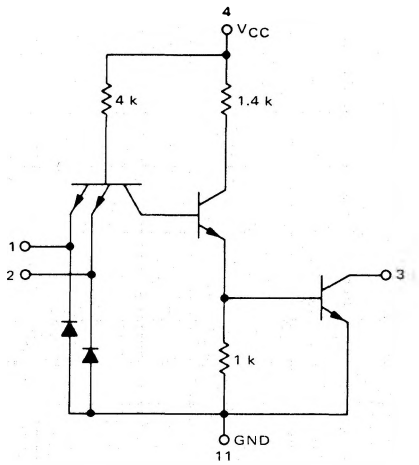
QUAD 2-INPUT "NAND" GATE
WITH OPEN COLLECTOR

MCBC5400/MCB5400F series

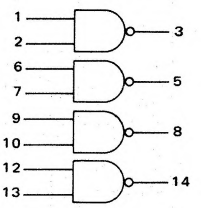
MCBC5401*
MCB5401F*

BEAM LEAD

1/4 OF CIRCUIT SHOWN



This device consists of four 2-input NAND gates with no output pullup network 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: $3 = \overline{1 + 2}$

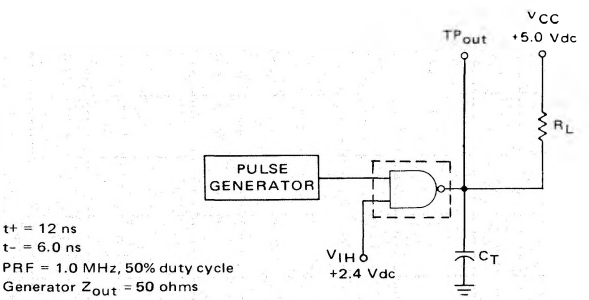
Input Loading Factor = 1
Output Loading Factor = 10

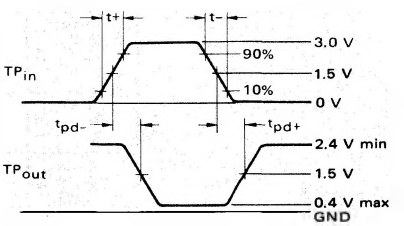
Total Power Dissipation = 40 mW typ/pkg

Propagation Delay Time = 35 ns typ

VOLTAGE WAVEFORMS AND DEFINITIONS

SWITCHING TIME TEST CIRCUIT





t+ = 12 ns
t- = 6.0 ns
PRF = 1.0 MHz, 50% duty cycle
Generator Z_{out} = 50 ohms

R_L = 400 ohms for t_{pd-} test.
4.0 k ohms for t_{pd+} test.

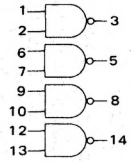
C_T = 15 pF = total parasitic capacitance, which includes probe, wiring, and load capacitances.

High impedance probes (>1.0 megohm) must be used for tests.

*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.

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 MCBC5401/MCB5401F −55 to +125°C Min	Max	Unit	TEST CURRENT/VOLTAGE VALUES (All Temperatures) mA I_{OL}	Volts V_{IL}	V_{IH}	V_{IHH}	V_{R1}	V_{R2}	$V_{th\,1}$	$V_{th\,0}$	V_{CEX}	V_{CC}	V_{CCL}	V_{CCH}	Gnd
						16	0.4	2.4	5.5	4.5	5.0	2.0	0.8	5.5	5.0	4.5	5.5	
						TEST CURRENT/VOLTAGE APPLIED TO PINS LISTED BELOW:												
						I_{OL}	V_{IL}	V_{IH}	V_{IHH}	V_{R1}	V_{R2}	$V_{th\,1}$	$V_{th\,0}$	V_{CEX}	V_{CC}	V_{CCL}	V_{CCH}	
Input																		
Forward Current	I_F	1	-	-1.6	mAdc	-	1	-	-	2	-	-	-	-	-	-	4	11*
Leakage Current	I_{R1}	1	-	40	μAdc	-	-	1	-	-	-	-	-	-	-	-	4	2,11*
	I_{R2}	1	-	1.0	mAdc	-	-	-	1	-	-	-	-	-	-	-	4	2,11*
Output																		
Output Voltage	V_{OL}	3	-	0.4	Vdc	3	-	-	-	-	-	1,2	-	-	-	4	-	11*
Output Leakage Current	I_{CEX}	3	-	0.25	mAdc	-	-	-	-	1	-	-	2	3	-	4	-	11*
Power Requirements (Total Device)																		
Power Supply Drain	I_{PDH}	4	-	22	mAdc	-	-	-	-	-	1,2,6,7,9, 10,12,13	-	-	-	-	-	4	11
	I_{PDL}	4	-	8.0	mAdc	-	-	-	-	-	-	-	-	-	-	-	4	1,2,11*
Switching Parameters						Pulse In	Pulse Out											
Turn-On Delay	t_{pd-}	1,3	-	15**	ns	1	3	2	-	-	-	-	-	-	4	-	-	11
Turn-Off Delay	t_{pd+}	1,3	-	45**	ns	1	3	2	-	-	-	-	-	-	4	-	-	11

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