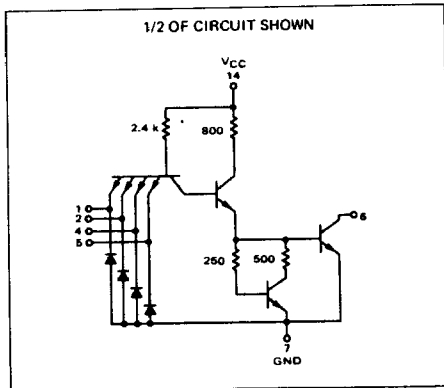


MTTL III MC3100/3000 series

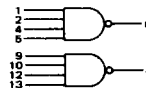
DUAL 4-INPUT "NAND" GATE  
(Open Collector)

**MC3112F • MC3012F**  
**MC3112L • MC3012L,P**  
(54H22J) (74H22J,N)

1/2 OF CIRCUIT SHOWN



This device consists of two 4-input NAND gates with no output pull-up circuits. It can be used where the Wired-OR function is required or for driving discrete components.

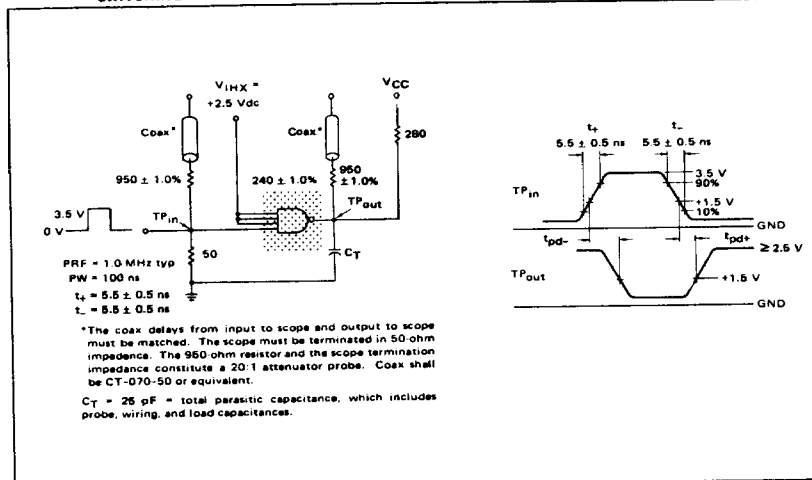


Positive Logic:  $6 = \overline{1 \cdot 2 \cdot 4 \cdot 5}$   
Negative Logic:  $6 = 1 + 2 + 4 + 5$

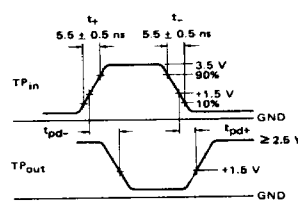
Input Loading Factor = 1  
Output Loading Factor = 10

Total Power Dissipation = 44 mW typ/pkg  
Propagation Delay Time = 8.0 ns typ

SWITCHING TIME TEST CIRCUIT



VOLTAGE WAVEFORMS AND DEFINITIONS



PRF = 1.0 MHz typ  
PW = 100 ns  
 $t_r = 5.5 \pm 0.5$  ns  
 $t_f = 5.5 \pm 0.5$  ns

\*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.

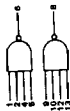
$C_T = 25$  pF = total parasitic capacitance, which includes probe, wiring, and load capacitances.

See General Information section for packaging.

MC3112F, MC3012F/MC3112L, MC3012L,P (continued)

ELECTRICAL CHARACTERISTICS

Test procedures are shown for only one gate. The other gate test procedures are shown in the same manner. Further test procedures are shown for only one gate out of the gate under test. To complete testing, sequence through remaining inputs.

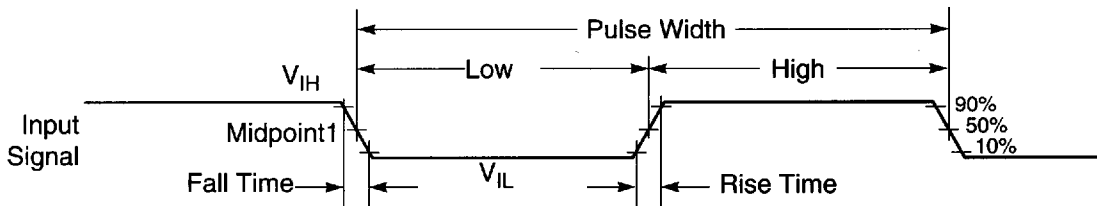


Characteristic	Symbol	Pin Under Test	MC3012 Test Limits												Unit	TEST CURRENT / VOLTAGE APPLIED TO PINS LISTED BELOW												End
			-55°C		+25°C		+75°C		0°C		+125°C		+25°C			+75°C		V <sub>OH</sub>		V <sub>OL</sub>		V <sub>CC1</sub>		V <sub>CC2</sub>				
			Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max		Min	Max	Min	Max	Min	Max	Min	Max	Min	Max			
Input Leakage Current	I <sub>I</sub>	1	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0				
Input Current	I <sub>I</sub>	1	-30	-30	-30	-30	-30	-30	-30	-30	-30	-30	-30	-30	-30	-30	-30	-30	-30	-30	-30	-30	-30	-30				
Breakdown Voltage	B <sub>Vin</sub>	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
Clamp Voltage	V <sub>D</sub>	1	-	-	-1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
Output Voltage	V <sub>OL</sub>	6	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4				
Output Leakage	I <sub>CEX</sub>	-	-	-	250	-	-	-	250	-	-	-	-	250	-	-	-	-	-	-	-	-	-	-				
Power Requirements (Test Device)	I <sub>max</sub>	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
Supply Current	I <sub>DD</sub>	14	-	-	18	-	-	18	-	-	18	-	-	18	-	-	-	-	-	-	-	-	-	-				
Power Supply Drain	I <sub>DDL</sub>	14	-	-	6.0	-	-	6.0	-	-	6.0	-	-	6.0	-	-	-	-	-	-	-	-	-	-				
Switching Parameters	t <sub>prop</sub>	1,6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
Turn-On Delay	t <sub>prop</sub>	1,6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				

\* See this is an inverting gate; power drain is minimized by grounding the inputs to gates not under test.

## AC ELECTRICAL CHARACTERISTICS

The timing waveforms in the AC Electrical Characteristics are tested with a  $V_{IL}$  maximum of 0.5 V and a  $V_{IH}$  minimum of 2.4 V for all pins, except EXTAL, RESET, MODA, MODB, and MODC. These pins are tested using the input levels set forth in the DC Electrical Characteristics. AC timing specifications that are referenced to a device input signal are measured in production with respect to the 50% point of the respective input signal's transition. DSP56002 output levels are measured with the production test machine  $V_{OL}$  and  $V_{OH}$  reference levels set at 0.8 V and 2.0 V, respectively.



Note: The midpoint is  $V_{IL} + (V_{IH} - V_{IL})/2$ .

AA0179

Figure 2-1 Signal Measurement Reference