

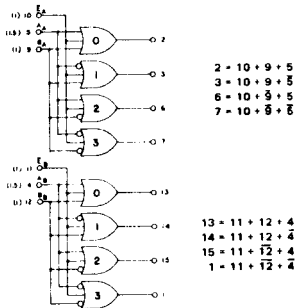
DUAL BINARY TO ONE-OF-FOUR DECODER

MECL II MC1000/1200 series

MC1042

Advance Information

POSITIVE LOGIC



Numbers In Parenthesis = DC Input Loading Factor
 DC Output Loading Factor = 25
 Power Dissipation = 245 mW typ

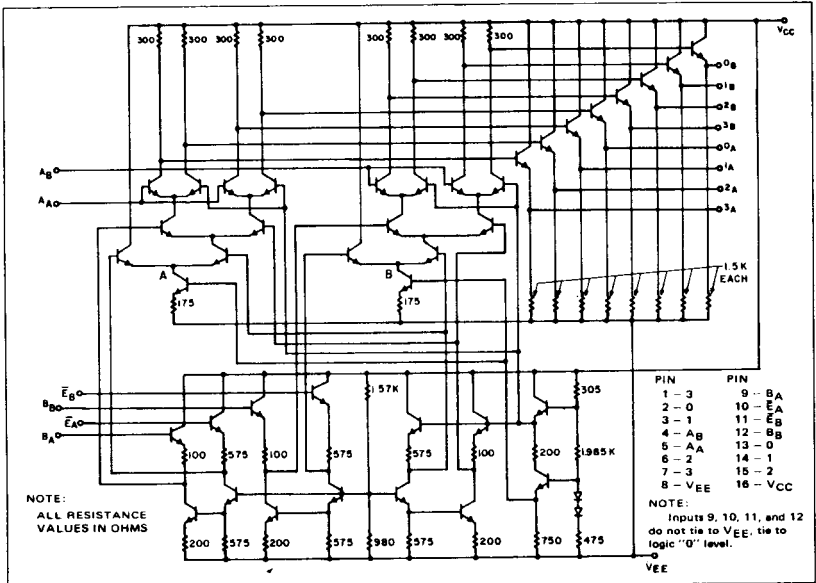
The MC1042 is a dual monolithic device that converts a 2-bit binary code to one-line of four decimal output. An enable line is provided to inhibit decoding when it is raised to a high level. MC1042 is packaged in a 16-pin dual in-line package.

TRUTH TABLE

Inputs				Outputs			
E _A	B _A	A _A	0 _A	1 _A	2 _A	3 _A	Pin No.
10	9	5	2	3	6	7	
0	0	0	0	1	1	1	11
0	0	1	0	1	1	1	12
0	1	0	1	1	0	1	4
0	1	1	1	1	0	1	13
1	*	*	1	1	1	1	14
							15
							1

*either state

CIRCUIT SCHEMATIC



MC1042 (continued)

ELECTRICAL CHARACTERISTICS @ 25°C				TEST CONDITIONS: V _{DD} = 5.0V, V _{SS} = 0V, t _{rise} = t _{fall} = 20ns										
Characteristics	Symbol	Pin Under Test	Test Limits		Unit	TEST MODES								
			min.	max.		V _{IL}	V _{IH}	V _{OH}	V _{OL}	V _{OC}	V _{OL}	V _{OL}		
Power Supply Drain Current	I _E	8	-	61	mAdc	4, 5, 7, 10, 11, 12	-	-	-	-	-	-	-	-
Input Current	1.5 I _{in}	5	-	150	μAdc	4, 10, 11, 12	4	5	4	4	16	-	-	
	**I _{in}	9, 10	-	100	μAdc	4, 7, 10, 11, 12	4	5	4	4	16	-	-	
Input Leakage Current	**I _{IR}	5, 9, 10	-	1.0	μAdc	4, 11, 12	-	-	5, 7, 9, 10	16	-	-	-	
Logic "1" Output Voltage	V _{OH}	2, 3	-0.850	-0.700	Vdc	Apply Input Conditions per Truth Table					5	16	4, 7, 9, 7	
Logic "0" Output Voltage	V _{OL}	2, 3	-1.800	-1.500	Vdc	Apply Input Conditions per Truth Table					5	16	-	

* Logic "1" Limits Apply From No Load to Full Load (-2.5 mAdc) Notes: Test Procedures are shown for only the 2-4 Line Decoder, other Decoders is 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	TEST MODES						
					V _{IL} ±1.2 Vdc	V _{IH} ±1.2 Vdc	Pulse In	V _{EE} ±0.5 Vdc	V _{OC} ±1.5 Vdc	Pulse Out	V _{OL}
Propagation Delay	t ₅₋₂	4, 5	6.0	nsec	9, 10	-	5	8	16	-	-
	t ₉₋₂	2, 9	8.0		5, 10	-	7	8	16	-	-
	t ₁₀₋₂	2, 10	12.0		5, 9	-	7	8	16	-	-
	t ₅₊₂	2, 5	5.0		9, 10	-	7	8	16	-	-
	t ₉₊₂	2, 9	6.5		5, 10	-	7	8	16	-	-
	t ₁₀₊₂	2, 10	9.0		5, 9	-	7	8	16	-	-
Rise Time	t ₂₊	2	4.0		9, 10	-	7	8	16	-	-
Fall Time	t ₂₋	2	9.0		9, 10	-	7	8	16	-	-
Propagation Delay	t ₅₊₇	5, 7	6.0		10	9	7	8	16	7	-
	t ₉₊₇	7, 9	7.0		10	7	9	8	16	7	-
	t ₅₋₇₊	5, 7	5.0		10	7	9	8	16	7	-
	t ₉₋₇₊	7, 9	6.5		10	7	9	8	16	7	-
	Rise Time	t ₇₊	7	4.0		10	9	5	8	16	-
Fall Time	t ₇₋	7	9.0		10	9	5	8	16	-	-

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.

