



MOTOROLA

Quad 2-Input Positive NAND Gate

**ELECTRICALLY TESTED PER:
MPG54ALS00**

Military 54ALS00

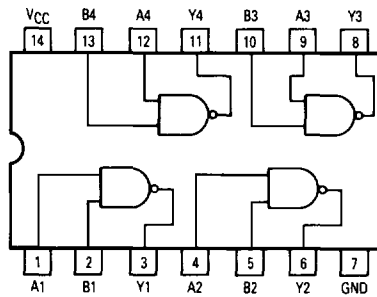


AVAILABLE AS:

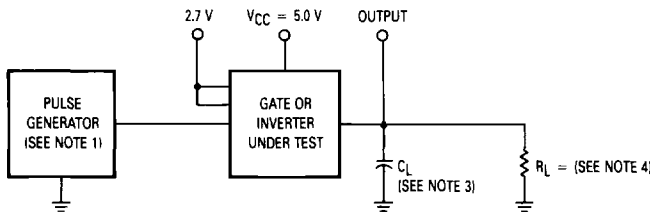
- 1) JAN: N/A
- 2) SMD: N/A
- 3) 883C: 54ALS00/BXAJC

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

LOGIC DIAGRAM



AC TEST CIRCUIT



NOTES:

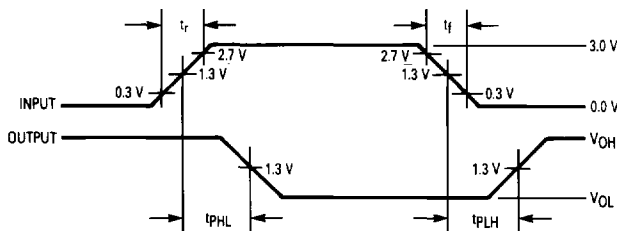
- 1. Pulse generator has the following characteristics: $t_r = t_f = 6.0 \pm 1.5$ ns, PRR = 1.0 MHz, $Z_{out} = 50 \Omega$.
- 2. Terminal condition (pins not designated) may be high ≥ 2.0 V, low ≤ 0.8 V, or open).
- 3. $C_L = 50$ pF $\pm 10\%$, including scope probe, wiring and stray capacitance, without package in test fixture.
- 4. $R_L = 499 \Omega \pm 5.0\%$.
- 5. Voltage measurements are to be made with respect to network ground terminal.

PIN ASSIGNMENTS

FUNCTION	DIL	FLATS	LCC	BURN-IN (CONDITION 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**

WAVEFORMS



TRUTH TABLE

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

54ALS00

Symbol	Parameter	Limits						Units	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} = -400 μA, V _{IL} = 0.8 V, V _{IN} = 5.5 V on other input.
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 _{IH}	Logical "1" Input Current		20		20		20	μA	V _{CC} = 5.5 V, V _{IH} = 2.7 V, other input is GND.
I _{IHH}	Logical "1" Input Current		100		100		100	μA	V _{CC} = 5.5 V, V _{IHH} = 7.0 V, other input is GND.
I _{IL}	Logical "0" Input Current	0	-100	0	-100	0	-100	μA	V _{CC} = 5.5 V, V _{IN} = 0.4 V, other inputs = 5.5 V.
I _{OS}	Output Short Circuit Current	-30	-110	-30	-110	-30	-110	mA	V _{CC} = 5.5 V, V _{IN} = GND (both inputs), V _{OUT} = 2.25 V.
I _{CCH}	Power Supply Current		0.85		0.85		0.85	mA	V _{CC} = 5.5 V, V _{IN} = GND (all inputs).
I _{CCL}	Power Supply Current		3.0		3.0		3.0	mA	V _{CC} = 5.5 V, V _{IN} = 4.5 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		0.8		0.8		0.8	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} = 0.4 V, and V _{INH} = 2.5 V.	

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Symbol	Parameter	Limits						Units	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}	Propagation Delay :Data-Output Output <u>High-Low</u>	2.0	8.0	2.0	9.0	2.0	9.0	ns	V _{CC} = 5.0 V, C _L = 50 pF, R _L = 499 Ω.
t _{PLH}	Propagation Delay :Data-Output Output <u>Low-High</u>	3.0	11	3.0	14	3.0	14	ns	V _{CC} = 5.0 V, C _L = 50 pF, R _L = 499 Ω.

NOTE:

- Method 3011 of MIL-STD-883 shall be used, except the output shall be as specified herein, and the output current shall be operating rather than short circuit current. The output conditions have been chosen to produce a current that closely approximates one half of the true short-circuit output current, I_{OS}.