MOTOROLA

Quad 2-Input Positive AND Gate

ELECTRICALLY TESTED PER:
MPG54ALS08

MPO

AVAILABLE AS:

1) JAN: N/A
2) SMD: N/A
3) 883C: 54ALS08/BXAJC

X = CASE OUTLINE AS FOLLOWS:
  PACKAGE: CERDIP: C
       CERFLAT: D
         LCC: 2
*Call Factory for latest update

LOGIC DIAGRAM
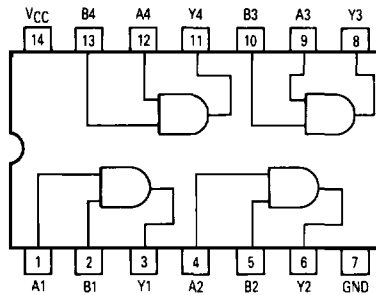
AC TEST CIRCUIT
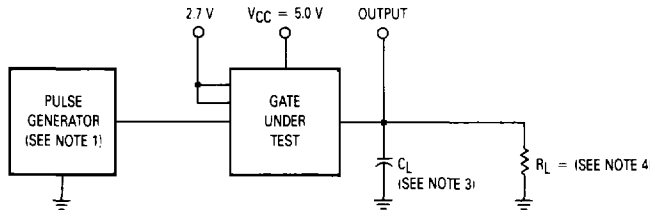
NOTES:
1. The pulse generator has the following characteristics: $t_r = t_f = 6.0 \pm 1.5$ ns, PRR = 1.0 MHz, $Z_{out} \approx 50\ \Omega$.
2. Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 0.8 V, or open).
3. $C_L = 50$ pF ± 10%, including scope probe, wiring and jig capacitance, without package in test fixture.
4. $R_L = 499\ \Omega \pm 1.0\%$.
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	V_{CC}
B1	2	2	3	V_{CC}
Y1	3	3	4	V_{CC}
A2	4	4	6	V_{CC}
B2	5	5	8	V_{CC}
Y2	6	6	9	V_{CC}
GND	7	7	10	GND
Y3	8	8	12	V_{CC}
A3	9	9	13	V_{CC}
B3	10	10	14	V_{CC}
Y4	11	11	16	V_{CC}
A4	12	12	18	V_{CC}
B4	13	13	19	V_{CC}
V_{CC}	14	14	20	V_{CC}

BURN-IN CONDITIONS:
V_{CC} = 5.0 V MIN/6.0 V MAX

WAVEFORMS
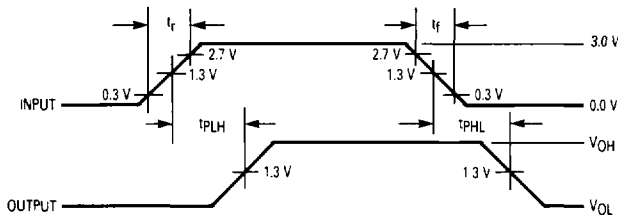
TRUTH TABLE

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

54ALS08

Symbol	Parameter	Limits						Units	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_{OH}	Logical "1" Output Voltage	2.5		2.5		2.5		V	V_{CC} = 4.5 V, I_{OH} = −0.4 mA, V_{IH} = 2.0 V, V_{IN} = 2.0 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_{IL} = 0.8 V, V_{IN} = 5.5 V on other input.
V_{IC}	Input Clamping Voltage		−1.5					V	V_{CC} = 4.5 V, I_{IN} = −18 mA, on other inputs are open.
I_{IH}	Logical "1" Input Current		20		20		20	μA	V_{CC} = 5.5 V, V_{IH} = 2.7 V, other input is open.
I_{IHH}	Logical "1" Input Current		100		100		100	μA	V_{CC} = 5.5 V, V_{IHH} = 7.0 V, other input is open.
I_{IL}	Logical "0" Input Current	0	−100	0	−100	0	−100	μA	V_{CC} = 5.5 V, V_{IN} = 0.4 V, other input = 5.5 V.
I_{OS}	Output Short Circuit Current	−30	−110	−30	−110	−30	−110	mA	V_{CC} = 5.5 V, V_{IN} = 5.5 V (both inputs), V_{OUT} = 2.25 V.
I_{CCH}	Power Supply Current		2.4		2.4		2.4	mA	V_{CC} = 5.5 V, V_{IN} = 4.5 V (all inputs).
I_{CCL}	Power Supply Current		4.0		4.0		4.0	mA	V_{CC} = 5.5 V, V_{IN} = GND (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.
		Subgroup 7		Subgroup 8A		Subgroup 8B			
	Functional Tests								per Truth Table with V_{CC} = 5.0 V, V_{INL} = 0.4 V, and V_{INH} = 2.5 V.

Symbol	Parameter	Limits						Units	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		
t_{PHL}	Propagation Delay ·Data-Output Output High-Low	3.0	10	3.0	12	3.0	12	ns	V_{CC} = 5.0 V, C_L = 50 pF, R_L = 499 Ω.
t_{PLH}	Propagation Delay ·Data-Output Output Low-High	4.0	14	4.0	16	4.0	16	ns	V_{CC} = 5.0 V, C_L = 50 pF, R_L = 499 Ω.

NOTE:
1. 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}

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