

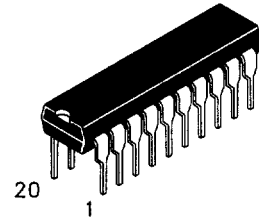
DV74HC620 Available Q2, 1995

Octal 3-State Bus Transceiver

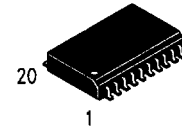
These devices are 3-state transceivers used for two way communication between buses. Two separate enables are available. The enable for bus A to B is active-high, the enable for bus B to A is active-low. The HC620 provides inversion between the buses.

- Output Drive Capability: 15 LSTTL Loads
- Outputs Directly Interface to CMOS, NMOS, and TTL
- Operating Voltage Range: 2 to 6 V
- Low Input Current: 1 μ A
- DC, AC parameters guaranteed from -55°C to 125°C

DV74HC620
DV74HC623



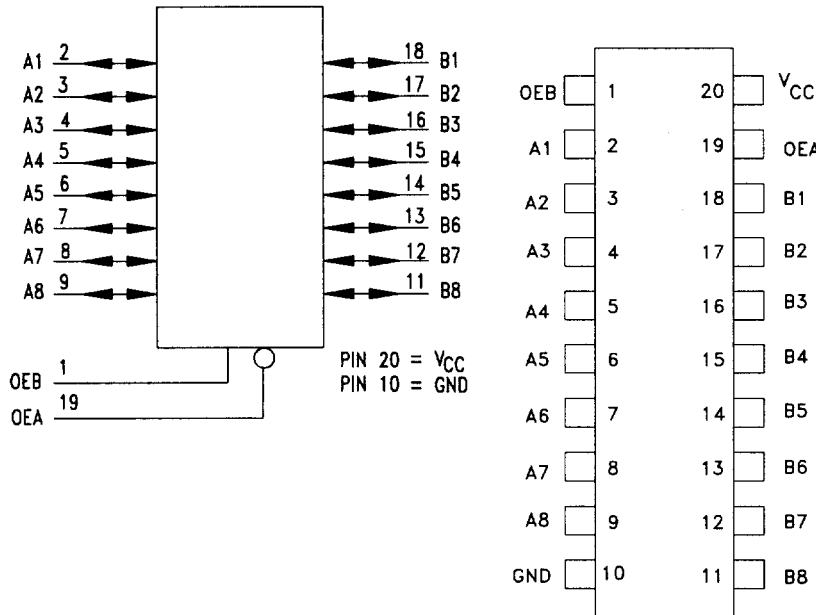
N Suffix
Plastic DIP
AVG-005 Case



DW Suffix
Plastic SOP
AVG-006 Case

TRUTH TABLE

620, 623



Control Inputs		EFFECT	
OEB	OEA	HC620	HC623
L	L	Port B → Port A	Port B → Port A
H	H	Port A → Port B	Port A → Port B
L	H	Z	Z
H	L	Latch Data	

H = High Logic Level
 L = Low Logic Level
 Z = High Impedance
 X = Don't Care

ABSOLUTE MAXIMUM RATINGS

Maximum ratings are those values beyond which damage to the device may occur.

Symbol	Parameters	Value	Unit
V _{CC}	DC Supply Voltage (Referenced to GND)	- 0.5 to + 7.0	V
V _{IN}	DC Input Voltage (Referenced to GND)	- 1.5 to V _{CC} + 1.5	V
V _{OUT}	DC Output Voltage (Referenced to GND)	- 0.5 to V _{CC} + 0.5	V
I _{IN}	DC Input Current, per Pin	± 20	mA
I _{OUT}	DC Output Sink/Source Current, per Pin	± 35	mA
I _{CC}	DC Supply Current, V _{CC} and GND Pins	± 75	mA
PD	Power Dissipation in Still Air, Plastic DIP SOP Package	750 500	mW

GUARANTEED OPERATING CONDITIONS

Symbol	Parameter	Min	Max	Unit
V _{CC}	DC Supply Voltage (Referenced to GND)	2.0	6.0	V
V _{IN} , V _{OUT}	DC Input Voltage, Output Voltage (Referenced to GND)	0	V _{CC}	V
T _A	Ambient Temperature	-55	+125	°C
t _r , t _f	Input Rise and Fall Time			ns
	V _{CC} =2.0V	0	1000	
	V _{CC} =4.0V	0	500	
	V _{CC} =6.0V	0	400	

DC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Conditions	V _{CC} (V)	Guaranteed Limits			Unit
				25°C to -55°C	≤ 85°C	≤ 125°C	
V _{IH}	Minimum High Level Input Voltage	V _{OUT} = V _{CC} - 0.1 V I _{OUT} ≤ 20 μA	2.0	1.5	1.5	1.5	V
			4.5	3.15	3.15	3.15	
			6.0	4.2	4.2	4.2	
V _{IL}	Maximum Low Level Input Voltage	V _{OUT} = 0.1 V I _{OUT} ≤ 20 μA	2.0	0.5	0.5	0.5	V
			4.5	1.35	1.35	1.35	
			6.0	1.8	1.8	1.8	
V _{OH}	Minimum High Level Output Voltage	V _{IN} = V _{IH} I _{OUT} ≤ 20 μA	2.0	1.9	1.9	1.9	V
			4.5	4.4	4.4	4.4	
		6.0	5.9	5.9	5.9	V	
			V _{IN} = V _{IH} I _{OUT} ≤ 6.0 mA I _{OUT} ≤ 7.8 mA	4.5	3.98		3.84
6.0	5.48	5.34	5.20				
V _{OL}	Maximum Low Level Output Voltage	V _{IN} = V _{IL} I _{OUT} ≤ 20 μA	2.0	0.1	0.1	0.1	V
			4.5	0.1	0.1	0.1	
		6.0	0.1	0.1	0.1	V	
			V _{IN} = V _{IL} I _{OUT} ≤ 6.0 mA I _{OUT} ≤ 7.8 mA	4.5	0.26		0.33
6.0	0.26	0.33	0.40				
I _{IN}	Maximum Input Leakage Current	V _{IN} = V _{CC} or GND	6.0	±0.1	±1.0	±1.0	μA
I _{OZ}	Maximum 3-State Current (Output in High Impedance State)	V _{IN} = V _{IL} or V _{IH} V _{OUT} = V _{CC} or GND, I/O Pins	6.0	±0.5	±5.0	±10.0	mA
I _{CC}	Maximum Quiescent Supply Current	V _{IN} = V _{CC} or GND I _{OUT} = 0 μA	6.0	8	80	160	μA

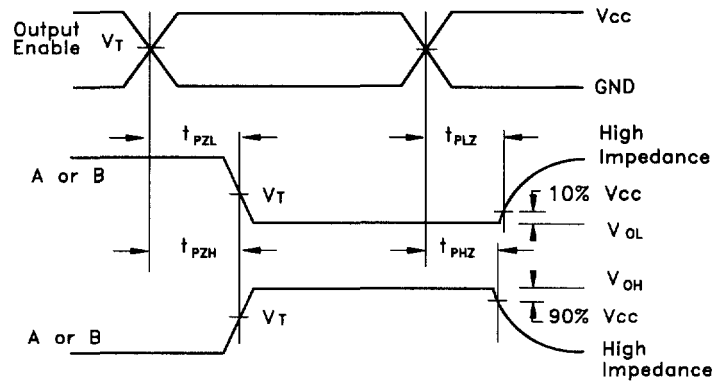
620, 623

AC CHARACTERISTICS over full operating conditions (C_L=50pF, Input t_r=t_f=6.0ns)

Symbol	Parameter	V _{CC} (V)	Guaranteed Limits			Unit
			25°C to -55°C	≤ 85°C	≤ 125°C	
t _{PLH} , t _{PHL}	Maximum Propagation Delay A to B or B to A	2.0	100	125	150	ns
		4.5	20	25	30	
		6.0	17	21	26	
t _{PLZ} , t _{PHZ}	Maximum Propagation Delay Output Disable to Output	2.0	150	190	125	ns
		4.5	30	38	45	
		6.0	26	33	38	
t _{PZL} , t _{PZH}	Maximum Propagation Delay Output Enable to Output	2.0	150	190	225	ns
		4.5	30	38	45	
		6.0	26	33	38	
t _{TLH} , t _{THL}	Maximum Output Transition Time, Any Output	2.0	60	75	90	ns
		4.5	12	15	18	
		6.0	10	13	15	
C _{IN}	Maximum Input Capacitance		10	10	10	pF

Symbol	Parameter	V _{CC} (V)	Guaranteed Limits			Unit
			25° C to -55° C	≤ 85° C	≤ 125° C	
C _{OUT}	Maximum Three-State Output Capacitance (Output in High-Impedance State)		15	15	15	pF
C _{PD}	Power Dissipation Capacitance (Output in High-Impedance) Used to determine the no-load dynamic power consumption: $P_D = C_{PD} V_{CC}^2 f + I_{CC} V_{CC}$	Typical @ 25° C, V _{CC} = 5.0 V			pF	
		40				

SWITCHING WAVEFORMS



Input and output threshold voltage:
 $V_T = 50\% V_{CC}$ for HC; 1.3V for HCT;
 $V_H = V_{CC}$ for HC, 3V for HCT

620, 623