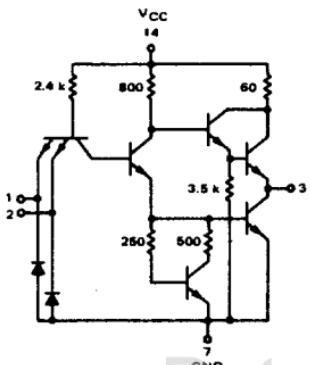


## MTTL III MC3100/3000 series

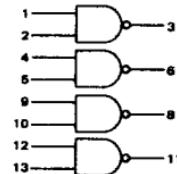
QUAD 2-INPUT "NAND" GATE

**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.



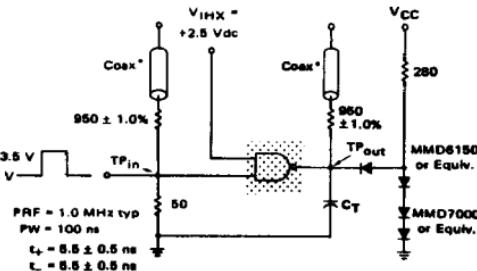
Positive Logic:  $3 = 1 \cdot 2$   
 Negative Logic:  $3 = 1 + 2$

Input Loading Factor = 1  
 Output Loading Factor = 10

Total Power Dissipation = 68 mW typ/pkg  
 Propagation Delay Time = 6.0 ns typ

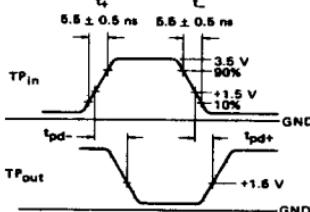
## SWITCHING TIME TEST CIRCUIT

## 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.

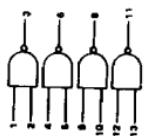
CT = 26 pF = total parasitic capacitance, which includes probe, wiring, and load capacitances.



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**MC3100F, MC3000F/MC3100L, MC3000L,P (continued)****ELECTRICAL CHARACTERISTICS**

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

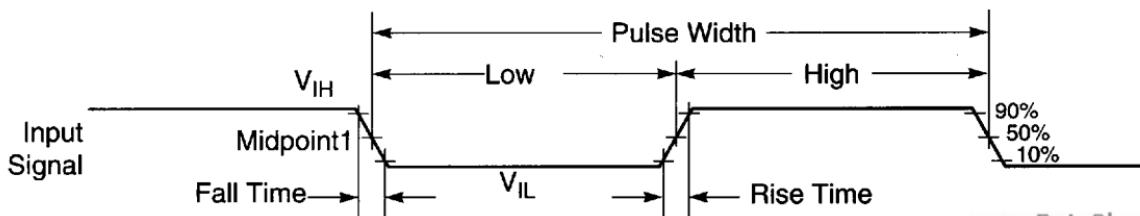


TEST CURRENT / VOLTAGE VALUES													
Characteristic	Symbol	Unit	@ Test										
			mA	I <sub>in</sub>	I <sub>in</sub>	V <sub>G</sub>	V <sub>H</sub>	V <sub>L</sub>	V <sub>th</sub>	V <sub>min</sub>	V <sub>max</sub>	V <sub>CC</sub>	V <sub>DC</sub>
Leakage Current	I <sub>F</sub>	A	-	-2.0	-	-2.0	-	-2.0	-	-2.0	-	-2.0	mAdc
Forward Current	I <sub>R</sub>	A	-	-80	-	-50	-	-50	-	-50	-	-50	mAdc
Breakdown Voltage	V <sub>BR</sub>	V	-	-	-5.5	-	-	-5.5	-	-	-	-	-
Clamp Voltage	V <sub>D</sub>	V	-	-	-1.5	-	-	-1.5	-	-1.5	-	-1.5	-
Output Voltage	V <sub>OL</sub>	V	0	-0.4	-	0.4	-	0.4	-	0.4	-	0.4	-
V <sub>OH</sub>	V	V	2.4	-	3.4	-	2.4	-	2.5	-	2.5	-	2.5
Short-Circuit Current	I <sub>SC</sub>	A	-40	-100	-40	-100	-40	-100	-40	-100	-100	-100	mAdc
MC3100 Test Limits													
Input	V <sub>IN</sub>	V	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Unit
Under Test	V <sub>IN</sub>	V	-55°C	+125°C	0°C	+25°C	+25°C	+75°C	+75°C	+75°C	+75°C	+75°C	-
Input	V <sub>IN</sub>	V	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	-
Output	V <sub>OL</sub>	V	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	-
Output	V <sub>OH</sub>	V	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	-
Output Requirements (Total Device)	I <sub>MAX</sub>	A	-	-25	-	-	-	-25	-	-	-	-	-
Maximum Power	P <sub>MAX</sub>	W	-	-	-	-	-	-	-	-	-	-	-
Power Supply Drift	I <sub>PDR</sub>	mA	-	-30	-	-30	-	-30	-	-30	-	-30	-
I <sub>POL</sub>	mA	-	-17.5	-	-17.5	-	-17.5	-	-17.5	-	-17.5	-	-
Saturation Parameters	I <sub>sat</sub>	A	-	-10	-	-	-	-10	-	-10	-	-10	-
On-Off Delay	T <sub>ON</sub>	s	-	-	-	-	-	-	-	-	-	-	-
Turn-Off Delay	T <sub>OFF</sub>	s	-	-	-	-	-	-	-	-	-	-	-

This data sheet is an advertising specification. It is not intended to guarantee the performance of the device. It is the responsibility of the user to determine the suitability of the device for its application.

**Specifications****AC Electrical Characteristics****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.



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

AA0179

**Figure 2-1 Signal Measurement Reference**

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