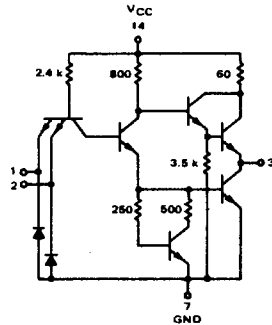


QUAD 2-INPUT "NAND" GATE

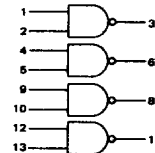
MTTL III MC3100/3000 series

**MC3100F • MC3000F**  
**MC3100L • MC3000L,P**  
 (54H00J) (74H00J,N)

1/4 OF CIRCUIT SHOWN



This device consists of four 2-input NAND gates. Each gate may be used as an inverter, or two gates may be cross-coupled to form bistable circuits.



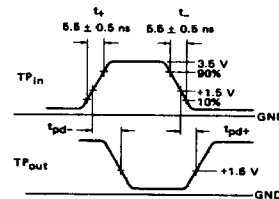
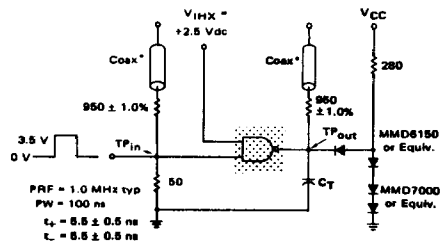
Positive Logic:  $3 = \overline{1 \cdot 2}$   
 Negative Logic:  $3 = \overline{1} \cdot \overline{2}$

Input Loading Factor = 1  
 Output Loading Factor = 10

Total Power Dissipation = 88 mW typ/pkg  
 Propagation Delay Time = 6.0 ns typ

SWITCHING TIME TEST CIRCUIT

VOLTAGE WAVEFORMS AND DEFINITIONS



\*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.

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

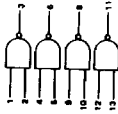
See General Information section for packaging.

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MC3100F, MC3000F/MC3100L, MC3000L,P (continued)

ELECTRICAL CHARACTERISTICS

Test procedures are shown for only one gate. The procedures are similar for all gates. The gates are tested in the same manner. Further test procedures are shown for only one input of the gate. The test conditions are shown in the test tables. To complete testing, sequence through remaining inputs



© Test  
Temperatures

MC3100  
-55°C  
+25°C  
+125°C  
0°C

MC3000  
-55°C  
+25°C  
+125°C

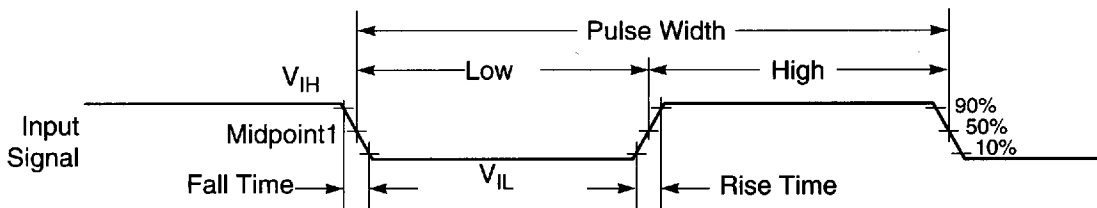
Characteristic Symbol	-55°C			+25°C			+125°C			0°C			MC3000 Test Limits			-55°C			+25°C			+125°C		
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max		
	Unit	Test	Unit	Test	Unit	Test	Unit	Test	Unit	Test	Unit	Test	Unit	Test	Unit	Test	Unit	Test	Unit	Test	Unit	Test		
Supply Current $I_{cc}$	1	-	-3.0	-	-2.0	-	-2.0	-	-2.0	-	-2.0	-	-2.0	-	-2.0	-	-2.0	-	-2.0	-	-2.0	-	-2.0	
Load Current $I_L$	1	-	50	-	50	-	50	-	50	-	50	-	50	-	50	-	50	-	50	-	50	-	50	
Breakdown Voltage $BV_{DS}$	1	-	-	-	5.5	-	-	-	5.5	-	-	-	5.5	-	-	-	5.5	-	-	-	5.5	-	-	
Clamp Voltage $V_D$	1	-	-	-	-1.5	-	-	-	-1.5	-	-	-	-1.5	-	-	-	-1.5	-	-	-	-1.5	-	-	
Output Voltage VOL	3	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 Voltage VOH	3	2.4	-	2.4	-	2.4	-	2.4	-	2.4	-	2.4	-	2.4	-	2.4	-	2.4	-	2.4	-	2.4	-	2.4
Power Requirements Power Requirements Power Requirements Power Requirements Power Supply Error	14 14 14 14	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -
Switching Parameters Turn-On Delay Turn-Off Delay	1,3 1,3 1,3	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -

\*Place this at an inverting gate, power drain is minimized by grounding the inputs in gates not under test.

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## 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