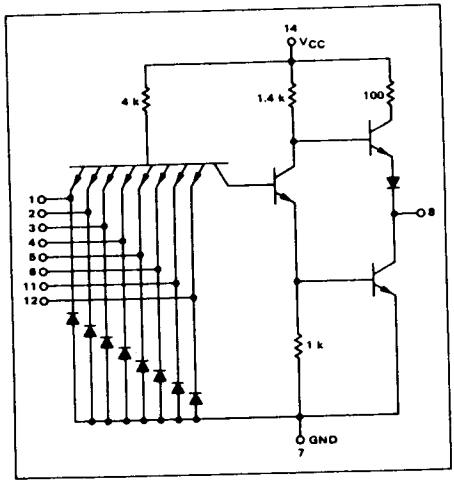
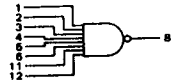
8-INPUT "NAND" GATE

MC5430L*
MC7430P,L*



*L suffix = TO-116 ceramic package (Case 632)
P suffix = TO-116 plastic package (Case 606)
See General Information section for package outline dimensions.

This device is an 8-input NAND gate. It is useful when processing a large number of variables, such as in encoders and decoders.



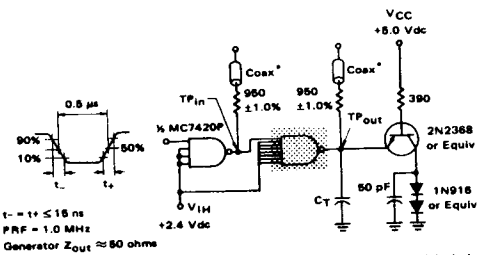
Positive Logic:
$8 = \overline{1 \cdot 2 \cdot 3 \cdot 4 \cdot 5 \cdot 6 \cdot 11 \cdot 12}$

Negative Logic:
$8 = \overline{1 + 2 + 3 + 4 + 5 + 6 + 11 + 12}$

Input Loading Factor = 1
Output Loading Factor = 10

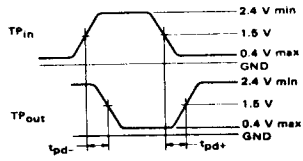
Total Power Dissipation = 10 mW typ/pkg
Propagation Delay Time = 13 ns typ

SWITCHING TIME TEST CIRCUIT



t- = t+ ≤ 15 ns
PRF = 1.0 MHz
Generator $Z_{out} \approx 50$ ohms

VOLTAGE WAVEFORMS AND DEFINITIONS

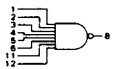


C_T = 15 pF = total parasitic capacitance, which includes probe, wiring, and load capacitances.

*The coax delays from input to scope and output to scope must be matched. The scope must be terminated in 50-ohm impedance. The 950-ohm resistor and the scope termination impedance constitute a 20:1 attenuator probe. Coax shall be CT-070-50 or equivalent.

ELECTRICAL CHARACTERISTICS

Test procedures are shown for only one input of this device. To complete testing, sequence through remaining inputs in the same manner



	TEST CURRENT/VOLTAGE VALUES (All Temperatures)											
	mA		Volts									
	I_{OL}	I_{OH}	V_{IL}	V_{IH}	V_{IHH}	V_{R1}	V_{R2}	V_{th1}	V_{th0}	V_{CC}	V_{CCL}	V_{CCH}
MC5430	16	-0.4	0.4	2.4	5.5	4.5	5.0	2.0	0.8	5.0	4.5	5.5
MC7430	16	-0.4	0.4	2.4	5.5	4.5	5.0	2.0	0.8	5.0	4.75	5.25

Characteristic	Symbol	Pin Under Test	MC5430 Test Limits −55 to +125°C Min	Max	Unit	MC7430 Test Limits 0 to +70°C Min	Max	Unit	TEST CURRENT/VOLTAGE APPLIED TO PINS LISTED BELOW: I_{OL}	I_{OH}	V_{IL}	V_{IH}	V_{IHH}	V_{R1}	V_{R2}	V_{th1}	V_{th0}	V_{CC}	V_{CCL}	V_{CCH}	Gnd
Input																					
Forward Current	I_F	1	-	-1.6	mAdc	-	-1.6	mAdc	-	-	1	-	-	2,3,4,5,6, 11,12	-	-	-	-	-	14	7
Leakage Current	I_{R1}	1	-	40	µAdc	-	40	µAdc	-	-	-	1	-	-	-	-	-	-	-	14	2,3,4,5,6,7,11,12
	I_{R2}	1	-	1.0	mAdc	-	1.0	mAdc	-	-	-	-	1	-	-	-	-	-	-	14	2,3,4,5,6,7,11,12
Output																					
Output Voltage	V_{OL}	8	-	0.4	Vdc	-	0.4	Vdc	8	-	-	-	-	-	-	1,2,3,4,5, 6,11,12	-	-	14	-	7
	V_{OH}	8	2.4	-	Vdc	2.4	-	Vdc	-	8	-	-	-	2,3,4,5, 6,11,12	-	-	1	-	14	-	7
Short-Circuit Current	I_{SC}	8	-20	-55	mAdc	-18	-55	mAdc	-	-	-	-	-	-	-	-	-	-	-	14	1,2,3,4,5,6,7,8,11,12
Power Requirements																					
Power Supply Drain	I_{PDH}	14	-	5.1	mAdc	-	5.1	mAdc	-	-	-	-	-	-	1,2,3,4,5, 6,11,12	-	-	14	-	-	7
	I_{PDL}	14	-	1.8	mAdc	-	1.8	mAdc	-	-	-	-	-	-	-	-	-	14	-	-	1,2,3,4,5,6,7,11,12
Switching Parameters									Pulse In	Pulse Out											
Turn-On Delay	t_{pd-}	1,8	-	15**	ns	-	15**	ns	1	8	-	2,3,4,5, 6,11,12	-	-	-	-	-	14	-	-	7
Turn-Off Delay	t_{pd+}	1,8	-	29**	ns	-	29**	ns	1	8	-	2,3,4,5, 6,11,12	-	-	-	-	-	14	-	-	7

**Tested only at 25°C.