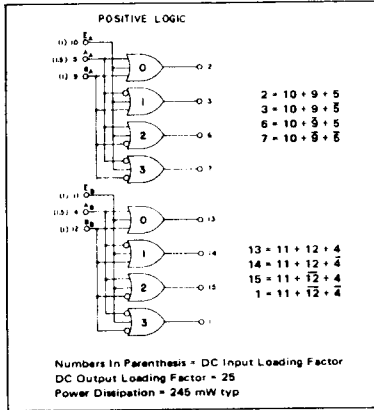


DUAL BINARY TO ONE-OF-FOUR DECODER

MECL II MC1000/1200 series

MC1042

Advance Information



The MC1042 is a dual monolithic device that converts a 2-bit binary code to one-line of four decimal output. An enable line is provided to inhibit decoding when it is raised to a high level. MC1042 is packaged in a 16-pin dual in-line package.

TRUTH TABLE

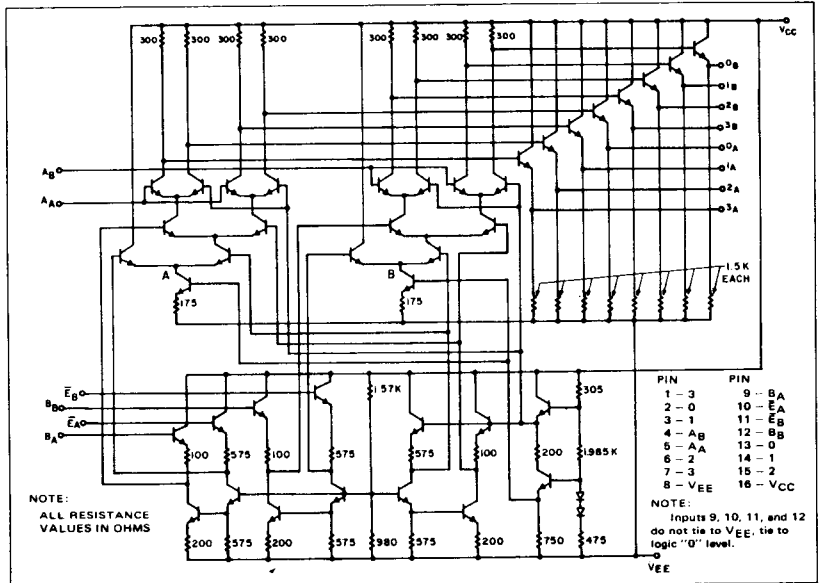
Inputs				Outputs			
E <sub>A</sub>	B <sub>A</sub>	A <sub>A</sub>	0 <sub>A</sub>	1 <sub>A</sub>	2 <sub>A</sub>	3 <sub>A</sub>	
10	9	5	2	3	6	7	
0	0	0	0	1	1	1	
0	0	1	1	0	1	1	
0	1	0	1	1	0	1	
0	1	1	1	1	1	0	
1	*	*	1	1	1	1	

Pin No.

Inputs				Outputs			
E <sub>B</sub>	B <sub>B</sub>	A <sub>B</sub>	0 <sub>B</sub>	1 <sub>B</sub>	2 <sub>B</sub>	3 <sub>B</sub>	
11	12	4	13	14	15	1	
0	0	0	0	1	1	1	
0	0	1	1	0	1	1	
0	1	0	1	1	0	1	
0	1	1	1	1	1	0	
1	*	*	1	1	1	1	

\*either state

CIRCUIT SCHEMATIC



# MC1042 (continued)

ELECTRICAL CHARACTERISTICS @ 25°C				TEST CONDITIONS: V <sub>CC</sub> = 5.0V, V <sub>EE</sub> = 0V, I <sub>CC</sub> = 0mA							
Characteristics	Symbol	Pin Under Test	Test Limits		Unit	-1.500	0	0	0	0	0
			min.	max.		V <sub>IL</sub>	V <sub>IH</sub>	t <sub>PH max.</sub>	t <sub>PL</sub>	t <sub>PL</sub>	t <sub>PL</sub>
Power Supply Drain Current	I <sub>E</sub>	8	-	61	mADC	4,5,7,10,11,12	-	-	-	-	-
Input Current	1.5 I <sub>in</sub>	5	-	150	mADC	4,10,11,12	-	-	-	-	-
	**I <sub>in</sub>	5, 9,10	-	100	mADC	4,9,10,11,12	-	-	-	-	-
Input Leakage Current	**I <sub>IR</sub>	5,9,10	-	1.0	mADC	4,11,12	-	-	-	-	-
Logic "1" Output Voltage	V <sub>OH</sub>	2,3	-0.850	-0.700	Vdc	Apply Input Conditions per Truth Table					
Logic "0" Output Voltage	V <sub>OL</sub>	2,3	-1.800	-1.500	Vdc	Apply Input Conditions per Truth Table					

\* Logic "1" Limits Apply From No Load to Full Load (-2.5 mADC)      Note: Test Procedures are shown for only the 2-4 line decoder, other decoders are tested in a similar manner.

\*\*Individually test each input using the pin connections shown.

Switching Speed (Fan-Out = 15pF)	Symbol	Pin Under Test	AC Parameters (typical)	Unit	V <sub>IL</sub>	V <sub>IH</sub>	Pulse In	V <sub>EE</sub>	V <sub>CC</sub>	Pulse Out
					+1.2 Vdc	+1.2 Vdc	0V	+5.0 Vdc	+1.2 Vdc	
Propagation Delay	t <sub>5-2</sub>	2,5	6.0	nsec	9,10	-	5	0	5	7
	t <sub>9-2</sub>	2,9	8.0		5,10	-	7	0	5	7
	t <sub>10-2</sub>	2,10	12.0		5,9	-	10	0	5	7
	t <sub>5+2</sub>	2,5	5.0		9,10	-	5	5	0	7
	t <sub>9+2</sub>	2,9	6.5		5,10	-	7	5	0	7
	t <sub>10+2</sub>	2,10	9.0		5,9	-	10	5	0	7
Rise Time	t <sub>2+</sub>	2	4.0		9,10	-	5	5	0	7
Fall Time	t <sub>2-</sub>	2	9.0		9,10	-	5	5	0	7
Propagation Delay	t <sub>5+7</sub>	5,7	6.0		10	5	5	0	5	7
	t <sub>9+7</sub>	7,9	7.0		10	5	5	0	5	7
	t <sub>5-7+</sub>	5,7	5.0		10	5	5	0	5	7
	t <sub>9-7+</sub>	7,9	6.5		10	5	5	0	5	7
	Rise Time	t <sub>7+</sub>	7	4.0		10	5	5	0	5
Fall Time	t <sub>7-</sub>	7	9.0		10	5	5	0	5	7

## APPLICATION INFORMATION

The MC1042 dual 2-4 line decoder with an enable input has very fast decoding time, typically 6.0 ns @ +25°C. When the selected output is at a logic "0" level all other outputs are at a logic "1" level. When the enable input is at a logic "1" level all outputs will be at logic "1" level.

The illustrated application shows five MC1042 devices connected to perform fast decoding of 5-bit binary to 32-line decimal by utilizing the enable inputs. Maximum delay time on this 5 to 32-line decoder is typically 18 ns @ +25°C.

