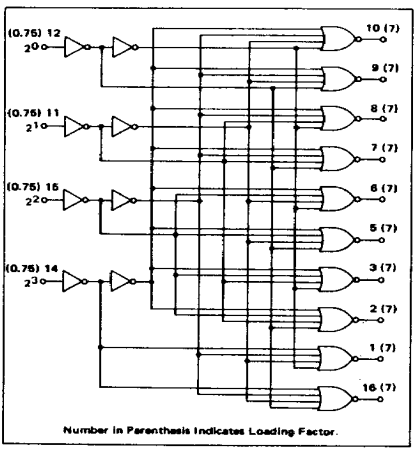
BCD-TO-DECIMAL DECODER

PLASTIC mW MRTL MC700P/800P series

MC770P · MC870P*

16 Pin dip



Number in Parenthesis Indicates Loading Factor.

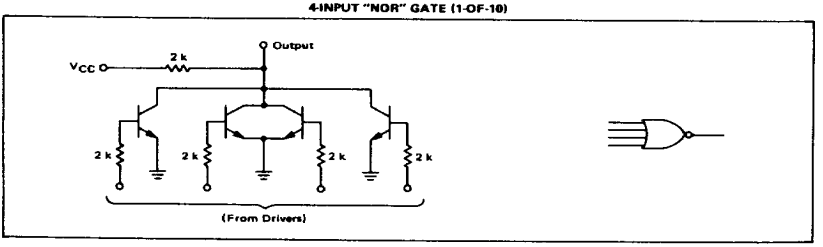
The MC770P/870P is a monolithic BCD to decimal decoder consisting of eight inverters and ten 4-input NOR gates which are utilized to convert binary coded decimal (8-4-2-1) input to an output, via the appropriate one of ten output lines.

TRUTH TABLE

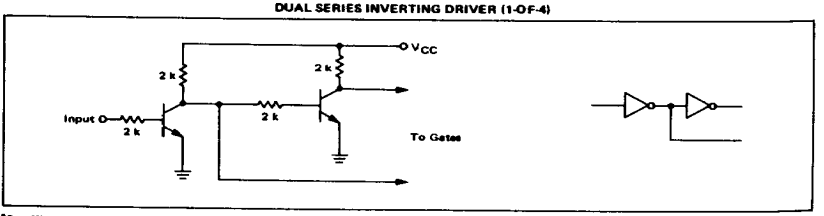
	INPUT (BCD)				OUTPUT (DECIMAL)								
Value	2^3	2^2	2^1	2^0	0	1	2	3	4	5	6	7	8	9
Pin No.	14	15	11	12	10	9	8	7	6	5	3	2	1	16
Logic Level	0	0	0	0	1	0	0	0	0	0	0	0	0	0
	0	0	0	1	0	1	0	0	0	0	0	0	0	0
	0	0	1	0	0	0	1	0	0	0	0	0	0	0
	0	0	1	1	0	0	0	1	0	0	0	0	0	0
	0	1	0	0	0	0	0	0	1	0	0	0	0	0
	0	1	0	1	0	0	0	0	0	1	0	0	0	0
	0	1	1	0	0	0	0	0	0	0	1	0	0	0
	0	1	1	1	0	0	0	0	0	0	0	1	0	0
	1	0	0	0	0	0	0	0	0	0	0	0	1	0
	1	0	0	1	0	0	0	0	0	0	0	0	0	1
	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
	1	1	0	0	0	0	0	0	0	0	0	0	0	0
	1	1	0	1	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	1	1	1	0	0	0	0	0	0	0	0	0	0

t_{pd} = 36 ns
P_D = 100 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.

ELECTRICAL CHARACTERISTICS

@ Test Temperature		TEST VOLTAGE VALUES (Volts) V_{in}	V_{on}	V_{BOT}	V_{off}	V_{CC}
MC870P	0°C	0.880	0.850	1.80	0.500	3.60
	+25°C	0.830	0.800	1.80	0.460	3.60
	+75°C	0.740	0.710	1.80	0.400	3.60
MC770P	+15°C	0.865	0.865	1.80	0.475	3.60
	+25°C	0.850	0.850	1.80	0.460	3.60
	+55°C	0.800	0.800	1.80	0.430	3.60

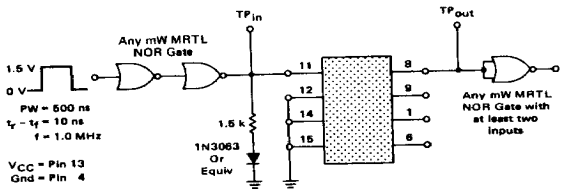
Characteristic	Symbol	Pin Under Test	MC870P Test Limits 0°C Min	0°C Max	+25°C Min	+25°C Max	+75°C Min	+75°C Max	Unit	MC770P Test Limits +15°C Min	+15°C Max	+25°C Min	+25°C Max	+55°C Min	+55°C Max	Unit	TEST VOLTAGE APPLIED TO PINS LISTED BELOW: V_{in}	V_{on}	V_{BOT}	V_{off}	V_{CC}	Gnd
Input Current	$0.75\ I_{in}$	11	-	113	-	105	-	105	μAdc	-	113	-	113	-	113	μAdc	11	-	-	-	13	4,12,14,15
		12	-	↓	-	↓	-	↓		-	↓	-	↓	-	↓		12	-	-	-	↓	4,11,14,15
		14	-		-		-			-		-		-			14	-	-	-		4,11,12,15
		15	-		-		-			-		-		-			15	-	-	-		4,11,12,14
Output Current	I_{A7}*	10	-1.05	-	-0.98	-	-0.98	-	mAdc	-1.05	-	-1.05	-	-1.05	-	mAdc	-	10*	-	*	13	4
Output Voltage	V_{out}	1**	-	400	-	350	-	300	mVdc	-	400	-	300	-	320	mVdc	-	**	-	**	13	4
Power Supply Current Drain	I_{PD}	13	-	-	-	42	-	-	mAdc	-	-	-	42	-	-	mAdc	11,12,14,15	*	-	-	13	4
Switching Times																	Pulse In	Pulse Out				
	t_{14-1-}	1	-	-	-	65	-	-	ns	-	-	-	65	-	-	ns	14	1	-	-	13	4,11,12,15
	t_{14-1-}	1	-	-	-	50	-	-	↓	-	-	-	50	-	-	↓	14	1	-	-	↓	4,11,12,15
	t_{15-6-}	6	-	-	-	65	-	-		-	-	-	65	-	-		15	6	-	-		4,11,12,14
	t_{15-6-}	6	-	-	-	50	-	-		-	-	-	50	-	-		15	6	-	-		4,11,12,14
	t_{11-8-}	8	-	-	-	65	-	-		-	-	-	65	-	-		11	8	-	-		4,12,14,15
	t_{11-8-}	8	-	-	-	50	-	-		-	-	-	50	-	-		11	8	-	-		4,12,14,15
	t_{12-9-}	9	-	-	-	65	-	-		-	-	-	65	-	-		12	9	-	-		4,11,14,15
	t_{12-9-}	9	-	-	-	50	-	-	↓	-	-	-	50	-	-	↓	12	9	-	-	↓	4,11,14,15

Pins not listed are left open.

*Test is shown for one output only. The other outputs are tested in the same manner. Inputs must have V_{on} and V_{off} applied in accordance with the truth table for the output under test.

**Test shown is for one output only. All nine 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.

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.