CMOS 4-TO-16 LINE DECODERS WITH LATCH

FEATURES

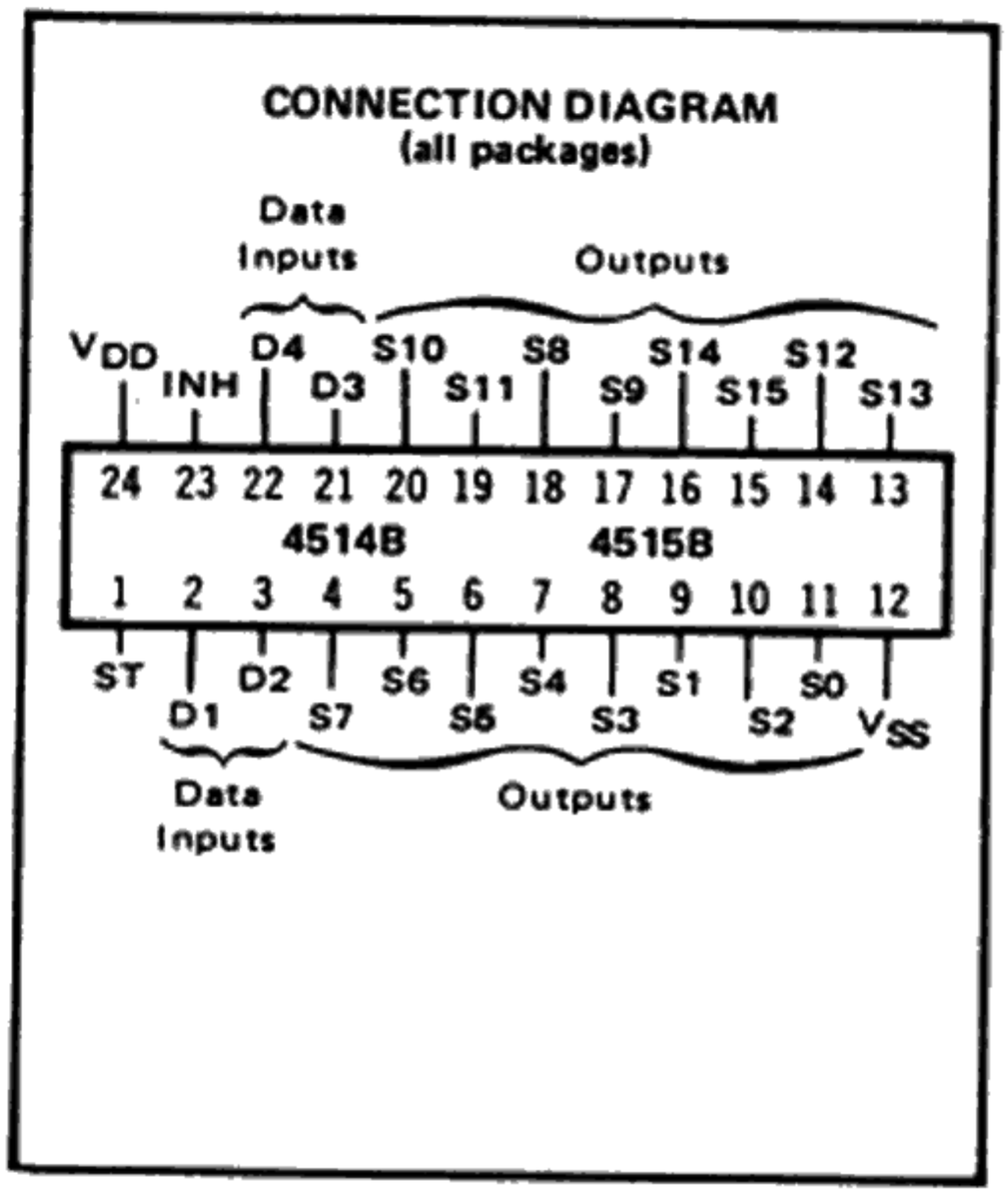
- Strobed Input Latch
- Inhibit Control
- Selected Output Active High (4514B) or Active Low (4515B)

DESCRIPTION

The 4514B and 4515B are two output options of a 4-to-16 Line Decoder with Latched Inputs. The 4514B presents a logic "1" at the selected output, and the 4515B presents a logic "0" at the selected output. The latches hold the last input data presented prior to the Strobe transition from "1" to "0". Inhibit allows all outputs to be placed at "0" (4514B), or "1" (4515B), regardless of the state of the Data or Strobe inputs.

Applications include code conversion, address decoding, memory selection control, demultiplexing, and readout decoding.

CONNECTION DIAGRAM
(all packages)



TRUTH TABLE (Strobe = 1)

Inhibit	Data Inputs D	C	B	A	Selected Output 4514B = Logic "1" 4515B = Logic "0"
0	0	0	0	0	S0
0	0	0	0	1	S1
0	0	0	1	0	S2
0	0	0	1	1	S3
0	0	1	0	0	S4
0	0	1	0	1	S5
0	0	1	1	0	S6
0	0	1	1	1	S7
0	1	0	0	0	S8
0	1	0	0	1	S9
0	1	0	1	0	S10
0	1	0	1	1	S11
0	1	1	0	0	S12
0	1	1	0	1	S13
0	1	1	1	0	S14
0	1	1	1	1	S15
1	X	X	X	X	All Outputs = "0", 4514B All Outputs = "1", 4515B

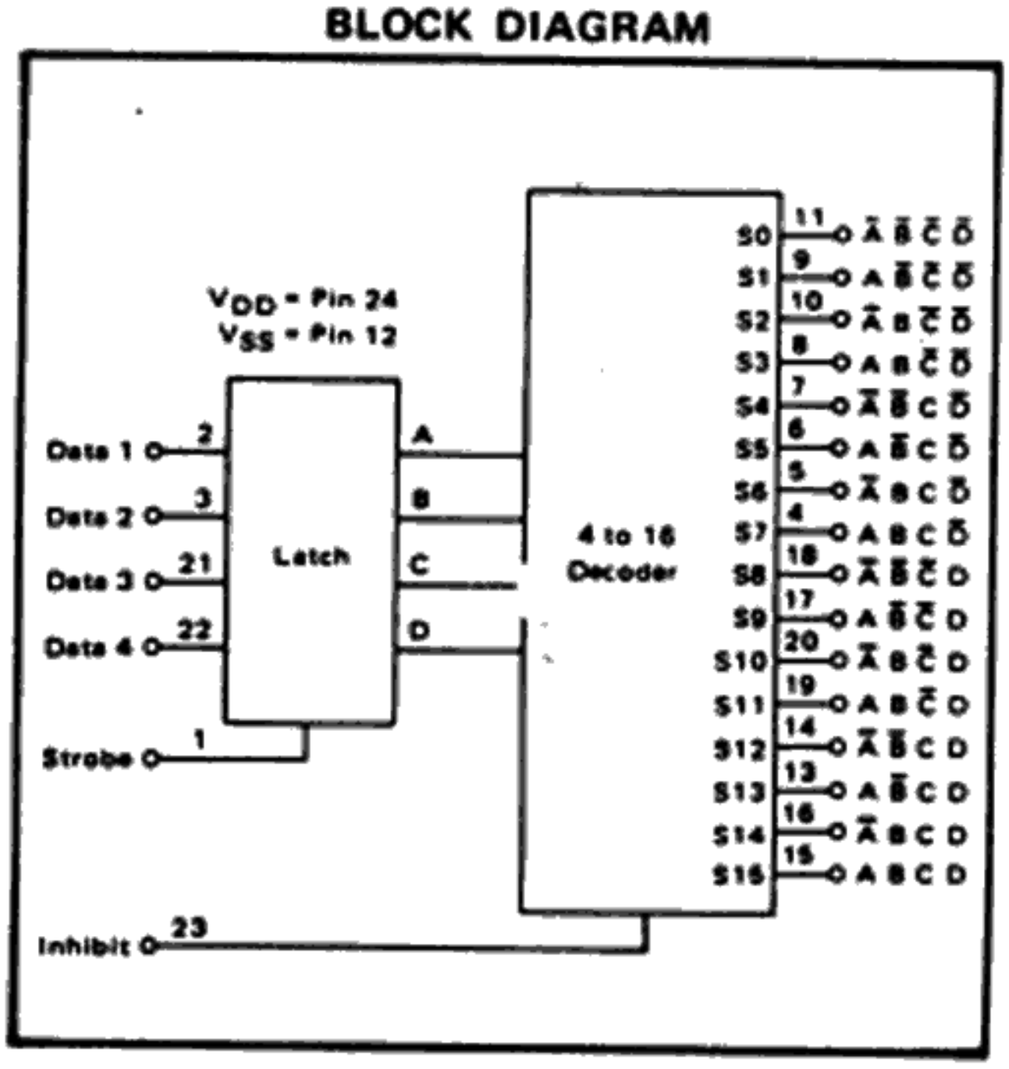
X = Don't Care

RECOMMENDED OPERATING CONDITIONS

For maximum reliability:

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

BLOCK DIAGRAM



ELECTRICAL CHARACTERISTICS

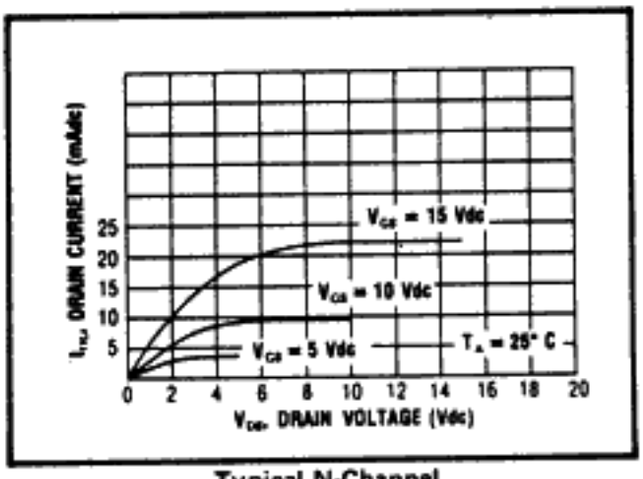
STATIC CHARACTERISTICS[1]

PARAMETER		V_{DD} (Vdc)	CONDITIONS	T_{LOW}[2]		+25°C			T_{HIGH}[2]		Units
				Min.	Max.	Min.	Typ.	Max.	Min.	Max.	
QUIESCENT DEVICE CURRENT	I_{DD}	5	$V_{IN} = V_{SS}$ or V_{DD}	–	5	–	0.05	5	–	150	μAdc
		10	All valid input	–	10	–	0.1	10	–	300	
		15	combinations	–	20	–	0.2	20	–	600	

NOTES: [1] Remaining Static Electrical Characteristics are listed under "4000B Series Family Specifications".
[2] T_{LOW} = -55°C for C
= -40°C for E
T_{HIGH} = +125°C for C
= + 85°C for E

DYNAMIC CHARACTERISTICS (C_L = 50pF, T_A = 25°C)

PARAMETER		V_{DD} (Vdc)	Min.	Typ.	Max.	Units
PROPAGATION DELAY TIME	t_{PLH}, t_{PHL}					
From Data Inputs		5	–	485	970	ns
		10	–	185	370	
		15	–	135	270	
From Inhibit Input		5	–	250	500	ns
		10	–	110	220	
		15	–	85	170	
OUTPUT TRANSITION TIME	t_{TLH}, t_{THL}					
		5	–	130	260	ns
		10	–	68	130	
		15	–	50	100	
MINIMUM DATA INPUT SETUP TIME	t_{setup}					
		5	–	75	150	ns
		10	–	35	70	
		15	–	20	40	
MINIMUM STROBE PULSE WIDTH	PW_{ST}					
		5	–	125	250	ns
		10	–	50	100	
		15	–	40	75	



Typical N-Channel
Sink Current Characteristics

LOGIC DIAGRAM