HD74HC620 ● Octal Bus Transceivers (with inverted 3-state outputs)
HD74HC623 ● Octal Bus Transceivers (with 3-state outputs)

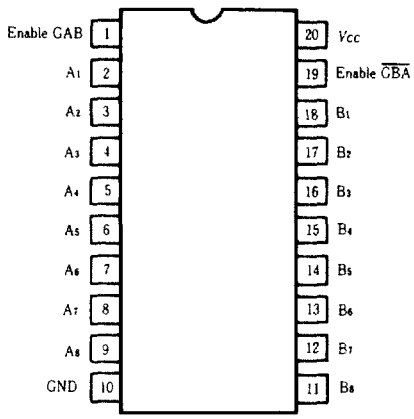
This octal bus transceiver is designed for asynchronous two-way communication between data buses. The control function implementation allows for maximum flexibility in timing.

This device allows data transmission from A bus to the B bus or from the B bus to the A bus depending upon the logic levels at the enable inputs ($\overline{GBA}$ and GAB).

The enable inputs can be used to disable the device so that the buses are effectively isolated.

The dual-enable configuration gives these devices the capability to store data by simultaneous enabling of $\overline{GBA}$ and GAB. Each output reinforces its input in this transceiver configuration. Thus, when both control inputs are enabled and all other data sources to the two sets of bus lines are at high impedance, both sets of bus lines (16 in all) will remain at their last states. The 8-bit codes appearing on the two sets of buses will be identical for the HD74HC623 or complementary for the HD74HC620.

■ PIN ARRANGEMENT



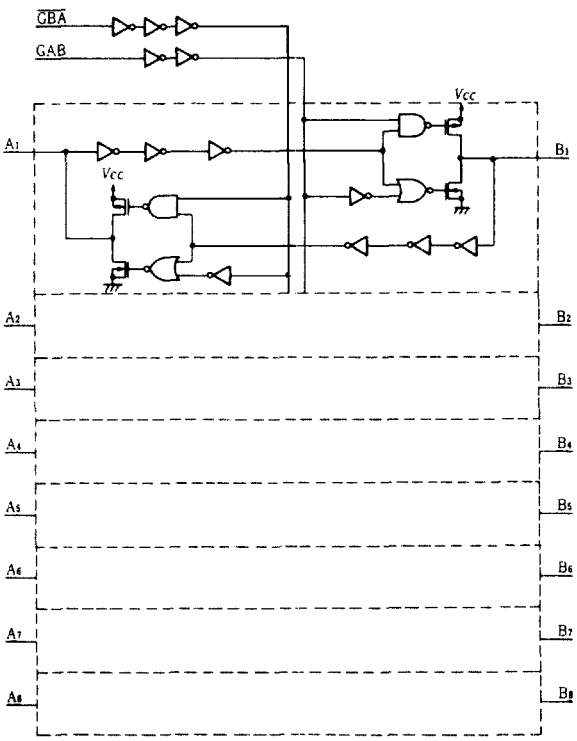
(Top View)

■ FEATURES

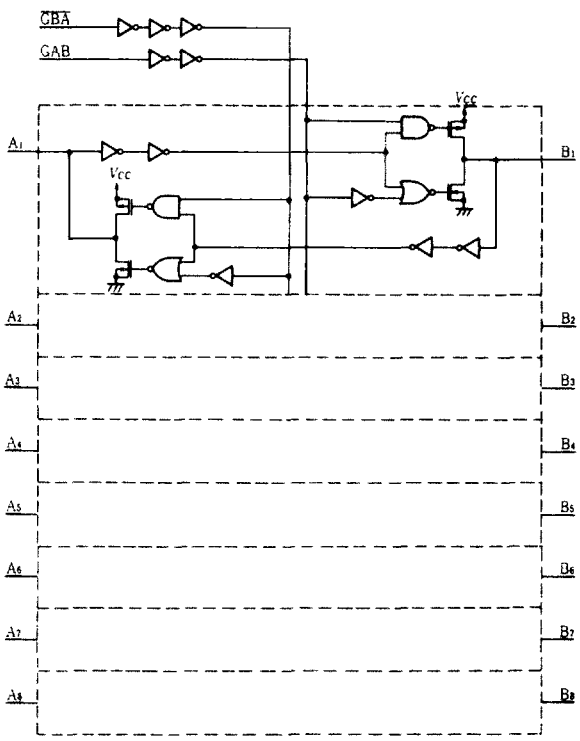
- High Speed Operation: t_{pd} (Bus to Bus) = 12ns typ. (C_L=50pF)
- High Output Current: Fanout of 15 LSTTL Loads
- Wide Operating Voltage: V_{CC}=2~6V
- Low Input Current: 1μA max.
- Low Quiescent Supply Current: I_{CC} (static)=4μA max. (Ta=25°C)

■ LOGIC DIAGRAM

●HD74HC620



●HD74HC623



■ FUNCTION TABLE

Enable Inputs		Operation	
$\overline{GBA}$	GAB	HD74HC620	HD74HC623
L	L	$\overline{B}$ data to A bus	B data to A bus
H	H	$\overline{A}$ data to B bus	A data to B bus
H	L	Isolation	Isolation
L	H	$\overline{B}$ data to A bus, $\overline{A}$ data to B bus	B data to A bus, A data to B bus

■ ABSOLUTE MAXIMUM RATINGS

Item	Symbol	Rating	Unit
Supply Voltage Range	V_{CC}	−0.5～+7.0	V
Input Voltage	V_{IN}	−0.5～V_{CC}+0.5	V
Output Voltage	V_{OUT}	−0.5～V_{CC}+0.5	V
Output Current	I_{OUT}	±35	mA
DC Current Drain per V_{CC}, GND	I_{CC}, I_{GND}	±75	mA
DC Input Diode Current	I_{IK}	±20	mA
DC Output Diode Current	I_{OK}	±20	mA
Power Dissipation per Package	P_T	500	mW
Storage Temperature	T_{stg}	−65～+150	°C

■ DC CHARACTERISTICS

Item	Symbol	V_{CC}(V)	Test Conditions		Ta=25°C min	Ta=25°C typ	Ta=25°C max	Ta=−40～+85°C min	Ta=−40～+85°C max	Unit
Input Voltage	V_{IH}	2.0			1.5	–	–	1.5	–	V
		4.5			3.15	–	–	3.15	–	
		6.0			4.2	–	–	4.2	–	
	V_{IL}	2.0			–	–	0.5	–	0.5	V
		4.5			–	–	1.35	–	1.35	
		6.0			–	–	1.8	–	1.8	
Output Voltage	V_{OH}	2.0	V_{in}=V_{IH} or V_{IL}	I_{OH}=−20μA	1.9	2.0	–	1.9	–	V
		4.5			4.4	4.5	–	4.4	–	
		6.0			5.9	6.0	–	5.9	–	
		4.5		I_{OH}=−6mA	4.18	–	–	4.13	–	
		6.0		I_{OH}=−7.8mA	5.68	–	–	5.63	–	
	V_{OL}	2.0	V_{in}=V_{IH} or V_{IL}	I_{OL}=20μA	–	0.0	0.1	–	0.1	V
		4.5			–	0.0	0.1	–	0.1	
		6.0			–	0.0	0.1	–	0.1	
		4.5		I_{OL}=6mA	–	–	0.26	–	0.33	
		6.0		I_{OL}=7.8mA	–	–	0.26	–	0.33	
Off-state output current	I_{OZ}	6.0	V_{in}=V_{IH} or V_{IL}, V_{out}=V_{CC} or GND		–	–	±0.5	–	±5.0	μA
Input Current	I_{in}	6.0	V_{in}=V_{CC} or GND		–	–	±0.1	–	±1.0	μA
Quiescent Supply Current	I_{CC}	6.0	V_{in}=V_{CC} or GND, I_{out}=0μA		–	–	4.0	–	40	μA

■ AC CHARACTERISTICS (C_L=50pF, Input t_r=t_f=6ns)

Item	Symbol	V_{CC}(V)	Test Conditions	Ta=25°C min.	Ta=25°C typ.	Ta=25°C max.	Ta=−40～+85°C min.	Ta=−40～+85°C max.	Unit
Propagation Delay Time	t_{PLH} t_{PHL}	2.0		–	–	100	–	125	ns
		4.5		–	12	20	–	25	
		6.0		–	–	17	–	21	
Output Enable Time	t_{ZH} t_{ZL}	2.0		–	–	150	–	190	ns
		4.5		–	12	30	–	38	
		6.0		–	–	26	–	33	
Output Disable Time	t_{HZ} t_{LZ}	2.0		–	–	150	–	190	ns
		4.5		–	16	30	–	38	
		6.0		–	–	26	–	33	
Output Rise/Fall Time	t_{TLH} t_{THL}	2.0		–	–	60	–	75	ns
		4.5		–	4	12	–	15	
		6.0		–	–	10	–	13	
Input Capacitance	C_{in}	–		–	5	10	–	10	pF