

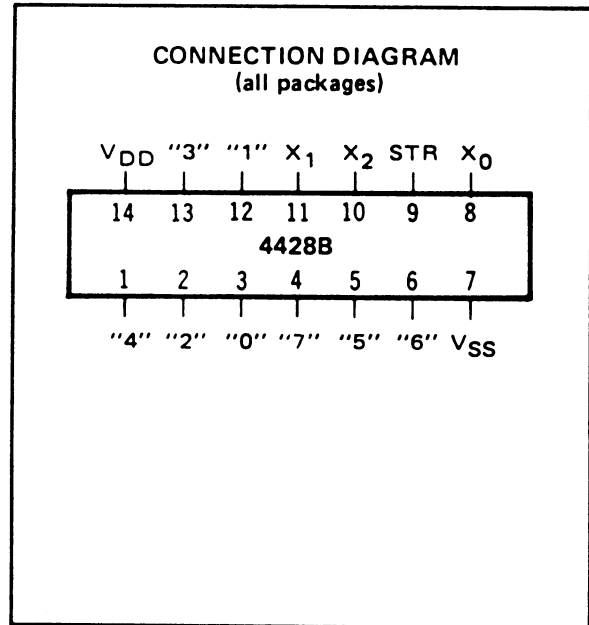
## CMOS BINARY-TO-OCTAL DECODER

### FEATURES

- ◆ Binary-to-Octal Decoding
- ◆ Buffered Outputs Go High on Selection
- ◆ Strobe Input for Simple Expansion

### DESCRIPTION

The 4428B is a one-of-eight CMOS Strobed Decoder. The three inputs labeled  $X_0$ ,  $X_1$ , and  $X_2$ , constitute a three-bit word which defines a number from 0 to 7, and activates one of eight outputs of the decoder. The Strobe line inhibits the outputs from responding to the inputs. If the Strobe line is a logic "1", one of eight outputs is a logic "1". This is an important feature of the Strobe since many 4428B's may be cascading to produce a 1 or N X 8 strobed decoder. This array is particularly useful in expanding memory systems.



**TRUTH TABLE – Strobe at Logical 1**

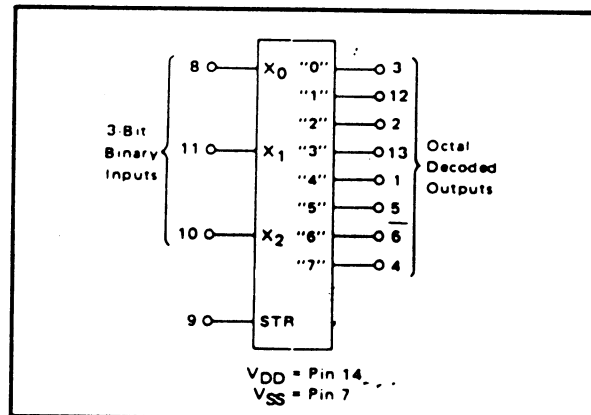
Address Input			Output							
$X_2$	$X_1$	$X_0$	"0"	"1"	"2"	"3"	"4"	"5"	"6"	"7"
PIN 10	11	8	3	12	2	13	1	5	6	4
0	0	0	1	0	0	0	0	0	0	0
0	0	1	0	1	0	0	0	0	0	0
0	1	0	0	0	1	0	0	0	0	0
0	1	1	0	0	0	1	0	0	0	0
1	0	0	0	0	0	0	1	0	0	0
1	0	1	0	0	0	0	0	1	0	0
1	1	0	0	0	0	0	0	0	1	0
1	1	1	0	0	0	0	0	0	0	1

### RECOMMENDED OPERATING CONDITIONS

For maximum reliability:

DC Supply Voltage	$V_{DD} - V_{SS}$	3 to 15	Vdc
Operating Temperature	$T_A$	-55 to +125	°C
		-40 to +85	°C

### BLOCK DIAGRAM



## ELECTRICAL CHARACTERISTICS

### STATIC CHARACTERISTICS<sup>1</sup>

PARAMETER	V <sub>DD</sub> (Vdc)	CONDITIONS	T <sub>LOW</sub> <sup>2</sup>		+25°C			T <sub>HIGH</sub> <sup>2</sup>		Units
			Min.	Max.	Min.	Typ.	Max.	Min.	Max.	
QUIESCENT DEVICE CURRENT	I <sub>DD</sub>	V <sub>IN</sub> = V <sub>SS</sub> or V <sub>DD</sub> All valid input combinations	—	5	—	0.05	5	—	150	μA <sub>DC</sub>
			—	10	—	0.1	10	—	300	
			—	20	—	0.2	20	—	600	

NOTES: <sup>1</sup> Remaining Static Electrical Characteristics are listed under "4000B Series Family Specifications".

<sup>2</sup> T<sub>LOW</sub> = -55°C for C

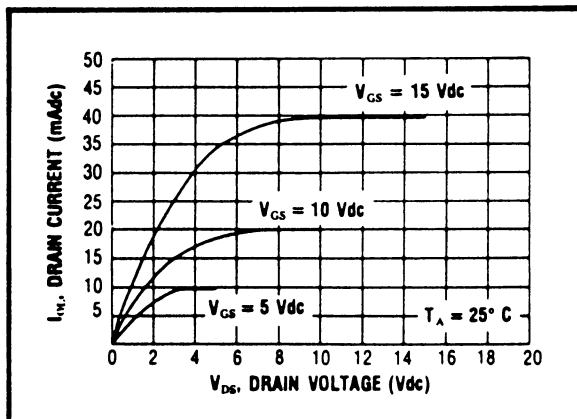
= -40°C for E

T<sub>HIGH</sub> = +125°C for C

= + 85°C for E

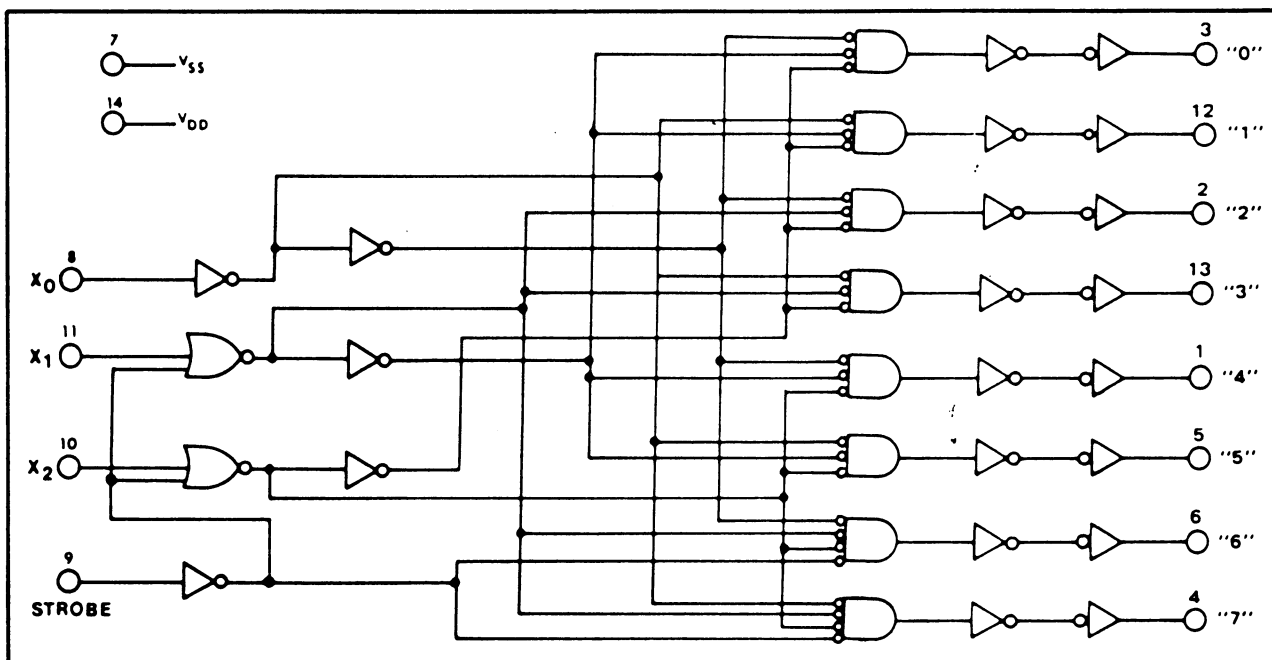
### DYNAMIC CHARACTERISTICS (C<sub>L</sub> = 50pF, T<sub>A</sub> = 25°C)

PARAMETERS		V <sub>DD</sub> (Vdc)	Min.	Typ.	Max.	Units
PROPAGATION DELAY TIME	t <sub>PLH</sub> , t <sub>PHL</sub>	5	—	225	450	ns
		10	—	100	200	
		15	—	70	140	
OUTPUT TRANSITION TIME	t <sub>TLH</sub> , t <sub>THL</sub>	5	—	100	200	ns
		10	—	50	100	
		15	—	40	80	



Typical N-Channel  
Sink Current Characteristics

### LOGIC DIAGRAM



APPLICATIONS INFORMATION  
SIX-BIT BINARY 1-OF-64 DECODER

