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 µA max
- Low Quiescent Supply Current: I_{CC} (static) = 4 µA max (Ta = 25°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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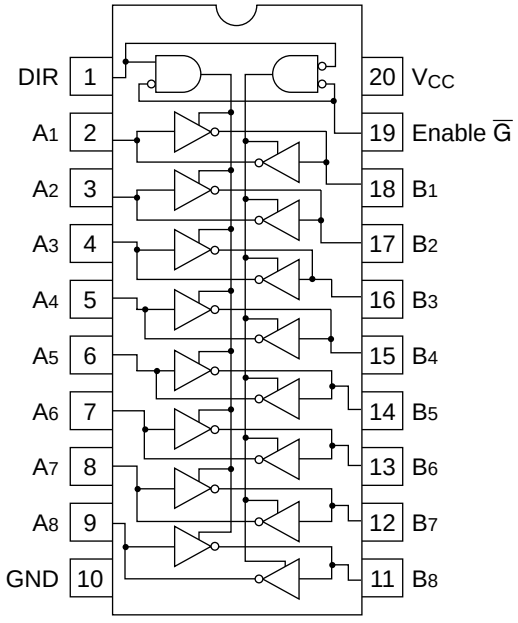
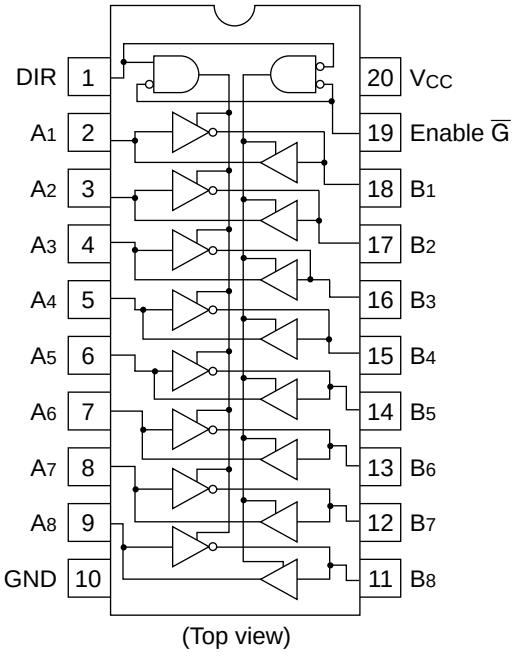
Pin Arrangement

HD74HCT640



(Top view)

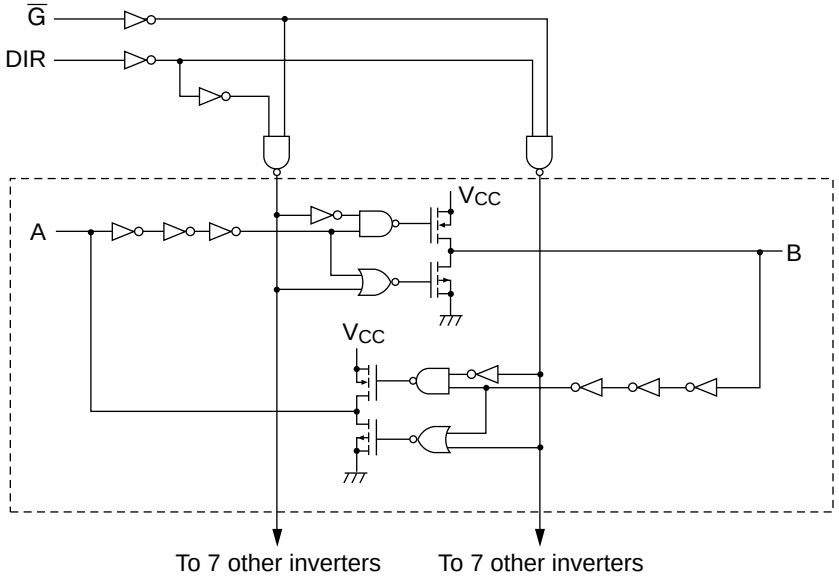
HD74HCT643



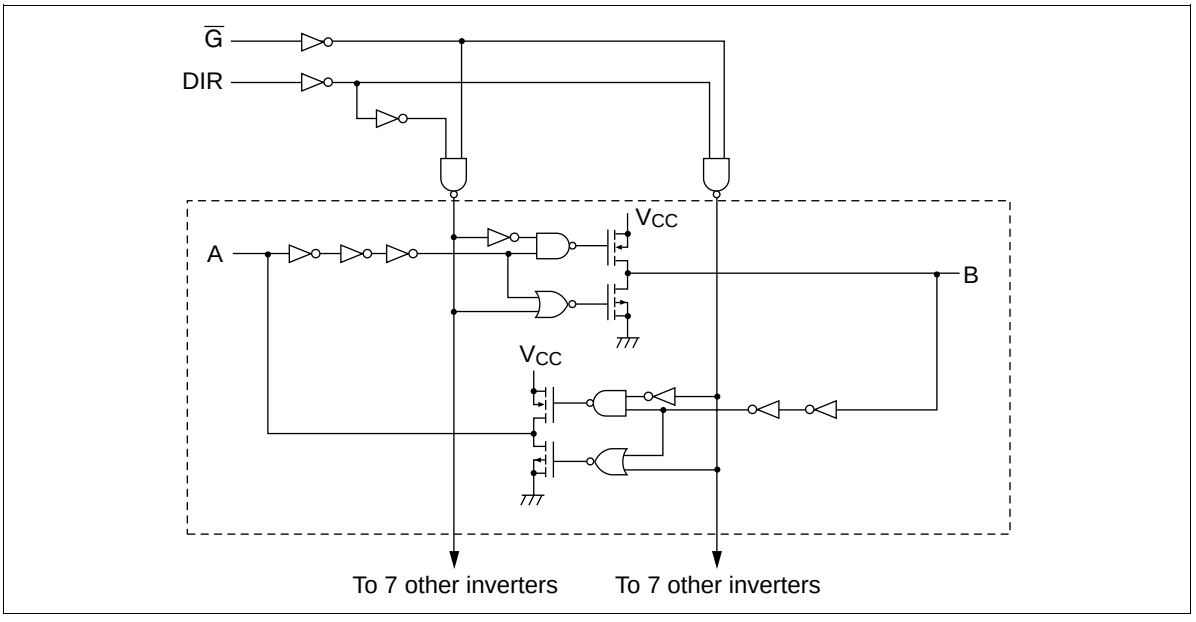
(Top view)

Block Diagram

HD74HCT640



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	Tstg	–65 to +150	°C

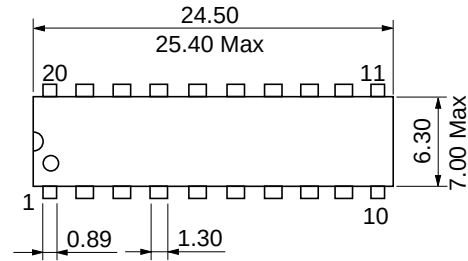
DC Characteristics

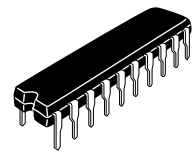
Item	Symbol	Ta = 25°C			Ta = –40 to +85°C		Unit	Test Conditions	
		Min	Typ	Max	Min	Max		V_{CC} (V)	
Input voltage	V_{IH}	2.0	—	—	2.0	—	V	4.5 to 5.5	
	V_{IL}	—	—	0.8	—	0.8	V	4.5 to 5.5	
Output voltage	V_{OH}	4.4	—	—	4.4	—	V	4.5	Vin = V_{IH} or V_{IL} I_{OH} = –20 µA
		4.18	—	—	4.13	—		4.5	I_{OH} = –6 mA
	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	Iin	—	—	±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	t_{PLH}	—	13	18	—	23	ns	4.5
time	t_{PHL}	—	16	18	—	23		4.5
Output enable	t_{ZH}	—	16	46	—	58	ns	4.5
time	t_{ZL}	—	16	46	—	58		4.5
Output disable	t_{HZ}	—	17	43	—	54	ns	4.5
time	t_{LZ}	—	21	43	—	54		4.5
Output rise/fall time	t_{TLH} t_{THL}	—	4	12	—	15	ns	4.5
Input capacitance	Cin	—	5	10	—	10	pF	—

Unit: mm





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

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