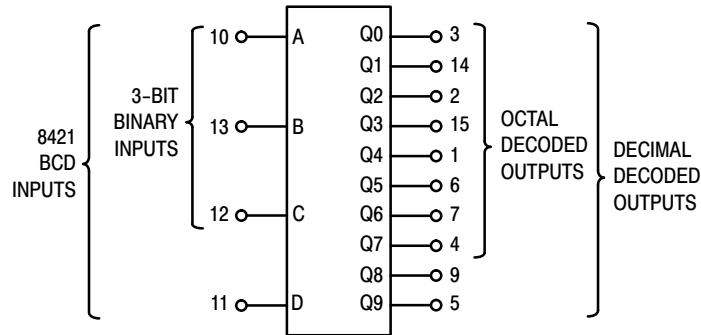




# MC14028B

## BLOCK DIAGRAM



$V_{DD}$  = PIN 16  
 $V_{SS}$  = PIN 8

## TRUTH TABLE

D	C	B	A	Q9	Q8	Q7	Q6	Q5	Q4	Q3	Q2	Q1	Q0
0	0	0	0	0	0	0	0	0	0	0	0	0	1
0	0	0	1	0	0	0	0	0	0	0	0	1	0
0	0	1	0	0	0	0	0	0	0	0	1	0	0
0	0	1	1	0	0	0	0	0	0	1	0	0	0
0	1	0	0	0	0	0	0	0	1	0	0	0	0
0	1	0	1	0	0	0	0	1	0	0	0	0	0
0	1	1	0	0	0	0	1	0	0	0	0	0	0
0	1	1	1	0	0	1	0	0	0	0	0	0	0
1	0	0	0	0	1	0	0	0	0	0	0	0	0
1	0	0	1	1	0	0	0	0	0	0	0	0	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
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

## ORDERING INFORMATION

Device	Package	Shipping†
MC14028BDG	SOIC-16 (Pb-Free)	48 Units / Rail
MC14028BDR2G	SOIC-16 (Pb-Free)	2500 / Tape & Reel
NLV14028BDR2G*	SOIC-16 (Pb-Free)	2500 / Tape & Reel

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

\*NLV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q100 Qualified and PPAP Capable.

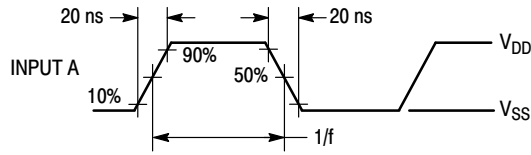
# MC14028B

## ELECTRICAL CHARACTERISTICS (Voltages Referenced to $V_{SS}$ )

Characteristic	Symbol	$V_{DD}$ Vdc	-55°C		25°C			125°C		Unit
			Min	Max	Min	Typ (Note 2)	Max	Min	Max	
Output Voltage $V_{in} = V_{DD}$ or 0	"0" Level $V_{OL}$	5.0	-	0.05	-	0	0.05	-	0.05	Vdc
		10	-	0.05	-	0	0.05	-	0.05	
$V_{in} = 0$ or $V_{DD}$	"1" Level $V_{OH}$	5.0	4.95	-	4.95	5.0	-	4.95	-	Vdc
		10	9.95	-	9.95	10	-	9.95	-	
Input Voltage ( $V_O = 4.5$ or $0.5$ Vdc) ( $V_O = 9.0$ or $1.0$ Vdc) ( $V_O = 13.5$ or $1.5$ Vdc)	"0" Level $V_{IL}$	5.0	-	1.5	-	2.25	1.5	-	1.5	Vdc
		10	-	3.0	-	4.50	3.0	-	3.0	
( $V_O = 0.5$ or $4.5$ Vdc) ( $V_O = 1.0$ or $9.0$ Vdc) ( $V_O = 1.5$ or $13.5$ Vdc)	"1" Level $V_{IH}$	5.0	3.5	-	3.5	2.75	-	3.5	-	Vdc
		10	7.0	-	7.0	5.50	-	7.0	-	
Output Drive Current ( $V_{OH} = 2.5$ Vdc) ( $V_{OH} = 4.6$ Vdc) ( $V_{OH} = 9.5$ Vdc) ( $V_{OH} = 13.5$ Vdc)	Source $I_{OH}$	5.0	-3.0	-	-2.4	-4.2	-	-1.7	-	mAdc
		5.0	-0.64	-	-0.51	-0.88	-	-0.36	-	
		10	-1.6	-	-1.3	-2.25	-	-0.9	-	
		15	-4.2	-	-3.4	-8.8	-	-2.4	-	
( $V_{OL} = 0.4$ Vdc) ( $V_{OL} = 0.5$ Vdc) ( $V_{OL} = 1.5$ Vdc)	Sink $I_{OL}$	5.0	0.64	-	0.51	0.88	-	0.36	-	mAdc
		10	1.6	-	1.3	2.25	-	0.9	-	
		15	4.2	-	3.4	8.8	-	2.4	-	
Input Current	$I_{in}$	15								

# MC14028B

Inputs B, C, and D switching in respect to a BCD code.



All outputs connected to respective  $C_L$  loads.  $f$  in respect to a system clock.

Inputs A, B, and D low.

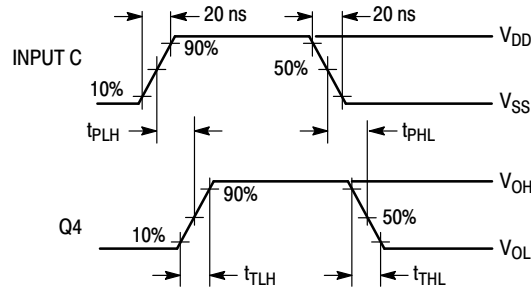
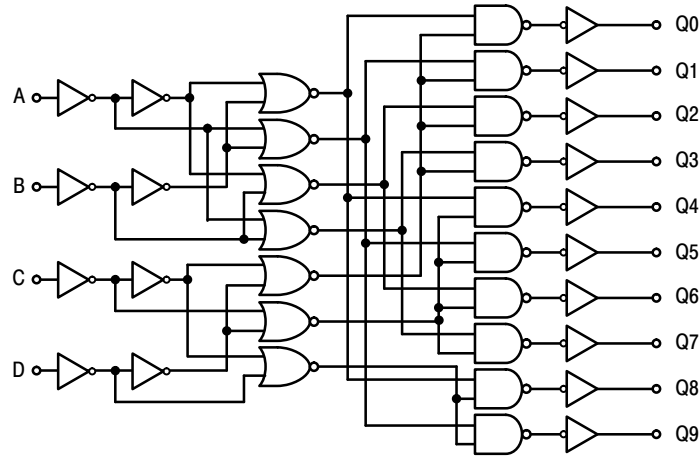


Figure 1. Dynamic Signal Waveforms



LOGIC DIAGRAM

APPLICATIONS INFORMATION 21 3 c1.395 0 08 WPPLID

# MC14028B

Inputs

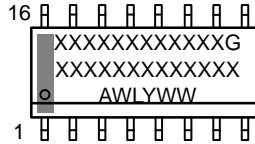
Output Numbers

**SOIC-16 9.90x3.90x1.50 1.27P**  
CASE 751B  
ISSUE L

SOIC-16 9.90x3.90x1.50 1.27P  
CASE 751B  
ISSUE L

DATE 29 MAY 2024

GENERIC  
MARKING DIAGRAM\*



XXXXX = Specific Device Code  
A = Assembly Location  
WL = Wafer Lot  
Y = Year  
WW = Work Week  
G = Pb-Free Package

\*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "▪", may or may not be present. Some products may not follow the Generic Marking.

<p>S 1: 1. C C ✓  2. BAS ✓  3. ✓  4. C C ✓  5. ✓  6. BAS ✓  7. C C ✓  8. C C ✓  9. BAS ✓  10. ✓  11. C C ✓  12. ✓  13. BAS ✓  14. C C ✓  15. ✓  16. C C ✓</p>	<p>S 2: 1. CA ✓  2. A ✓  3. C C ✓  4. CA ✓  5. CA ✓  6. C C ✓  7. A ✓  8. CA ✓  9. CA ✓  10. A ✓  11. C C ✓  12. CA ✓  13. CA ✓  14. C C ✓  15. A ✓  16. CA ✓</p>	<p>S 3: 1. C C , #1 ✓  2. BAS , #1 ✓  3. , #1 ✓  4. C C , #1 ✓  5. C C , #2 ✓  6. BAS , #2 ✓  7. , #2 ✓  8. C C , #2 ✓  9. C C , #3 ✓  10. BAS , #3 ✓  11. , #3 ✓  12. C C , #3 ✓  13. C C , #4 ✓  14. BAS , #4 ✓  15. , #4 ✓  16. C C , #4 ✓</p>	<p>S 4: 1. C C , #1 ✓  2. C C , #1 ✓  3. C C , #2 ✓  4. C C , #2 ✓  5. C C , #3 ✓  6. C C , #3 ✓  7. C C , #4 ✓  8. C C , #4 ✓  9. BAS , #4 ✓  10. , #4 ✓  11. BAS , #3 ✓  12. , #3 ✓  13. BAS , #2 ✓  14. , #2 ✓  15. BAS , #1 ✓  16. , #1 ✓</p>
<p>S 5: 1. A , #1 ✓  2. A , #1 ✓  3. A , #2 ✓  4. A , #2 ✓  5. A , #3 ✓  6. A , #3 ✓  7. A , #4 ✓  8. A , #4 ✓  9. A , #4 ✓  10. S C , #4 ✓  11. A , #3 ✓  12. S C , #3 ✓  13. A , #2 ✓  14. S C , #2 ✓  15. A , #1 ✓  16. S C , #1 ✓</p>	<p>S 6: 1. CA ✓  2. CA ✓  3. CA ✓  4. CA ✓  5. CA ✓  6. CA ✓  7. CA ✓  8. CA ✓  9. A ✓  10. A ✓  11. A ✓  12. A ✓  13. A ✓  14. A ✓  15. A ✓  16. A ✓</p>	<p>S 7: 1. S C -C ✓  2. C A ( ) ✓  3. C A ( ) ✓  4. A -C ✓  5. C A ( ) ✓  6. C A ( ) ✓  7. C A ( ) ✓  8. S C -C ✓  9. S C -C ✓  10. C A ( ) ✓  11. C A ( ) ✓  12. C A ( ) ✓  13. A -C ✓  14. C A ( ) ✓  15. C A ( ) ✓  16. S C -C ✓</p>	

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DESCRIPTION:	SOIC-16 9.90X3.90X1.50 1.27P	PAGE 2 OF 2

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