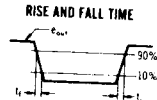
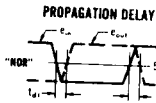
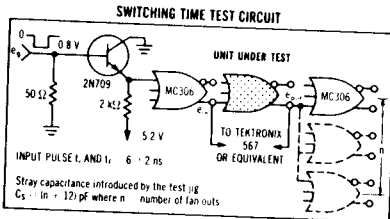
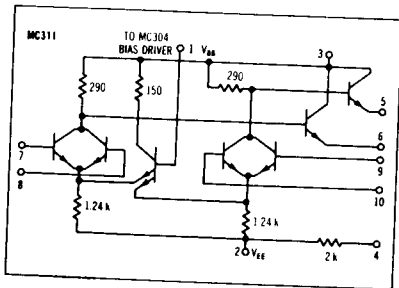
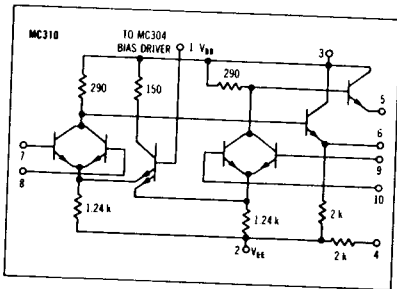
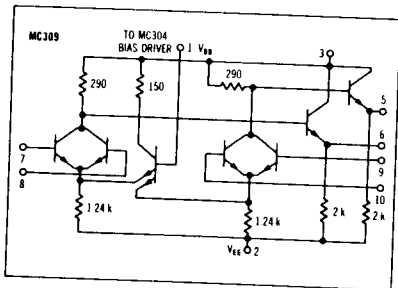
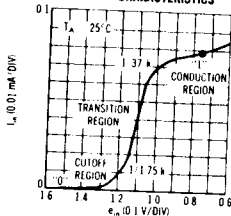


MC309 · MC310 · MC311

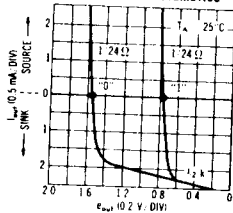
Dual 2-input gates that provide the positive logic "NOR" function. MC309 has two output pull-down resistors; MC310 has one of the output pull-down resistors optional; MC311 omits one output pull-down resistor and has the second optional.



TYPICAL INPUT CHARACTERISTICS



TYPICAL OUTPUT CHARACTERISTICS



MC309, MC310, MC311 (continued)

ELECTRICAL CHARACTERISTICS

Characteristic	Test Conditions										Test Limits						Unit			
	V _{cc} ± 1%										-55°C			+25°C				+125°C		
	V _{cc} Pin No	V _{ee} Pin No	V _{OL} Pin No	V _{OH} Pin No	V _{OL} Pin No	V _{OH} Pin No	I _{OL} Pin No	I _{OH} Pin No	Ground Pin No	Symbol Pin No in ()	Min	Max	Min	Max	Min	Max				
Power Supply	MC309, MC310	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—				
Static Current	MC311	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—				
Input Current	7	—	—	—	2.7A,10	1	—	—	3	I _{in} (7)	—	—	—	—	—	—				
	8	—	—	—	2.7A,10	1	—	—	3	I _{in} (8)	—	—	—	—	—	—				
	9	—	—	—	2.7A,10	1	—	—	3	I _{in} (9)	—	—	—	—	—	—				
	10	—	—	—	2.7A,9	1	—	—	3	I _{in} (10)	—	—	—	—	—	—				
"NOB" Legend "1" Output Voltage	—	—	7	2A,9,10	1	—	—	3	V _{OL} (8)	-0.925	-0.945	-0.980	-0.785	-0.525	-0.855	V _{cc}				
	—	—	8	2.7A,10	1	—	—	3	V _{OL} (8)	—	—	—	—	—	—	—				
	—	—	9	2.7A,10	1	—	—	3	V _{OL} (9)	—	—	—	—	—	—	—				
	—	—	10	2.7A,9	1	—	—	3	V _{OL} (9)	—	—	—	—	—	—	—				
"NOB" Legend "0" Output Voltage	—	7	—	2A,9,10	1	—	—	3	V _{OH} (8)	-1.560	-1.850	-1.665	-1.750	-1.340	-1.675	V _{cc}				
	—	8	—	2.7A,10	1	—	—	3	V _{OH} (8)	—	—	—	—	—	—	—				
	—	9	—	2.7A,10	1	—	—	3	V _{OH} (9)	—	—	—	—	—	—	—				
	—	10	—	2.7A,9	1	—	—	3	V _{OH} (9)	—	—	—	—	—	—	—				
"NOB" Output Voltage Change (No load to full load)	—	—	—	2.7A,9,10	1	—	0⊕	3	ΔV _{OL} (8)	—	-0.055	—	-0.055	—	-0.060	V _{cc}				
	—	—	—	2.7A,9,10	1	—	0⊕	3	ΔV _{OH} (8)	—	-0.055	—	-0.055	—	-0.060	V _{cc}				
"NOB" Extension Input/Output Voltage	—	—	—	2A,9,10	1	7⊕	—	3	V _{OL} (8)	—	-0.40	—	-0.35	—	-0.62	V _{cc}				
	—	—	—	2.7A,10	1	8⊕	—	3	V _{OL} (8)	—	—	—	—	—	—	—				
	—	—	—	2.7A,10	1	9⊕	—	3	V _{OL} (9)	—	—	—	—	—	—	—				
	—	—	—	2.7A,9	1	10⊕	—	3	V _{OL} (9)	—	—	—	—	—	—	—				
Switching Times	Pulse In	Pulse Out																		
	Propagation Delay Time		7	6	—	2A,9,10	1	—	—	3	t _{pd} (8)	Typ	Max	Typ	Max	Typ	Max	ns		
		10	5	—	2.7A,9	1	—	—	3	t _{pd} (9)	5.5	10.0	6.0	11.0	7.0	12.0				
		7	6	—	2A,9,10	1	—	—	3	t _{pd} (8)	5.5	10.0	6.0	11.0	7.0	12.0				
		10	5	—	2.7A,9	1	—	—	3	t _{pd} (9)	6.5	13.0	7.0	13.5	9.5	15.0				
		7	6	—	2A,9,10	1	—	—	3	t _{pd} (8)	6.0	12.0	6.0	12.0	7.0	13.5				
		10	5	—	2.7A,9	1	—	—	3	t _{pd} (9)	6.0	12.0	6.0	12.0	7.0	13.5				
		7	6	—	2A,9,10	1	—	—	3	t _{pd} (8)	7.0	13.0	7.5	14.0	9.5	17.0				
		10	5	—	2.7A,9	1	—	—	3	t _{pd} (9)	7.0	13.0	7.5	14.0	9.5	17.0				

Pins not listed are left open. For MC310, connect pin 4 to pin 5 for all tests. ⊕ Input voltage is adjusted to obtain dv/dt = "NOB"/ΔV_{cc} = 8.
 ⊕ Current test conditions: no load = 0; full load = -2.5 mA; ±5%.

SWITCHING CHARACTERISTICS (10% to 90% distribution)

