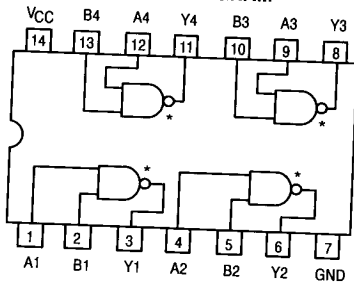


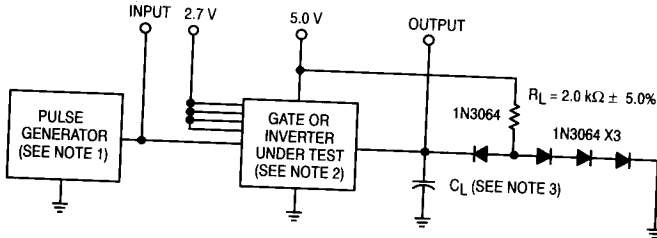
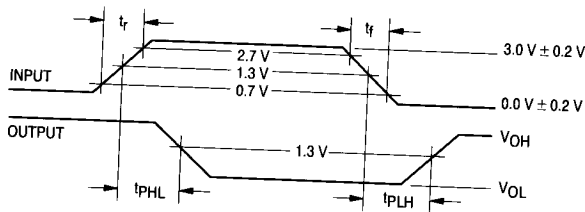
**MOTOROLA**

Quad 2-Input NAND Gate

ELECTRICALLY TESTED PER:
MIL-M-38510/30002

LOGIC DIAGRAM

*OPEN COLLECTOR OUTPUT

AC TEST CIRCUIT**WAVEFORMS****NOTES:**

1. Pulse generator has the following characteristics: $t_r \leq 15$ ns, $t_f \leq 6.0$ ns, $PRR \leq 1.0$ MHz, duty cycle = 50% and $Z_{OUT} = 50 \Omega$.
2. Inputs not under test are at 2.7 V.
3. $C_L = 50$ pF $\pm 10\%$, including scope probe, wiring and stray capacitance.
4. $R_L = 2.0$ k $\Omega \pm 5.0\%$.
5. Voltage measurements are to be made with respect to network ground terminal.

Military 54LS03

**AVAILABLE AS:**

- 1) JAN: JM38510/30002BXA
- 2) SMD: N/A
- 3) 883: 54LS03/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
Y1	3	3	4	VCC
A2	4	4	6	VCC
B2	5	5	8	GND
Y2	6	6	9	VCC
GND	7	7	10	GND
Y3	8	8	12	VCC
A3	9	9	13	VCC
B3	10	10	14	GND
Y4	11	11	16	VCC
A4	12	12	18	VCC
B4	13	13	19	GND
VCC	14	14	20	VCC

BURN-IN CONDITIONS:

VCC = 5.0 V MIN/6.0 V MAX

TRUTH TABLE

A	B	Y
0	0	1
0	1	1
1	0	1
1	1	0

MOTOROLA MILITARY FAST/LS/TTL DATA

54LS03

Symbol	Parameter	Limits						Unit	Test Condition (Unless Otherwise Specified)
	Static Parameters:	+ 25°C		+ 125°C		– 55°C			
		Subgroup 1		Subgroup 2		Subgroup 3			
		Min	Max	Min	Max	Min	Max		
V _{OL}	Logical "0" Output Voltage		0.4		0.4		0.4	V	V _{CC} = 4.5 V, I _{OL} = 4.0 mA, V _{IH} = 2.0 V on both inputs.
V _{IC}	Input Clamping Voltage		–1.5					V	V _{CC} = 4.5 V, I _{IN} = –18 mA, other input is open.
I _{CEX}	Open Collector Input Current		100		100		100	μA	V _{CC} = 4.5 V, V _{IL} = 0.7 V, V _{IN} = 5.5 V on other input, V _{OUT} = 5.5 V.
I _{IH1}	Logical "1" Input Current		20		20		20	μA	V _{CC} = 5.5 V, V _{IN} = 2.7 V, other input = 0 V.
I _{IH2}	Logical "1" Input Current		100		100		100	μA	V _{CC} = 5.5 V, V _{IN} = 5.5 V, other input = 0 V.
I _{IL}	Logical "0" Input Current	– 150	– 380	– 150	– 380	– 150	– 380	μA	V _{CC} = 5.5 V, V _{IN} = 0.4 V, other inputs = 5.5 V.
I _{CCH}	Power Supply Current		1.6		1.6		1.6	mA	V _{CC} = 5.5 V, V _{IN} = 0 V (all inputs).
I _{CCL}	Power Supply Current		4.4		4.4		4.4	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.	

Symbol	Parameter	Limits						Unit	Test Condition (Unless Otherwise Specified)
	Switching Parameters:	+ 25°C		+ 125°C		– 55°C			
		Subgroup 9		Subgroup 10		Subgroup 11			
		Min	Max	Min	Max	Min	Max		
tPHL tPHL	Propagation Delay /Data-Output Output <u>High-Low</u>	2.0 —	36 28	2.0 —	55 50	2.0 —	55 50	ns	VCC = 5.0 V, CL = 50 pF, RL = 2.0 kΩ. VCC = 5.0 V, CL = 15 pF, RL = 2.0 kΩ.
tPLH tPLH	Propagation Delay /Data-Output Output <u>Low-High</u>	2.0 —	40 32	2.0 —	60 55	2.0 —	60 55	ns	VCC = 5.0 V, CL = 50 pF, RL = 2.0 kΩ. VCC = 5.0 V, CL = 15 pF, RL = 2.0 kΩ.

NOTE:1. The limits specified for C_L = 15 pF are guaranteed but not tested.