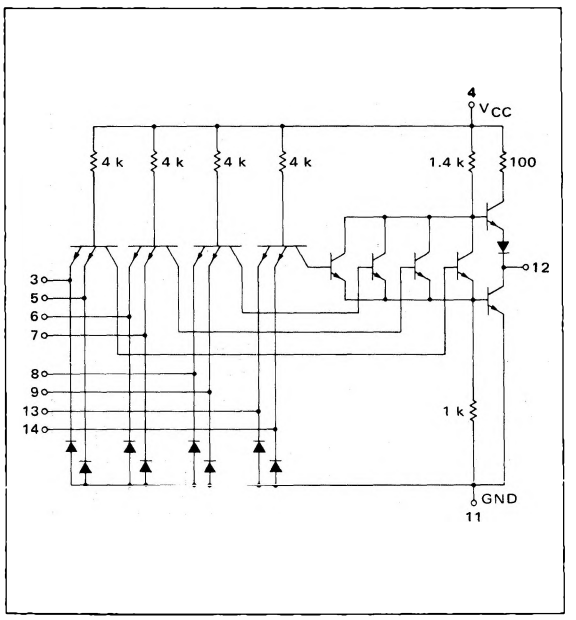
4-WIDE 2-INPUT
"AND-OR-INVERT" GATE

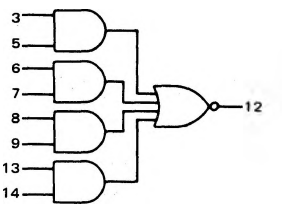
MCBC5454*
MCB5454F*

BEAM LEAD



This device consists of four 2-input AND gates ORed together and inverted.

Beam lead sealed junction technology is used to manufacture these devices. They are particularly useful in highly reliable systems using hybrid beam lead assembly techniques or standard flat package assembly techniques.



Positive Logic:

$12 = \overline{(3 \cdot 5) + (6 \cdot 7) + (8 \cdot 9) + (13 \cdot 14)}$

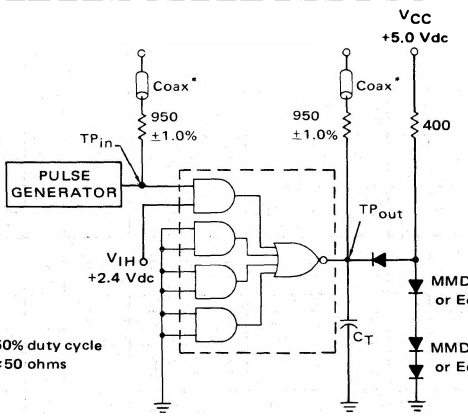
Negative Logic:

$12 = \overline{(3+5) \cdot (6+7) \cdot (8+9) \cdot (13+14)}$

Input Loading Factor = 1
Output Loading Factor = 10

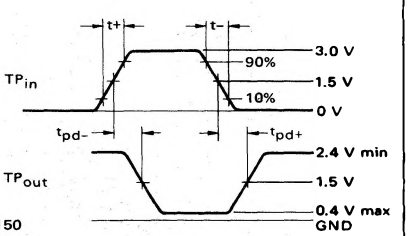
Total Power Dissipation = 22 mW typ/pkg
Propagation Delay Time = 13 ns typ

SWITCHING TIME TEST CIRCUIT



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

VOLTAGE WAVEFORMS AND DEFINITIONS



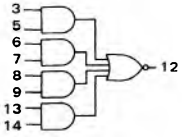
C_T = 15 pF = total parasitic capacitance, which includes probe, wiring, and load capacitances.

*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.

ELECTRICAL CHARACTERISTICS

Test procedures are shown for only one input of this device. To complete testing, sequence through remaining inputs in the same manner.



Characteristic	Symbol	Pin Under Test	Test Limits MCBC5454/MCB5454F −55 to +125°C 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}	Gnd
						TEST CURRENT/VOLTAGE VALUES (All Temperatures)												
						mA		Volts										
						16	-0.4	0.4	2.4	5.5	4.5	5.0	2.0	0.8	5.0	4.5	5.5	
						TEST CURRENT/VOLTAGE APPLIED TO PINS LISTED BELOW:												
Input																		
Forward Current	I_F	3	-	-1.6	mAdc	-	-	3	-	-	5	-	-	-	-	-	4	11
Leakage Current	I_{R1}	3	-	40	μAdc	-	-	-	3	-	-	-	-	-	-	-	4	5,6,7,8,9,11,13,14
	I_{R2}	3	-	1.0	mAdc	-	-	-	-	3	-	-	-	-	-	-	4	5,6,7,8,9,11,13,14
Output																		
Output Voltage	V_{OL}	12	-	0.4	Vdc	12	-	-	-	-	-	-	3,5	-	-	4	-	6,7,8,9,11,13,14
	V_{OH}	12	2.4	-	Vdc	-	12	-	-	-	5,7,9, 14	-	-	3,6,8, 13	-	4	-	11
Short-Circuit Current	I_{SC}	12	-20	-55	mAdc	-	-	-	-	-	-	-	-	-	-	-	4	3,5,6,7,8,9,11,12,13,14
Power Requirements																		
Power Supply Drain	I_{PDH}	4	-	9.5	mAdc	-	-	-	-	-	-	3,5,6,7,8, 9,13,14	-	-	-	-	4	11
	I_{PDL}	4	-	8.0	mAdc	-	-	-	-	-	-	-	-	-	-	-	4	3,5,6,7,8,9,11,13,14
Switching Parameters						Pulse In	Pulse Out											
Turn-On Delay	t_{pd-}	3,12	-	15**	ns	3	12	-	5	-	-	-	-	-	4	-	-	6,7,8,9,11,13,14
Turn-Off Delay	t_{pd+}	3,12	-	22**	ns	3	12	-	5	-	-	-	-	-	4	-	-	6,7,8,9,11,13,14

**Tested only at 25°C.