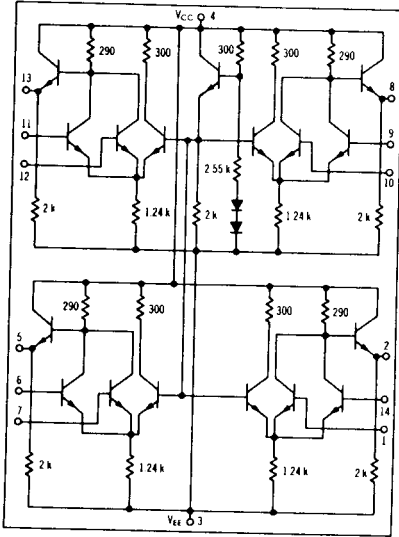


QUAD 2-INPUT GATE

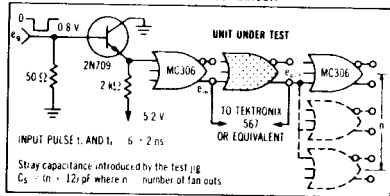
MECL MC300 series

MC313F

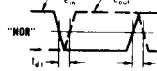
Quad 2-input gate that provides the positive logic "NOR" function, and features an internal bias driver.



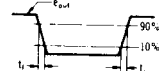
SWITCHING TIME TEST CIRCUIT



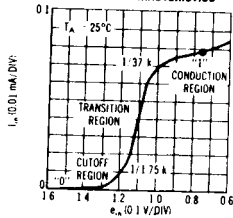
PROPAGATION DELAY



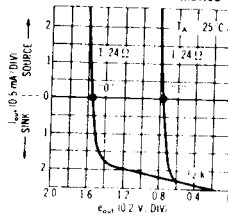
RISE AND FALL TIME



TYPICAL INPUT CHARACTERISTICS



TYPICAL OUTPUT CHARACTERISTICS



MC313F (continued)

ELECTRICAL CHARACTERISTICS

Characteristic	Test Conditions				V_{CC}	V_{OL}	Ground	Symbol	Test Limits						Unit	
	$V_{CC} = 1\%$								-55°C		+25°C		+125°C			
	V_{IN}	$V_{I,max}$	V_L	V_{OL}					Min	Max	Min	Max	Min	Max		
Power Supply Drain Current	---	---	---	---	1.3, 6.7, 9.10, 11, 12, 14	---	---	---	---	---	---	---	---	mA _{DC}		
Input Current	1	---	---	---	3.6, 7.9, 10, 11, 12, 14	---	4	$I_{i(1)}$	---	31.0	---	100	---	---	μA _{DC}	
	6	---	---	---	1.3, 7.9, 10, 11, 12, 14	---	4	$I_{i(6)}$	---	---	---	---	---	---	---	
	7	---	---	---	1.3, 6.7, 10, 11, 12, 14	---	4	$I_{i(7)}$	---	---	---	---	---	---	---	
	8	---	---	---	1.3, 6.7, 10, 11, 12, 14	---	4	$I_{i(8)}$	---	---	---	---	---	---	---	
"NOR" Logical "1" Output Voltage	---	---	---	---	1.3, 6.7, 9.10, 11, 12, 14	---	4	$V_{O(1)}$	---	---	---	---	---	---	V _{CC}	
	---	---	---	---	1.3, 7.9, 10, 11, 12, 14	---	4	$V_{O(5)}$	---	-0.825	-0.945	0.690	0.795	-0.525	-0.655	V _{CC}
	---	---	---	---	1.3, 6.7, 10, 11, 12, 14	---	4	$V_{O(6)}$	---	---	---	---	---	---	---	---
	---	---	---	---	1.3, 6.7, 9.10, 11, 12, 14	---	4	$V_{O(8)}$	---	---	---	---	---	---	---	---
"NOR" Logical "0" Output Voltage	---	---	---	---	1.3, 6.7, 9.10, 11, 12, 14	---	4	$V_{O(1)}$	---	---	---	---	---	---	V _{CC}	
	---	---	---	---	1.3, 7.9, 10, 11, 12, 14	---	4	$V_{O(5)}$	---	---	---	---	---	---	---	---
	---	---	---	---	1.3, 6.7, 10, 11, 12, 14	---	4	$V_{O(6)}$	---	---	---	---	---	---	---	---
	---	---	---	---	1.3, 6.7, 9.10, 11, 12, 14	---	4	$V_{O(8)}$	---	---	---	---	---	---	---	---
"NOR" Output Voltage Change (No load to full load)	---	---	---	---	1.3, 6.7, 9.10, 11, 12, 14	---	4	$\Delta V_{O(1)}$	---	---	-0.055	---	-0.055	---	-0.060	Volts
	---	---	---	---	1.3, 7.9, 10, 11, 12, 14	---	4	$\Delta V_{O(5)}$	---	---	---	---	---	---	---	---
	---	---	---	---	1.3, 6.7, 10, 11, 12, 14	---	4	$\Delta V_{O(6)}$	---	---	---	---	---	---	---	---
	---	---	---	---	1.3, 6.7, 9.10, 11, 12, 14	---	4	$\Delta V_{O(8)}$	---	---	---	---	---	---	---	---
"NOR" Extension Output Voltage	---	---	---	---	1.3, 6.7, 9.10, 11, 12, 14	---	4	$V_{O(1)}$	---	---	---	---	---	---	V _{CC}	
	---	---	---	---	1.3, 7.9, 10, 11, 12, 14	---	4	$V_{O(5)}$	---	---	-0.40	---	-0.55	---	-0.68	V _{CC}
	---	---	---	---	1.3, 6.7, 10, 11, 12, 14	---	4	$V_{O(6)}$	---	---	---	---	---	---	---	---
	---	---	---	---	1.3, 6.7, 9.10, 11, 12, 14	---	4	$V_{O(8)}$	---	---	---	---	---	---	---	---
Switching Time	Pulse t_r	Pulse t_d	---	---	3.6, 7.9, 10, 11, 12, 14	---	---	---	---	Typ	Max	Typ	Max	Typ	Max	ns
	---	---	---	---	1.3, 7.9, 10, 11, 12, 14	---	4	$t_{e(5)}$	---	8.5	11.0	8.5	11.0	8.0	14.5	---
Propagation Delay Time	---	---	---	---	1.3, 6.7, 10, 11, 12, 14	---	4	$t_{e(6)}$	---	---	---	---	---	---	---	---
	---	---	---	---	1.3, 6.7, 9.10, 11, 12, 14	---	4	$t_{e(8)}$	---	8.5	13.5	8.5	13.5	10.0	16.0	---
Rise Time	---	---	---	---	3.6, 7.9, 10, 11, 12, 14	---	4	$t_r(1)$	---	---	---	---	---	---	---	---
	---	---	---	---	1.3, 7.9, 10, 11, 12, 14	---	4	$t_r(5)$	---	8.5	12.5	9.0	12.5	11.0	15.5	---
Fall Time	---	---	---	---	1.3, 6.7, 10, 11, 12, 14	---	4	$t_f(1)$	---	---	---	---	---	---	---	---
	---	---	---	---	1.3, 6.7, 9.10, 11, 12, 14	---	4	$t_f(5)$	---	9.0	14.0	8.5	14.0	11.5	17.0	---

Pins not listed are left open. ① Input voltage is adjusted to obtain $dV_{OL}/dV_{IN} = 0$. ② Current test conditions: no load = 0, full load = -2.5 mA_{DC} ± 5%.

SWITCHING CHARACTERISTICS (10% to 90% distribution)

