5.0 V, C _L = 45 pF, R _L = 667 Ω. |

NOTES:

- The limits specified for C_L = 45 pF are guaranteed but not tested.