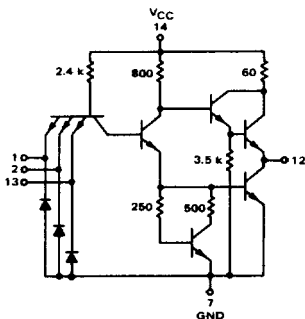
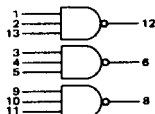


**MC3105F • MC3005F**  
**MC3105L • MC3005L,P**  
(54H10J) (74H10J,N)

1/3 OF CIRCUIT SHOWN



This package consists of three 3-input NAND gates. Each gate may be used as an inverter, or two gates may be cross-coupled to form bistable circuits.

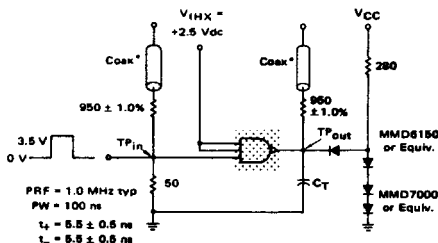


Positive Logic:  $12 = 1 \cdot 2 \cdot 13$   
Negative Logic:  $12 = 1 \bar{1} \bar{2} \bar{1}3$

Input Loading Factor = 1  
Output Loading Factor = 10

Total Power Dissipation = 66 mW typ/pkg  
Propagation Delay Time = 6.0 ns typ

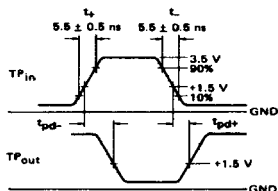
SWITCHING TIME TEST CIRCUIT



\*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 constitutes a 20:1 attenuator probe. Coax shall be CT-070-50 or equivalent.

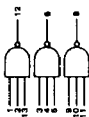
$C_T = 25$  pF = total parasitic capacitance, which includes probe, wiring, and load capacitances.

VOLTAGE WAVEFORMS AND DEFINITIONS



**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**

@ Test Temperature

mA			Volts														
$I_{CL}$	$I_{OHL}$	$I_{OH}$	$V_L$	$V_{OL}$	$V_{OH}$	$V_{L1}$	$V_{OL1}$	$V_{OH1}$	$V_{L2}$	$V_{OL2}$	$V_{OH2}$	$V_{L3}$	$V_{OL3}$	$V_{OH3}$	$V_{L4}$	$V_{OL4}$	$V_{OH4}$
20	-2.0	-	-	-1.1	2.0	0.4	2.4	4.0	-	-	-	-	-	-	-	-	-
20	-2.0	-	-1.0	-1.1	1.8	0.4	2.4	4.0	-	-	-	-	-	-	-	-	-
20	-2.0	-	-	-0.8	1.8	0.4	2.4	4.0	-	-	-	-	-	-	-	-	-
20	-2.0	-	-	-1.1	2.0	0.4	2.5	4.0	-	-	-	-	-	-	-	-	-
20	-2.0	-	-1.0	-1.1	1.8	0.4	2.3	4.0	-	-	-	-	-	-	-	-	-
20	-2.0	-	-	-0.9	1.8	0.4	2.5	4.0	-	-	-	-	-	-	-	-	-

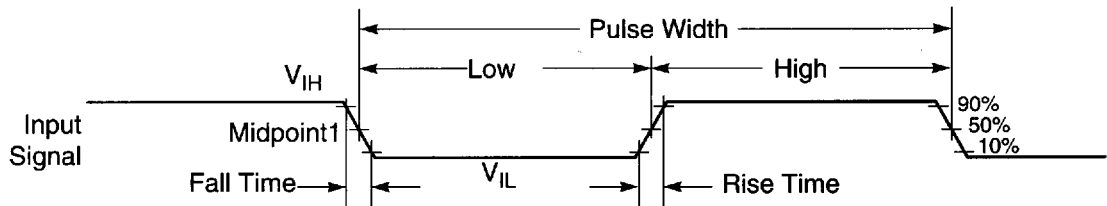
TEST CURRENT / VOLTAGE APPLIED TO PMS LISTED BELOW.

Characteristic	Pin Under Test	Symbol	MC3105 Test Limits						MC3005 Test Limits						Unit	$V_{OH}$	$V_{OL}$	$V_{OH1}$	$V_{OL1}$	$V_{OH2}$	$V_{OL2}$	$V_{OH3}$	$V_{OL3}$	$V_{OH4}$	$V_{OL4}$										
			-55°C		+25°C		+125°C		0°C		+25°C		+75°C																						
			Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max																					
Input Forward Current	1*	$I_F$	-	-2.0	-	-3.0	-	-1.0	-	-2.0	-	-2.0	-	+2.0	mA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Leakage Current	1	$I_B$	-	-	-	-	-	-	-	-	-	-	-	-	$\mu$ Adc	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
Broadband Voltage	1	$BV_{in}$	-	-	-	-	-	-	-	-	-	-	-	-	Vdc	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Clamp Voltage	1	$V_D$	-	-	-	-	-	-	-	-	-	-	-	-	Vdc	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Output $I_{OL}$	12	$I_{OL}$	-	-	-	-	-	-	-	-	-	-	-	-	Vdc	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Output $I_{OH}$	12	$I_{OH}$	-	-	-	-	-	-	-	-	-	-	-	-	Vdc	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Short-Circuit Current	12	$I_{SC}$	-40	-180	-40	-180	-40	-180	-40	-180	-40	-180	-40	-180	mA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Power Dissipation (Typical)	14	$P_{max}$	-	-	-	-	-	-	-	-	-	-	-	-	mW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Maximum Output Supply Current	14	$I_{POH}$	-	-	-	-	-	-	-	-	-	-	-	-	mA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Power Supply Drain	14	$I_{POD}$	-	-	-	-	-	-	-	-	-	-	-	-	mA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Switching Parameter (Turn-On Delay)	14	$t_{PDL}$	-	-	-	-	-	-	-	-	-	-	-	-	ns	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Switching Parameter (Turn-Off Delay)	1.12	$t_{pD}$	-	-	-	-	-	-	-	-	-	-	-	-	ns	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Turn-Off Delay	1.12	$t_{pD}$	-	-	-	-	-	-	-	-	-	-	-	-	ns	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

\*Since 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