

HD74HC442 ● Quad. Tridirectional Bus Transceiver (with noninverted 3-state outputs)
HD74HC443 ● Quad. Tridirectional Bus Transceiver (with inverted 3-state outputs)
HD74HC444 ● Quad. Tridirectional Bus Transceiver (with noninverted/inverted 3-state outputs)

These bus transceivers are designed for asynchronous three-way communication between four-line data buses. They give the designer a choice of selecting inverting, noninverting, or a combination of inverting and noninverting data paths with 3-state outputs.

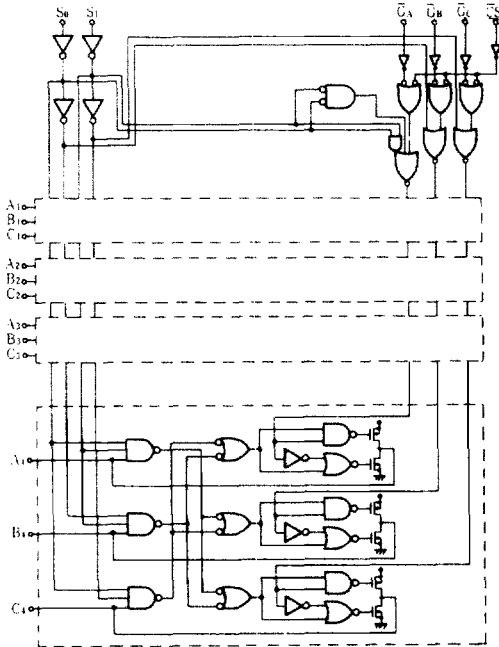
The S_0 and S_1 inputs select the bus from which data are to be transferred. The \bar{G} inputs enable the bus or buses to which data are to be transferred. The port for any bus selected for input and any other bus not enabled for output will be at high impedance.

FEATURES

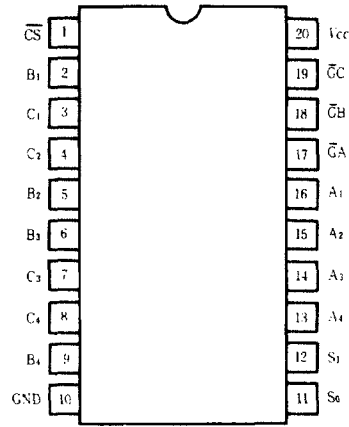
- High Speed Operation
- High Output Current: Fanout of 15 LSTTL Loads
- Wide Operating Voltage: $V_{CC}=2\sim 6V$
- Low Input Current: $1\mu A$ max.
- Low Quiescent Supply Current: I_{CC} (static) = $4\mu A$ max. ($T_a=25^\circ C$)

LOGIC DIAGRAM

● HD74HC442

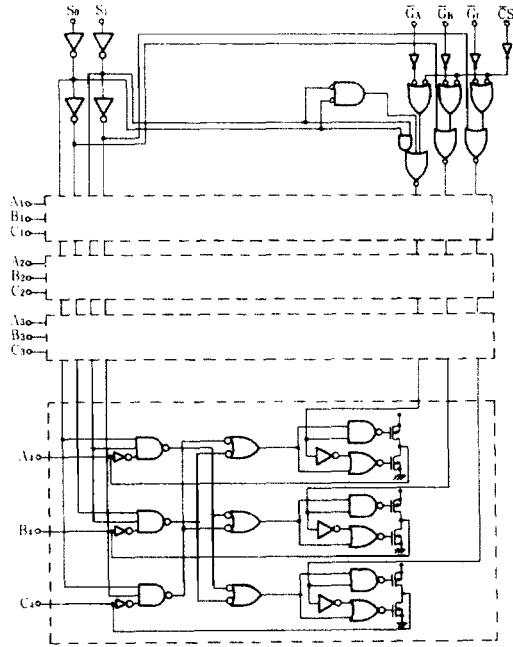


PIN ARRANGEMENT



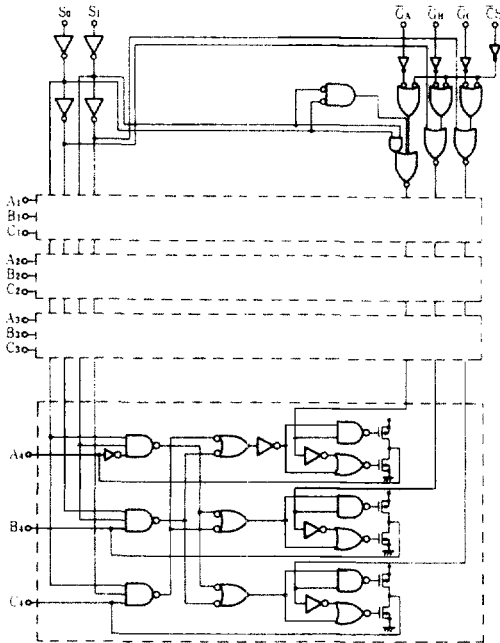
(Top View)

● HD74HC443



■ LOGIC DIAGRAM

● HD74HC444



■ FUNCTION TABLE

		Inputs			Transfers Between Buses			
CS	S ₁	S ₀	GA	GB	GC	HD74HC442	HD74HC443	HD74HC444
H	X	X	X	X	X	None	None	None
X	H	H	X	X	X	None	None	None
X	X	X	H	H	H	None	None	None
X	L	L	X	H	H	None	None	None
X	L	H	H	X	H	None	None	None
X	H	L	L	L	X	None	None	None
L	L	L	X	L	L	A→B, A→C	A→B, A→C	A→B, A→C
L	L	H	L	X	L	B→C, B→A	B→C, B→A	B→C, B→A
L	H	L	L	L	X	C→A, C→B	C→A, C→B	C→A, C→B
L	L	L	X	L	H	A→B	A→B	A→B
L	L	H	H	X	L	B→C	B→C	B→C
L	H	L	L	H	X	C→A	C→A	C→A
L	L	L	X	H	L	A→C	A→C	A→C
L	L	H	L	X	H	B→A	B→A	B→A
L	H	L	H	L	X	C→B	C→B	C→B

■ 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	T _a = 25°C			T _a = -40~+85°C		Unit	
				min	typ	max	min	max		
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	
	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	-
	Input Current	I _{ik}	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 ($C_L=50\text{pF}$, Input $t_r=t_f=6\text{ns}$)

Item	Symbol	$V_{CC}(\text{V})$	Test Conditions	$T_a=25^\circ\text{C}$			$T_a=-40\sim+85^\circ\text{C}$		Unit
				min.	typ.	max.	min.	max.	
Propagation Delay Time	t_{PLH} t_{PHL}	2.0		—	—	200	—	250	ns
		4.5		—	—	40	—	50	
		6.0		—	—	34	—	43	
Output Enable Time	t_{ZH} t_{ZL}	2.0		—	—	150	—	190	ns
		4.5		—	—	30	—	38	
		6.0		—	—	26	—	33	
Output Disable Time	t_{HZ} t_{LZ}	2.0		—	—	150	—	190	ns
		4.5		—	—	30	—	38	
		6.0		—	—	26	—	33	
Output Rise/Fall Time	t_{TLH} t_{THL}	2.0		—	—	60	—	75	ns
		4.5		—	—	12	—	15	
		6.0		—	—	10	—	13	
Input Capacitance	C_{in}	—		—	5	10	—	10	pF