
HD74HCT640/HD74HCT643

Octal Bus Transceivers (with 3-state outputs)

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Description

Both the HD74HCT640 and the HD74HCT643 have one active low enable input (\overline{G}), and a direction control (DIR). When the DIR input is high, data flows from the A inputs to the B outputs. When DIR is low, data flows from B to A.

The HD74HCT640 transfers inverted data from one bus to the other. The HD74HCT643 transfers inverted data from the A bus to the B bus and non-inverted data from the B bus to the A bus.

Features

- LSTTL Output Logic Level Compatibility as well as CMOS Output Compatibility
- High Speed Operation: t_{pd} (A to B) = 14.5 ns typ ($C_L = 50$ pF)
- High Output Current: Fanout of 15 LSTTL Loads
- Wide Operating Voltage: $V_{CC} = 4.5$ to 5.5 V
- Low Input Current: 1 μ A max
- Low Quiescent Supply Current: I_{CC} (static) = 4 μ A max ($T_a = 25^\circ\text{C}$)

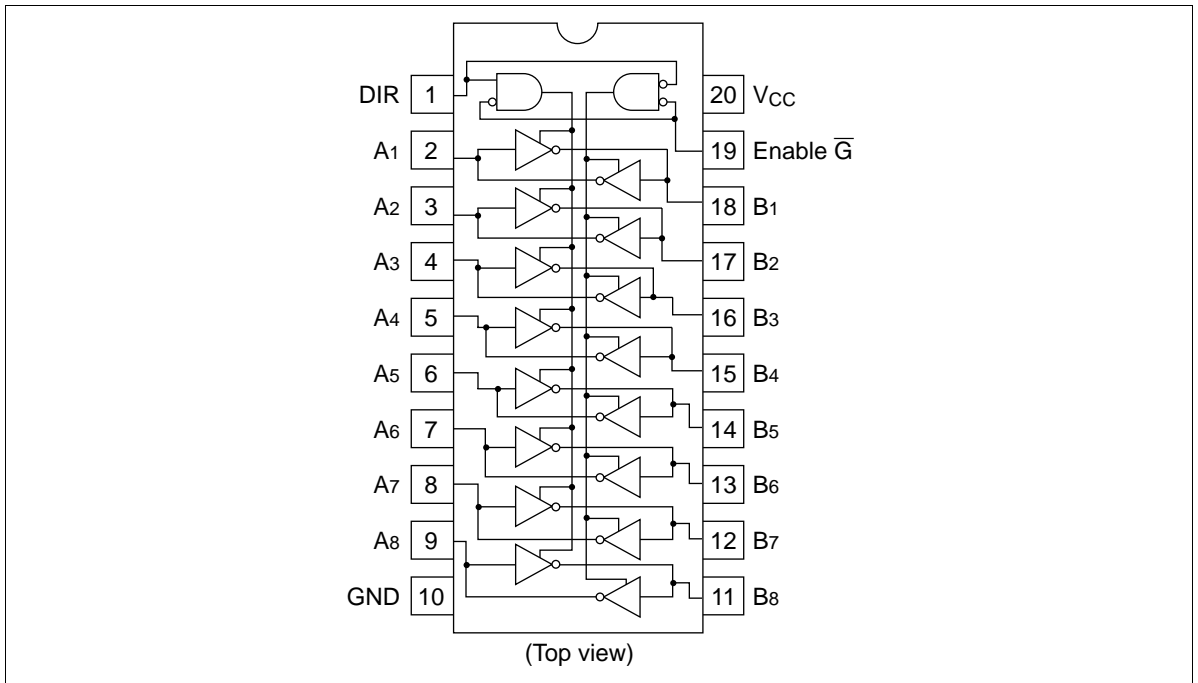
Function Table

Control Input		Operation	
\overline{G}	DIR	HD74HCT640	HD74HCT643
L	L	\overline{B} data to A bus	B data to A bus
L	H	\overline{A} data to B bus	\overline{A} data to B bus
H	X	Isolation	Isolation

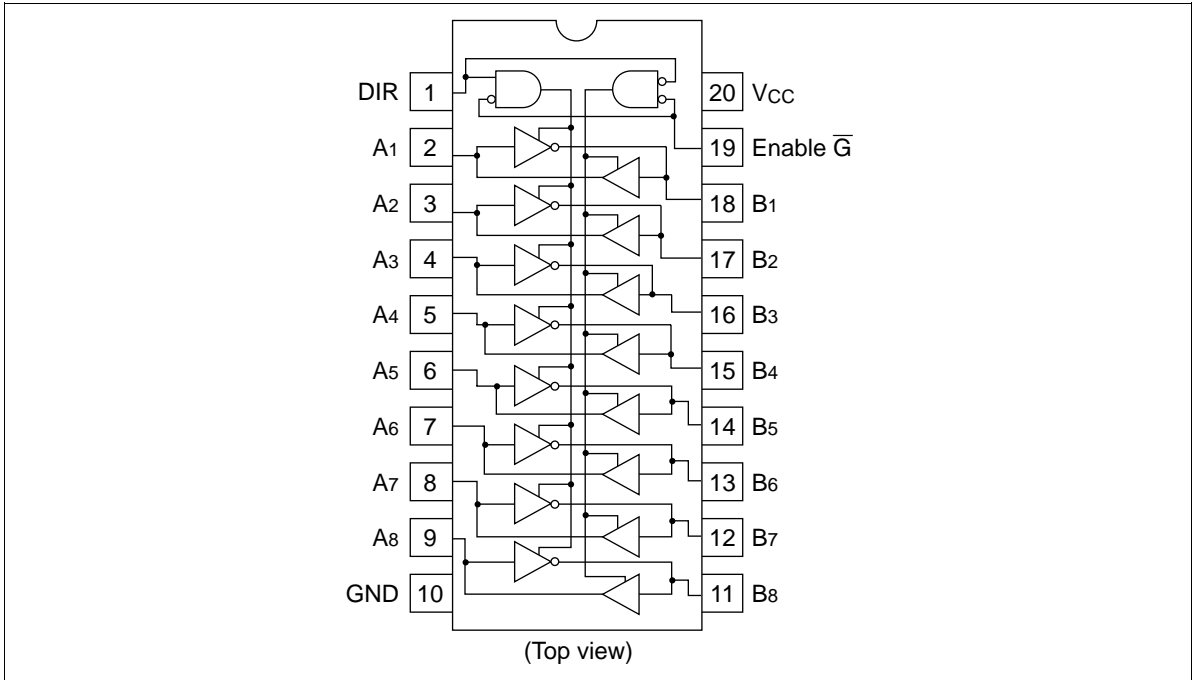
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Pin Arrangement

HD74HCT640

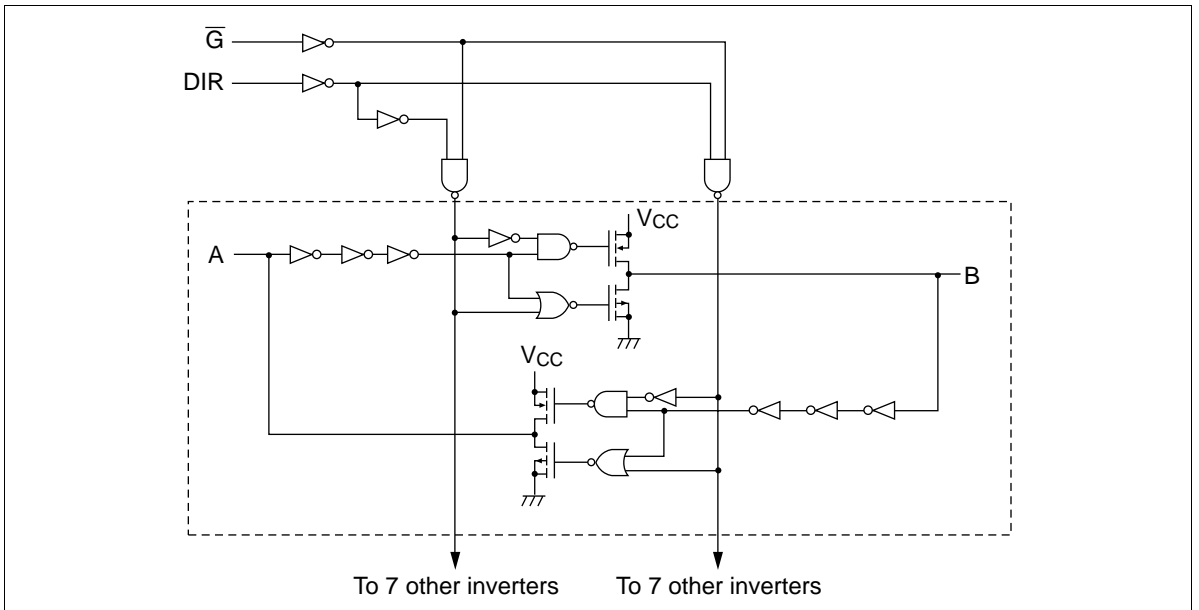


HD74HCT643



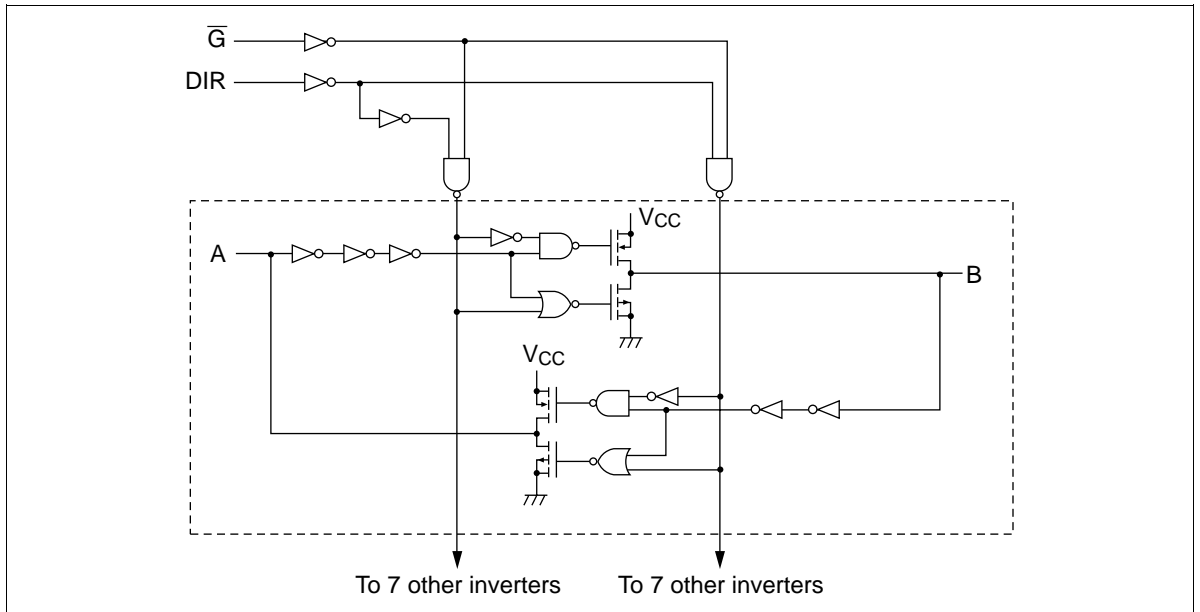
Block Diagram

HD74HCT640



HD74HCT640/HD74HCT643

HD74HCT643



Absolute Maximum Ratings

Item	Symbol	Rating	Unit
Supply voltage range	V_{CC}	-0.5 to +7.0	V
Input voltage	V_{IN}	-0.5 to $V_{CC} + 0.5$	V
Output voltage	V_{OUT}	-0.5 to $V_{CC} + 0.5$	V
DC current drain per pin	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 to +150	$^{\circ}C$

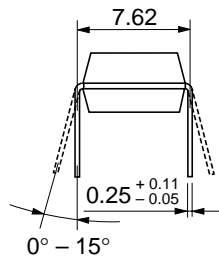
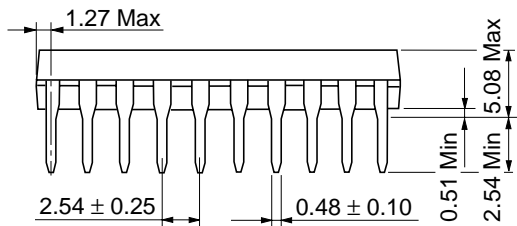
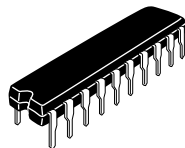
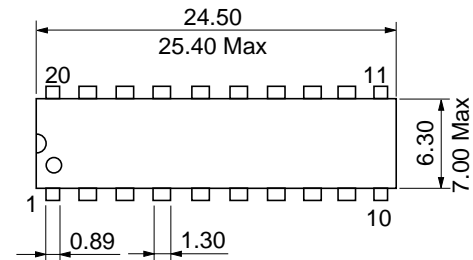
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DC Characteristics

Item	Symbol	Ta = 25°C		Ta = -40 to +85°C		Unit	Test Conditions		
		Min	Typ	Max	Min		Max	V _{CC} (V)	
Input voltage	V _{IH}	2.0	—	—	2.0	—	V	4.5 to 5.5	
	V _{IL}	—	—	0.8	—	0.8	V	4.5 to 5.5	
Output voltage	V _{OH}	4.4	—	—	4.4	—	V	4.5	Vin = V _{IH} or V _{IL} I _{OH} = -20 μA
		4.18	—	—	4.13	—		4.5	
	V _{OL}	—	—	0.1	—	0.1	V	4.5	Vin = V _{IH} or V _{IL} I _{OL} = 20 μA
		—	—	0.26	—	0.33		4.5	I _{OL} = 6 mA
Off-state output current	I _{OZ}	—	—	±0.5	—	±5.0	μA	5.5	Vin = V _{IH} or V _{IL} Vout = V _{CC} or GND
Input current	I _{in}	—	—	±0.1	—	±1.0	μA	5.5	Vin = V _{CC} or GND
Quiescent current	I _{CC}	—	—	4.0	—	40	μA	5.5	Vin = V _{CC} or GND, Iout = 0 μA

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

Item	Symbol	Ta = 25°C		Ta = -40 to +85°C		Unit	Test Conditions	
		Min	Typ	Max	Min		Max	V _{CC} (V)
Propagation delay time	t _{PLH}	—	13	18	—	23	ns	4.5
	t _{PHL}	—	16	18	—	23		4.5
Output enable time	t _{ZH}	—	16	46	—	58	ns	4.5
	t _{ZL}	—	16	46	—	58		4.5
Output disable time	t _{HZ}	—	17	43	—	54	ns	4.5
	t _{LZ}	—	21	43	—	54		4.5
Output rise/fall time	t _{TLH} t _{THL}	—	4	12	—	15	ns	4.5
Input capacitance	C _{in}	—	5	10	—	10	pF	—



Hitachi Code	DP-20N
JEDEC	—
EIAJ	Conforms
Weight (reference value)	1.26 g

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