

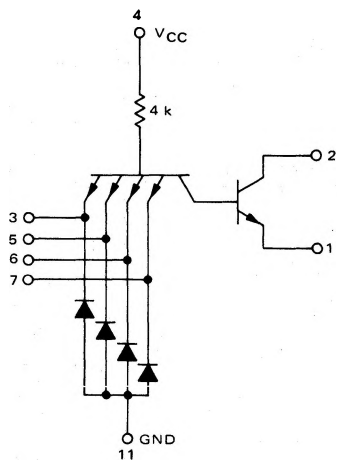
DUAL 4-INPUT EXPANDER FOR "AND-OR-INVERT" GATES

MCBC5400/MCB5400F series

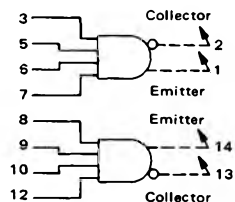
MCBC5460*
MCB5460F*



1/2 OF CIRCUIT SHOWN



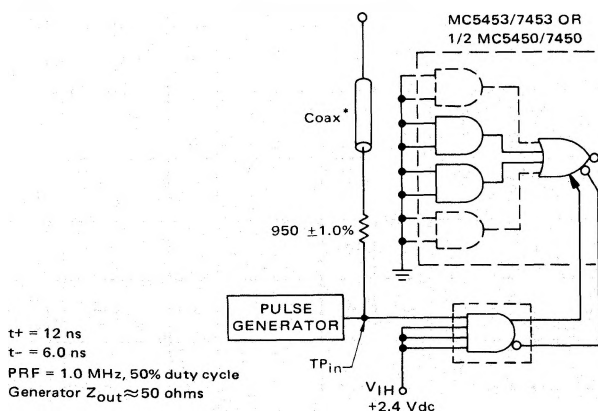
This device consists of two 4-input OR expanders for use with the AND-OR-INVERT gates. A maximum of four expander gates can be added to the MCB5450 or MCB5453 expandable gates without seriously affecting their operation. Beam lead sealed junction technology is used to manufacture these devices. They are particularly useful in highly reliable systems using hybrid beam lead assembly techniques or standard flat package assembly techniques.



Input Loading Factor = 1
Full output loading factor of the expandable gate is maintained.
Total Power Dissipation = 8.0 mW typ/pkg
Propagation Delay Time = 5.0 ns typ

SWITCHING TIME TEST CIRCUIT

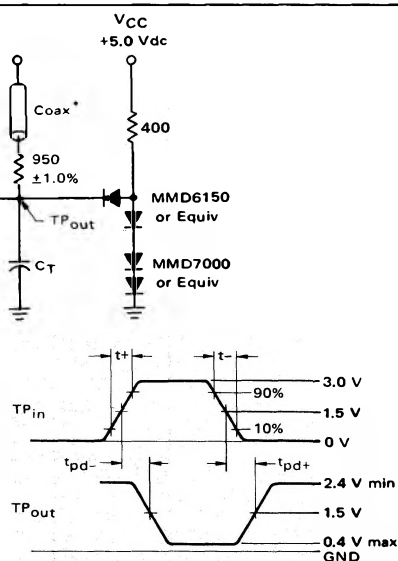
VOLTAGE WAVEFORMS AND DEFINITIONS



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

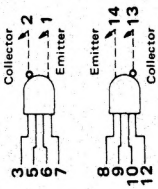
$C_T = 15$ pF = total parasitic capacitance, which includes probe, wiring, and load capacitances.

*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.

ELECTRICAL CHARACTERISTICS
Test procedures are shown for only one expander. The other expander is tested in the same manner. Further, test procedures are shown for only one input of the expander being tested. To complete testing, sequence through remaining inputs.



MCBC5460, MCB5460F (continued)

TEST VOLTAGE VALUES (All Temperatures)																						
Ohms		Volts																				
		R _{EX1} 1.2 k*	R _{EX2} 1.1 k†	V _{IL}	V _{IH}	V _{IHH}	V _{R1}	V _{R2}	V _{th1}	V _{th0}	V _{O1}	V _{O2}	V _{O3}	V _{CC}	V _{CCL}	V _{CCH}						
TEST VOLTAGE APPLIED TO PINS LISTED BELOW:																						
Characteristic	Symbol	Pin Under Test	Test Limits MCBC5460/MCB5460F -55 to +125°C			R _{EX1}	R _{EX2}	V _{IL}	V _{IH}	V _{IHH}	V _{R1}	V _{R2}	V _{th1}	V _{th0}	V _{O1}	V _{O2}	V _{O3}	V _{CC}	V _{CCL}	V _{CCH}	Gnd	
			Min	Max	Unit																	
Input Forward Current	I _F	5	-	-1.6	mAdc	-	-	5	-	-	3,6,7	-	-	-	-	-	-	-	-	-	4	11
	I _{R1}	5	-	40	μAdc	-	-	-	5	-	-	-	-	-	-	-	-	-	-	-	4	3,6,7,11
	I _{R2}	5	-	1.0	mAdc	-	-	-	-	5	-	-	-	-	-	-	-	-	-	-	4	3,6,7,11
Output Output Voltage	V _{OL}	1,2†	-	0.4	Vdc	-	2	-	-	-	-	-	3,5,6,7	-	-	1	-	-	4	-	-	11
	I _{CEX}	2	-	150‡	μAdc	1	-	-	-	-	3,6,7	-	-	5	2	-	-	-	4	-	-	11
Drive Current	I _{DR}	1	-0.3	-	mAdc	-	-	-	-	-	-	-	3,5,6,7	-	-	1	-	-	4	-	-	11
Power Requirements (Total Device) Power Supply Drain	I _{PDL}	4	-	4.0	mAdc	-	-	-	-	-	-	-	-	-	-	-	1,14	-	-	-	4	3,5,6,7,8,9,10,11,12
	I _{PDH}	4	-	2.5	mAdc	-	-	-	-	-	-	3,5,6,7,8,9,10,12	-	-	-	-	1,14	-	-	-	4	11
Switching Parameters	t _{pd-}	#	-	20**	ns	Pulse In	5	-	3,6,7	-	-	-	-	-	-	-	-	4	-	-	-	11
	t _{pd+}	#	-	30**	ns	5	-	-	-	3,6,7	-	-	-	-	-	-	-	-	4	-	-	-

*Resistor to ground.
†Resistor to V_{CCL}.
‡See test circuit.
§VOL measured between pins 1 and 2.
§Tested only at low temperature limit; i. e., at -55°C for MCB5460.
**Tested only at 25°C; times include delay of expandable gate.