

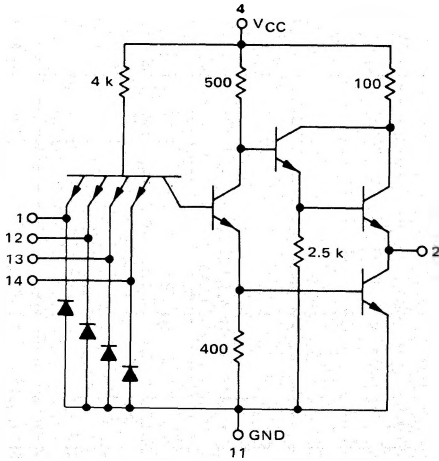
DUAL 4-INPUT "NAND" BUFFER

MCBC5400/MCB5400F series

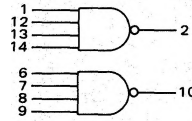
MCBC5440*
MCB5440F*



1/2 OF CIRCUIT SHOWN



This device consists of two 4-input NAND power gates that are 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: $2 = 1 \cdot 12 \cdot 13 \cdot 14$

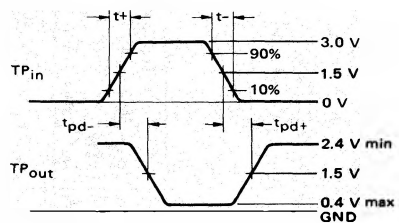
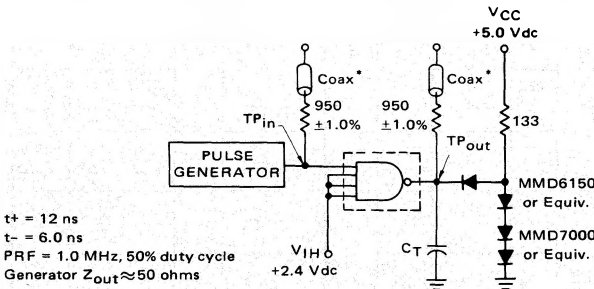
Negative Logic: $2 = 1 + 12 + 13 + 14$

Input Loading Factor = 1
Output Loading Factor = 30

Total Power Dissipation = 50 mW typ/pkg
Propagation Delay Time = 13 ns typ

SWITCHING TIME TEST CIRCUIT

VOLTAGE WAVEFORMS AND DEFINITIONS



$t^+ = 12$ ns
 $t^- = 6.0$ 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.

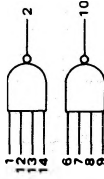
*The coax delays from input to scope and output to scope must be matched. The scope must be terminated in 50-ohm impedance. The 950-ohm resistor and the scope termination impedance constitute a 20:1 attenuator probe. Coax shall be CT-070-50 or equivalent.

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

MCBC5440, MCB5440F (continued)

ELECTRICAL CHARACTERISTICS

Test procedures are shown for only one gate. The other gate is 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)												Gnd	
			MCBC5440 / MCB5440F -55 to +125°C			mA						Volts							
			Min	Max	Unit	I_{OL}	I_{OH}	V_{IL}	V_{IH}	V_{IHH}	V_{R1}	V_{R2}	V_{th1}	V_{th0}	V_{CC}	V_{CCL}	V_{CCH}		
Input Forward Current	I_F	1	Min	-	-	48	-1.2	0.4	2.4	5.5	4.5	5.0	2.0	0.8	5.0	4.5	5.5	Gnd	
			Max	-	-	-	-	-	-	-	-	-	-	-	-	-	-		11*
			Unit	mAdc	mAdc	mAdc	V	V	V	V	V	V	V	V	V	V	V		
Leakage Current	I_{R1}	1	Min	-	40	-	-	-	1	-	-	-	-	-	-	-	-	11,12,13,14*	
			Max	-	-	-	-	-	-	-	-	-	-	-	-	-	-		11,12,13,14*
			Unit	μ Adc	μ Adc	mAdc	V	V	V	V	V	V	V	V	V	V	V		
Output Output Voltage	V_{OL}	2	Min	-	0.4	2	-	-	-	-	-	1,12,13,14	-	-	-	4	-	11*	
			Max	-	-	-	-	-	-	-	-	-	-	-	-	-	-		11*
			Unit	Vdc	Vdc	Vdc	Vdc	Vdc	Vdc	Vdc	Vdc	Vdc	Vdc	Vdc	Vdc	Vdc	Vdc		
Short-Circuit Current	I_{SC}	2	Min	-	20	-	-	-	-	-	-	-	-	-	-	-	-	1,2,11,12,13,14*	
			Max	-	-	-	-	-	-	-	-	-	-	-	-	-	-		11
			Unit	mAdc	mAdc	mAdc	mAdc	mAdc	mAdc	mAdc	mAdc	mAdc	mAdc	mAdc	mAdc	mAdc	mAdc		
Power Requirements (Total Device) Power Supply Drain	I_{PDH}	4	Min	-	27	-	-	-	-	-	1,6,7,8,9, 12,13,14	-	-	-	-	-	4	11	
			Max	-	-	-	-	-	-	-	-	-	-	-	-	-	-		1,11,12,13,14*
			Unit	mAdc	mAdc	mAdc	mAdc	mAdc	mAdc	mAdc	mAdc	mAdc	mAdc	mAdc	mAdc	mAdc	mAdc		
Switching Parameters	t_{pd-}	1,2	Min	-	15**	1	2	-	12,13,14	-	-	-	-	-	-	-	-	11*	
			Max	-	-	-	-	-	-	-	-	-	-	-	-	-	-		11*
			Unit	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns		
Turn-On Delay	t_{pd+}	1,2	Min	-	22**	1	2	-	12,13,14	-	-	-	-	-	-	-	-	11*	
			Max	-	-	-	-	-	-	-	-	-	-	-	-	-	-		11*
			Unit	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns		

*Ground inputs to gate not under test.

**Tested only at 25°C.