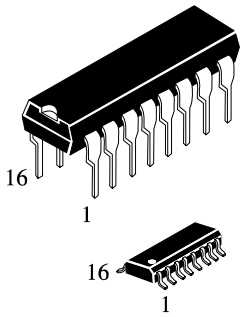
IW4503B

Hex Buffer
High-Voltage Silicon-Gate CMOS

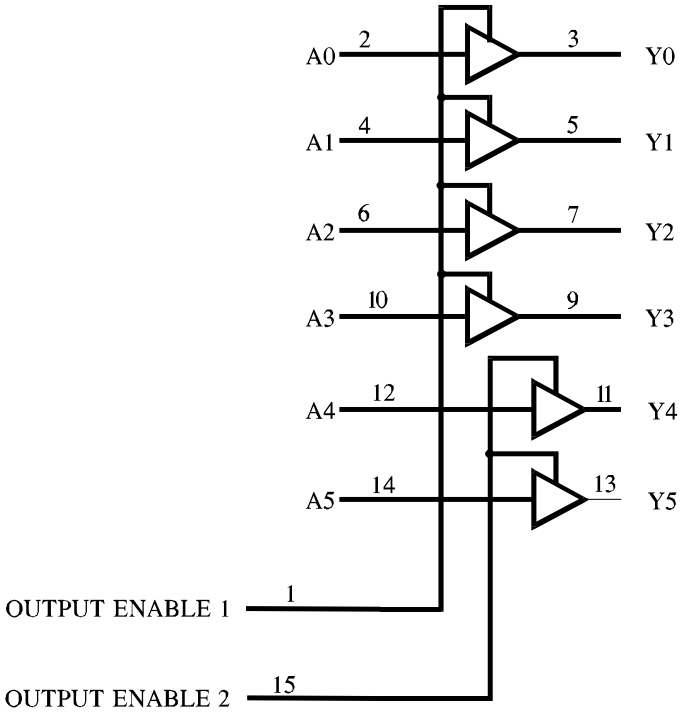


ORDERING INFORMATION
IW4503BN Plastic
IW4503BD SOIC
T_A = -55° to 125° C for all packages

The IW4503B is a hex noninverting buffer with 3-state outputs having high sink- and source-current capability. Two output ENABLE controls are provided, one of which controls four buffers and the other controls the remaining two buffers.

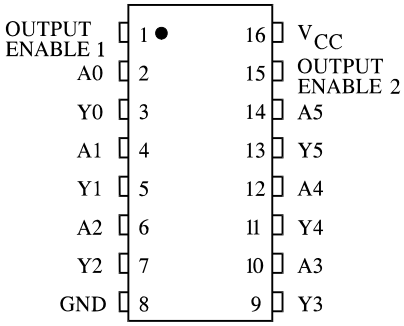
- Operating Voltage Range: 3.0 to 18 V
- Maximum input current of 1 μA at 18 V over full package-temperature range; 100 nA at 18 V and 25°C
- Noise margin (over full package temperature range):
  1.0 V min @ 5.0 V supply
  2.0 V min @ 10.0 V supply
  2.5 V min @ 15.0 V supply

LOGIC DIAGRAM



PIN 16=V_{CC}
PIN 8= GND

PIN ASSIGNMENT



FUNCTION TABLE

Inputs		Output
Enable 1,Enable 2	A	Y
L	L	L
L	H	H
H	X	Z

Z = high impedance
X = don't care

MAXIMUM RATINGS*

Symbol	Parameter	Value	Unit
V_{CC}	DC Supply Voltage (Referenced to GND)	-0.5 to +20	V
V_{IN}	DC Input Voltage (Referenced to GND)	-0.5 to V_{CC} +0.5	V
V_{OUT}	DC Output Voltage (Referenced to GND)	-0.5 to V_{CC} +0.5	V
I_{IN}	DC Input Current, per Pin	±10	mA
P_D	Power Dissipation in Still Air, Plastic DIP+ SOIC Package+	750 500	mW
P_D	Power Dissipation per Output Transistor	100	mW
Tstg	Storage Temperature	-65 to +150	°C
T_L	Lead Temperature, 1 mm from Case for 10 Seconds (Plastic DIP or SOIC Package)	260	°C

*Maximum Ratings are those values beyond which damage to the device may occur.
Functional operation should be restricted to the Recommended Operating Conditions.
+Derating - Plastic DIP: - 10 mW/°C from 65° to 125°C
SOIC Package: : - 7 mW/°C from 65° to 125°C

RECOMMENDED OPERATING CONDITIONS

Symbol	Parameter	Min	Max	Unit
V_{CC}	DC Supply Voltage (Referenced to GND)	3.0	18	V
V_{IN}, V_{OUT}	DC Input Voltage, Output Voltage (Referenced to GND)	0	V_{CC}	V
T_A	Operating Temperature, All Package Types	-55	+125	°C

This device contains protection circuitry to guard against damage due to high static voltages or electric fields. However, precautions must be taken to avoid applications of any voltage higher than maximum rated voltages to this high-impedance circuit. For proper operation, V_{IN} and V_{OUT} should be constrained to the range GND≤(V_{IN} or V_{OUT})≤V_{CC}.

Unused inputs must always be tied to an appropriate logic voltage level (e.g., either GND or V_{CC}). Unused outputs must be left open.

DC ELECTRICAL CHARACTERISTICS (Voltages Referenced to GND)

Symbol	Parameter	Test Conditions	V_{CC} V	Guaranteed Limit			Unit
				≥-55°C	25°C	≤125 °C	
V_{IH}	Minimum High-Level Input Voltage	V_{OUT}= V_{CC} - 0.5V V_{OUT}= V_{CC} - 1.0 V V_{OUT}= V_{CC} - 1.5V	5.0 10 15	3.5 7 11	3.5 7 11	3.5 7 11	V
V_{IL}	Maximum Low - Level Input Voltage	V_{OUT}=0.5 V V_{OUT}=1 V V_{OUT}=1.5	5.0 10 15	1.5 3 4	1.5 3 4	1.5 3 4	V
V_{OH}	Minimum High-Level Output Voltage	V_{IN}= V_{CC}	5.0 10 15	4.95 9.95 14.95	4.95 9.95 14.95	4.95 9.95 14.95	V
V_{OL}	Maximum Low-Level Output Voltage	V_{IN}=GND	5.0 10 15	0.05 0.05 0.05	0.05 0.05 0.05	0.05 0.05 0.05	V
I_{IN}	Maximum Input Leakage Current	V_{IN}= GND or V_{CC}	18	±0.1	±0.1	±1.0	μA
I_{CC}	Maximum Quiescent Supply Current (per Package)	V_{IN}= GND or V_{CC}	5.0 10 15 20	1 2 4 20	1 2 4 20	30 60 120 600	μA
I_{OL}	Minimum Output Low (Sink) Current	V_{IN}= GND or V_{CC} U_{OL}=0.4 V U_{OL}=0.5 V U_{OL}=1.5 V	 5.0 10 15	 2.6 6.5 19.2	 2.1 5.5 16.1	 1.3 3.8 11.2	mA
I_{OH}	Minimum Output High (Source) Current	V_{IN}= GND or V_{CC} U_{OH}=2.5 V U_{OH}=4.6 V U_{OH}=9.5 V U_{OH}=13.5 V	 5.0 5.0 10 15	 -1.2 -5.8 -3.1 -8.2	 -1.02 -4.8 -2.6 -6.8	 -0.7 -3 --1.8 -4.8	mA
I_{OZ}	Maximum Tree-State Leakage Current	Output in High-Impedance State V_{IN}= GND or V_{CC} V_{OUT}= GND or V_{CC}	18	±0.4	±0.4	±12	μA

AC ELECTRICAL CHARACTERISTICS (C_L=50pF, R_L=200kΩ unless otherwise specified, Input t_r=t_f=20 ns)

Symbol	Parameter	V_{CC} V	Guaranteed Limit ≥-55°C	25°C	≤125°C	Unit
t_{PLH}	Maximum Propagation Delay, Input A to Output Y (Figure 1)	5.0 10 15	150 70 50	150 70 50	300 140 100	ns
t_{PHL}	Maximum Propagation Delay, Input A to Output Y (Figure 1)	5.0 10 15	110 50 35	110 50 35	220 100 70	ns
t_{PHZ}, t_{PZH}	Maximum Propagation Delay, Output Enable to Output Y (Figure 2) R_L = 1 kΩ	5.0 10 15	140 60 50	140 60 50	280 120 100	ns
t_{PZL}, t_{PLZ}	Maximum Propagation Delay, Output Enable to Output Y (Figure 2) R_L = 1 kΩ	5.0 10 15	180 80 70	180 80 70	360 160 140	ns
t_{TLH}	Maximum Output Transition Time, Any Output (Figure 1)	5.0 10 15	90 45 35	90 45 35	180 90 70	ns
t_{THL}	Maximum Output Transition Time, Any Output (Figure 1)	5.0 10 15	70 40 25	70 40 25	140 80 50	ns
C_{IN}	Maximum Input Capacitance	-		7.5		pF
C_{OUT}	Maximum Tree-State Output Capacitance (Output in High-Impedance State)	-		15		pF

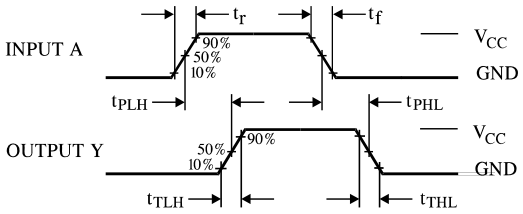


Figure 1. Switching Waveforms

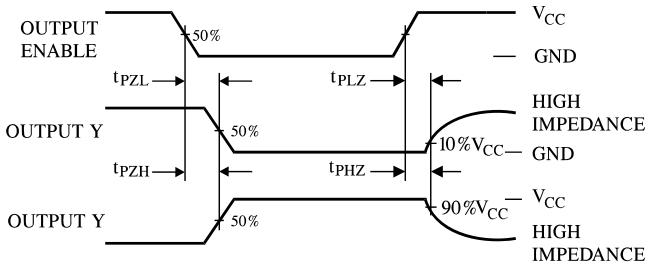
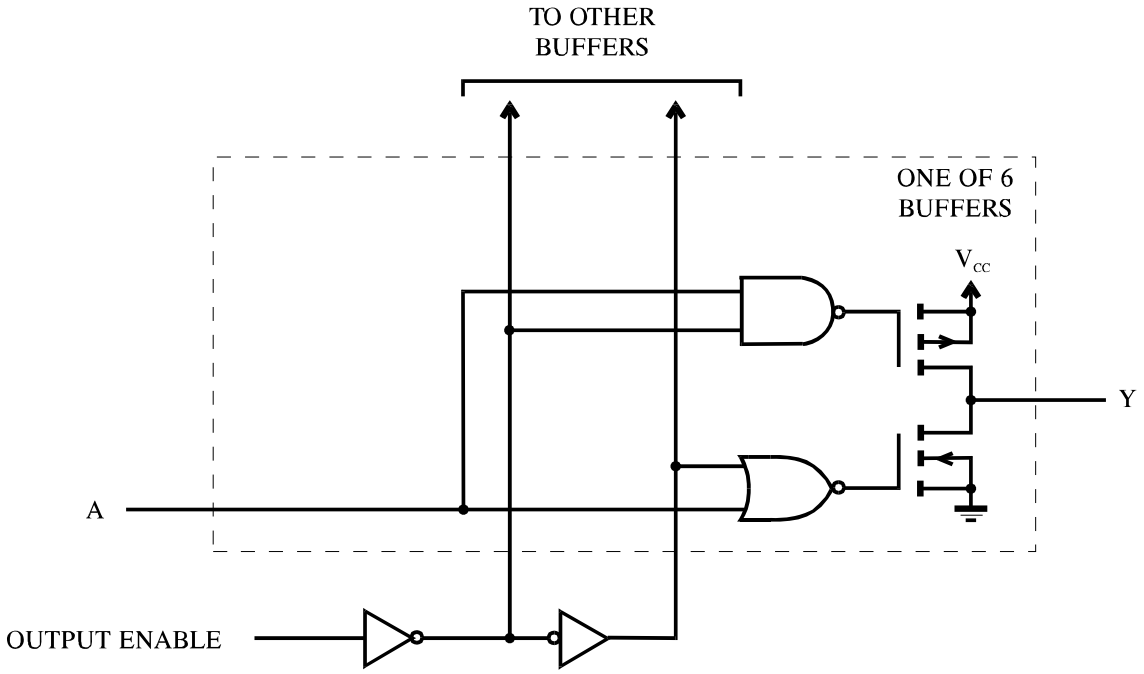
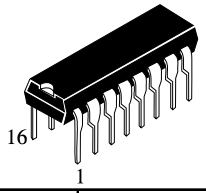


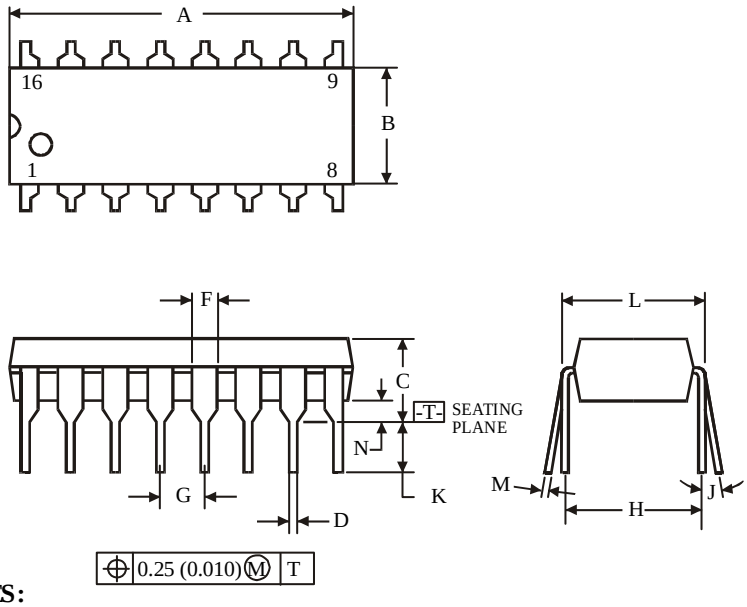
Figure 2. Switching Waveforms

EXPANDED LOGIC DIAGRAM
(1/6 of the Device)



N SUFFIX PLASTIC DIP
(MS - 001BB)





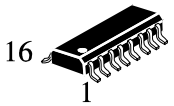
	Dimension, mm	
Symbol	**MIN**	**MAX**
A	18.67	19.69
B	6.1	7.11
C		5.33
D	0.36	0.56
F	1.14	1.78
G	2.54	
H	7.62	
J	0°	10°
K	2.92	3.81
L	7.62	8.26
M	0.2	0.36
N	0.38	

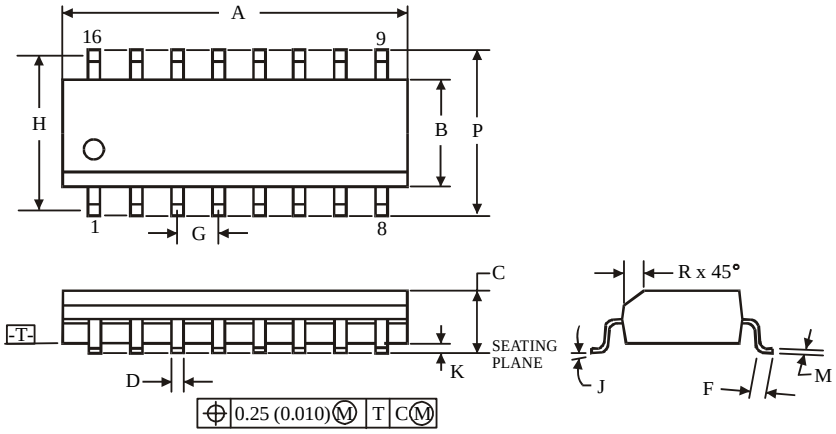
NOTES:

1. Dimensions “A”, “B” do not include mold flash or protrusions.

   Maximum mold flash or protrusions 0.25 mm (0.010) per side.

D SUFFIX SOIC
(MS - 012AC)





	Dimension, mm	
Symbol	**MIN**	**MAX**
A	9.8	10
B	3.8	4
C	1.35	1.75
D	0.33	0.51
F	0.4	1.27
G	1.27	
H	5.72	
J	0°	8°
K	0.1	0.25
M	0.19	0.25
P	5.8	6.2
R	0.25	0.5

NOTES:

1. Dimensions A and B do not include mold flash or protrusion.
2. Maximum mold flash or protrusion 0.15 mm (0.006) per side for A; for B – 0.25 mm (0.010) per side.