

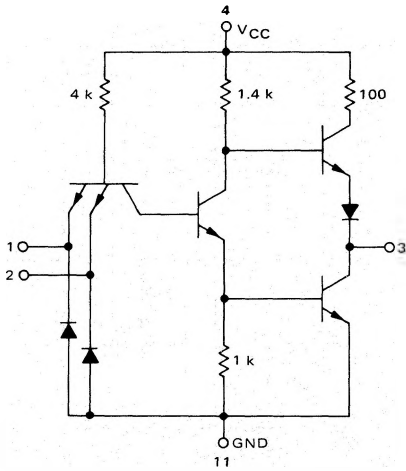
QUAD 2-INPUT "NAND" GATE

MCBC5400/MCB5400F series

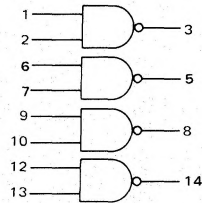
**MCBC5400\***  
**MCB5400F\***



1/4 OF CIRCUIT SHOWN



This device consists of four 2-input NAND gates that is produced using beam lead sealed junction technology. These devices are particularly useful in highly reliable systems using hybrid beam lead assembly techniques or standard flat package assembly techniques.



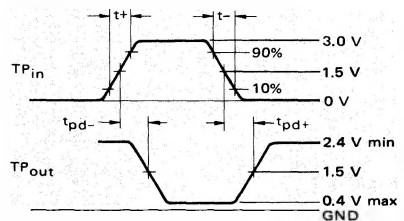
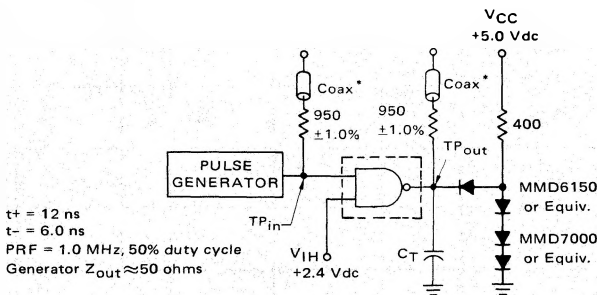
Positive Logic:  $3 = \overline{1 \cdot 2}$   
Negative Logic:  $3 = 1 + 2$

Input Loading Factor = 1  
Output Loading Factor = 10

Total Power Dissipation = 40 mW typ/pkg  
Propagation Delay Time = 10 ns typ

SWITCHING TIME TEST CIRCUIT

VOLTAGE WAVEFORMS AND DEFINITIONS



$t_r = 12$  ns  
 $t_f = 6.0$  ns  
PRF = 1.0 MHz, 50% duty cycle  
Generator  $Z_{out} \approx 50$  ohms

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

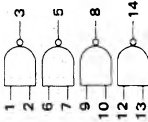
\* The coax delays from input to scope and output to scope must be matched. The scope must be terminated in 50-ohm impedance. The 950-ohm resistor and the scope termination impedance constitute a 20:1 attenuator probe. Coax shall be CT-070-50 or equivalent.

\* F suffix = 1/4" x 1/4" ceramic package (Case 651). MCBC-prefixed devices are unencapsulated. Beam numbers are the same as the pin numbers for flat-packaged devices. See General Information section for package and chip details.

MCBC5400, MCB5400F (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.



Characteristic	Symbol	Pin Under Test	Test Limits		TEST CURRENT /VOLTAGE VALUES (All Temperatures)																
			MCBC5400/MCB5400F -55 to +125°C		mA							Volts							Gnd		
			Min	Max	I <sub>OL</sub>	I <sub>OH</sub>	V <sub>IL</sub>	V <sub>IH</sub>	V <sub>IHH</sub>	V <sub>RI</sub>	V <sub>R2</sub>	V <sub>th1</sub>	V <sub>th0</sub>	V <sub>CC</sub>	V <sub>CCL</sub>	V <sub>CCH</sub>					
			Unit	Unit																	
Input Forward Current	I <sub>F</sub>	1	-	-1.6	mAdc	-	-	1	-	-	2	-	-	-	-	-	-	-	4	11*	
Leakage Current	I <sub>R1</sub>	1	-	40	μAdc	-	-	-	1	-	-	-	-	-	-	-	-	-	4	2,11*	
	I <sub>R2</sub>	1	-	1.0	mAdc	-	-	-	1	-	-	-	-	-	-	-	-	-	4	2,11*	
Output Output Voltage	V <sub>OL</sub>	3	-	0.4	Vdc	3	-	-	-	-	-	-	1,2	-	-	-	-	-	4	11*	
	V <sub>OH</sub>	3	2.4	-	Vdc	-	3	-	-	-	2	-	-	1	-	-	-	-	2,4	11*	
Short-Circuit Current	I <sub>SC</sub>	3	-20	-55	mAdc	-	-	-	-	-	-	-	-	-	-	-	-	-	4	1,2,3,11*	
Power Requirements (Total Device)	Power Supply Drain	I <sub>PDH</sub>	4	-	22	mAdc	-	-	-	-	-	-	-	-	-	-	-	-	-	4	11
		I <sub>PDL</sub>	4	-	8.0	mAdc	-	-	-	-	-	-	-	-	-	-	-	-	-	4	1,2,11*
Switching Parameters	Turn-On Delay	t <sub>pd-</sub>	1,3	-	15**	ns	Pulse In	Pulse Out	-	2	-	-	-	-	-	-	-	-	-	4	11*
Turn-Off Delay	t <sub>pd+</sub>	1,3	-	22**	ns	1	3	-	2	-	-	-	-	-	-	-	-	-	-	4	11*

\* Ground inputs to gates not under test.  
\*\* Tested only at 25°C.