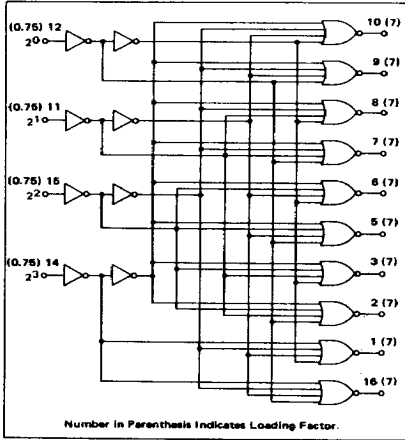


BCD-TO-DECIMAL DECODER

PLASTIC mW MRTL MC700P/800P series

MC770P • MC870P*

16 pin dip



Number in Parenthesis Indicates Loading Factor.

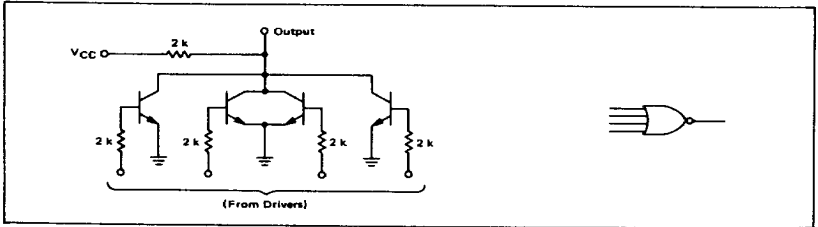
The MC770P/870P is a monolithic BCD to decimal decoder consisting of eight inverters and ten 4-input NOR gates which are utilized to convert binary coded decimal (8-4-2-1) input to an output, via the appropriate one of ten output lines.

TRUTH TABLE

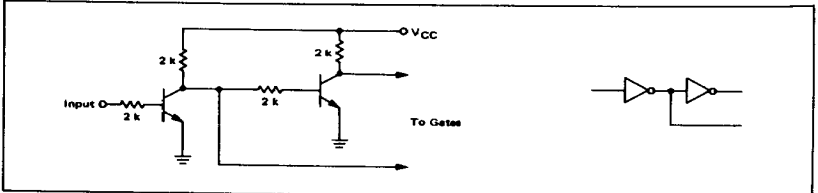
Value Pin No. Logic Level	INPUT (BCD)				OUTPUT (DECIMAL)										
	2 ³	2 ²	2 ¹	2 ⁰	0	1	2	3	4	5	6	7	8	9	16
0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0
0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0
1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0
1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0

$t_{pd} = 36 \text{ ns}$
 $P_D = 100 \text{ mW typ (All inputs high)}$

4-INPUT "NOR" GATE (1-OF-10)



DUAL SERIES INVERTING DRIVER (1-OF-4)



*P suffix = 16 pin dual-in-line plastic package, Case 612.

MC770P, MC870P (continued)

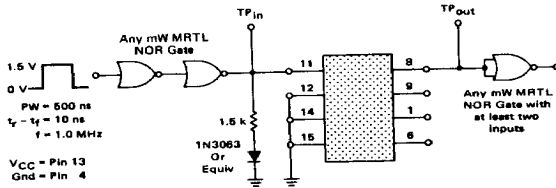
ELECTRICAL CHARACTERISTICS

Characteristic		Pin Under Test		MC770P Test Limits												TEST VOLTAGE VALUES						
				+25°C			+75°C			+15°C			+25°C			+55°C			@ Test Temperature			
				Min	Max	Unit	Min	Max	Unit	Min	Max	Unit	Min	Max	Unit	Min	Max	Unit	V _{in}	V _{out}	V _{off}	V _{CC}
Input Current	I _{in}	11	-	113	-	106	-	109	-	113	-	113	-	113	-	113	-	0.850	1.80	0.500	3.60	
		12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.850	1.80	0.480	3.60	
		14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.740	0.710	1.80	0.400	3.60
Output Current	I _{A17} *	10	-1.05	-0.96	-	-0.96	-	-	-	-	-	-	-	-	-	-	-	0.865	1.80	0.475	3.60	
		13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.850	0.850	1.80	0.480	3.60
		15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.800	1.80	0.430	3.60	
Output Voltage	V _{out}	1**	-	400	-	350	-	300	mVdc	400	-	300	-	320	mVdc	-	-	-	-	-	13	
		13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13	
		13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13	
Power Supply Current Drain	I _{PD}	13	-	42	-	42	-	42	mAdc	-	-	42	-	42	mAdc	-	-	-	-	-	4	
		13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	
		13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	
Switching Times	t ₁₄₋₁₋ , t ₁₄₊₁₋ , t ₁₅₋₆₋ , t ₁₁₋₈₋ , t ₁₁₋₈₋ , t ₁₂₋₉₋ , t ₁₂₋₉₋	1	-	-	-	65	-	-	ns	-	-	65	-	-	-	-	-	-	-	-	13	
		1	-	-	-	50	-	50	-	50	-	65	-	65	-	65	-	65	-	65	13	
		6	-	-	-	65	-	50	-	50	-	50	-	50	-	50	-	50	-	50	13	
		6	-	-	-	65	-	55	-	55	-	55	-	55	-	55	-	55	-	55	13	
		8	-	-	-	50	-	50	-	50	-	50	-	50	-	50	-	50	-	50	13	
		8	-	-	-	65	-	65	-	65	-	65	-	65	-	65	-	65	-	65	13	
		9	-	-	-	50	-	50	-	50	-	50	-	50	-	50	-	50	-	50	13	
		9	-	-	-	65	-	65	-	65	-	65	-	65	-	65	-	65	-	65	13	
		9	-	-	-	50	-	50	-	50	-	50	-	50	-	50	-	50	-	50	13	

Pins not listed are left open.
 *Test is shown for one output only. The other outputs are tested in the same manner.
 **Test shown is for one output only. All line outputs, excepting the one which is 'ON' according to the truth table, are to be tested for all usable input configurations shown in the truth table - a total of 90 tests.

MC770P, MC870P (continued)

SWITCHING TIMES TEST CIRCUIT AND WAVEFORMS



Switching Circuit indicates one input and one output. Other input and output combinations are tested in a similar manner.

Load and driving gates must be of same series as unit under test.

