

HD74HC640/HD74HC643

Octal Bus Transceivers (with 3-state outputs)

HITACHI

Description

Each device has an active enable $\overline{G}$ and a direction control input, DIR. when DIR is high, data flows from the A inputs to the B outputs. When DIR is low, data flows from the B inputs to the A outputs. The HD74HC640 transfers inverted data from one bus to other and the HD74HC643 transfers inverted data from the A bus to the B bus and true data from the B bus to the A bus.

Features

- High Speed Operation: $t_{pd} = 12\text{ ns typ (}C_L = 50\text{ pF)}$
- High Output Current: Fanout of 15 LSTTL Loads
- Wide Operating Voltage: $V_{CC} = 2\text{ to }6\text{ V}$
- Low Input Current: $1\text{ }\mu\text{A max}$
- Low Quiescent Supply Current: $I_{CC}(\text{static}) = 4\text{ }\mu\text{A max (}T_a = 25^\circ\text{C)}$

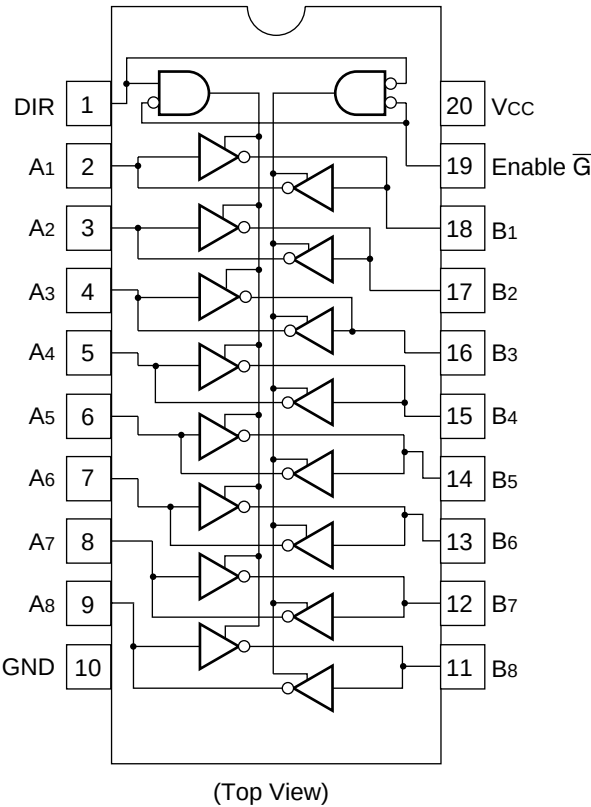
Function Table

Control Inputs		Operation	
$\overline{G}$	DIR	HD74HC640	HD74HC643
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

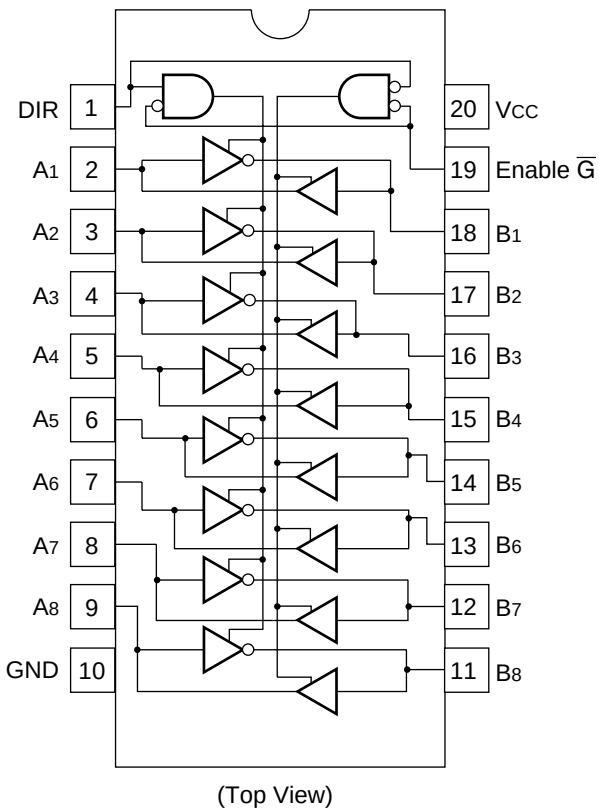
HD74HC640/HD74HC643

Pin Arrangement

HD74HC640



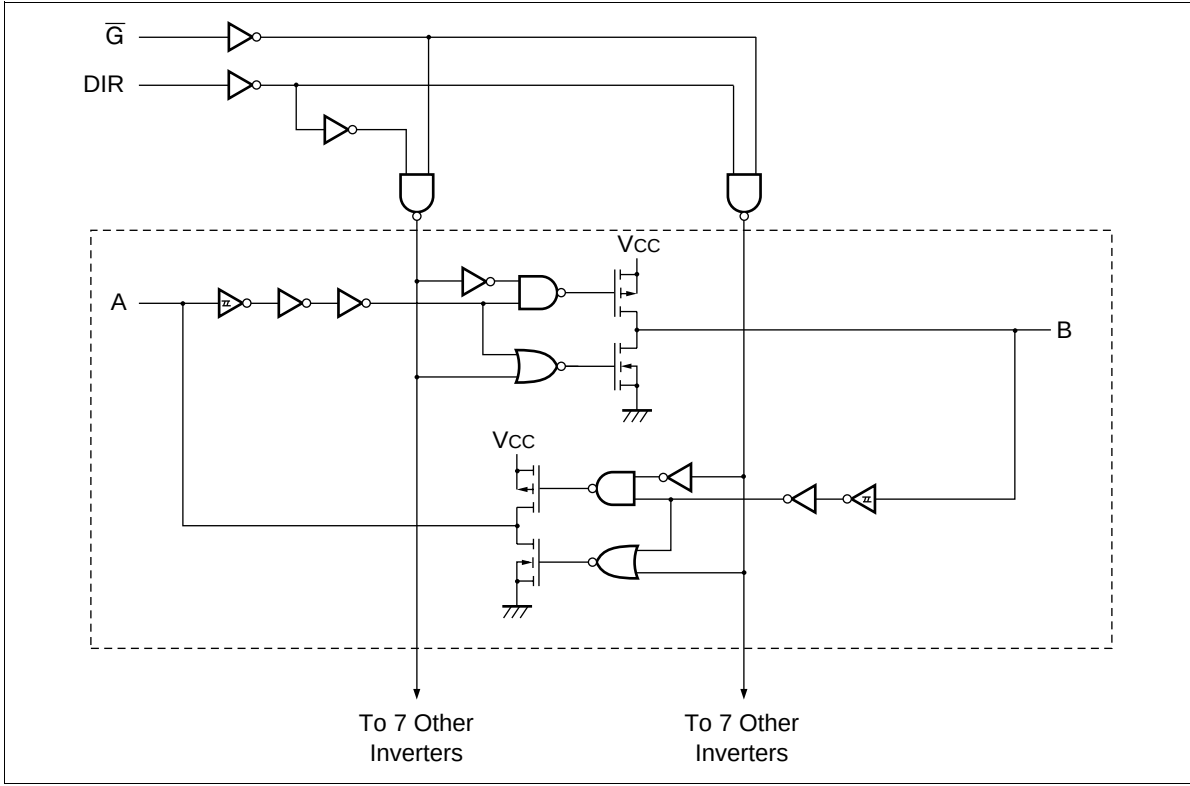
HD74HC643



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
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	Tstg	-65 to +150	$^{\circ}\text{C}$

HD74HC643

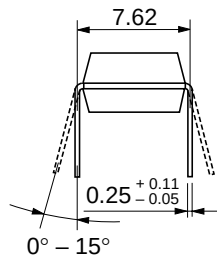
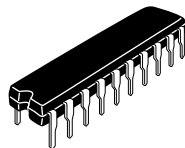
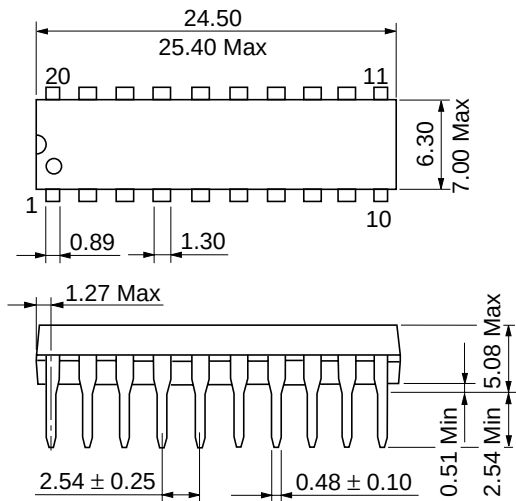


DC Characteristics

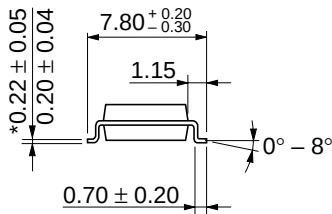
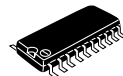
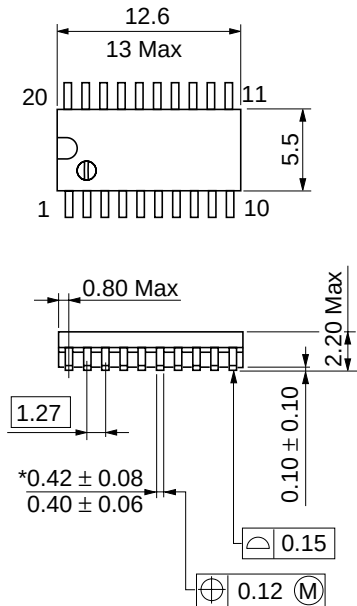
Item	Symbol	V _{CC} (V)	Ta = 25°C			Ta = -40 to +85°C		Unit	Test Conditions	
			Min	Typ	Max	Min	Max			
Input voltage	V _{IH}	2.0	1.5	—	—	1.5	—	V		
		4.5	3.15	—	—	3.15	—			
		6.0	4.2	—	—	4.2	—			
	V _{IL}	2.0	—	—	0.3	—	0.3	V		
		4.5	—	—	1.35	—	1.35			
		6.0	—	—	1.8	—	1.8			
Output voltage	V _{OH}	2.0	1.9	2.0	—	1.9	—	V	Vin = V _{IH} or V _{IL} I _{OH} = -20 µA	
		4.5	4.4	4.5	—	4.4	—			
		6.0	5.9	6.0	—	5.9	—			
		4.5	4.18	—	—	4.13	—			I _{OH} = -6 mA
		6.0	5.68	—	—	5.63	—			I _{OH} = -7.8 mA
	V _{OL}	2.0	—	0.0	0.1	—	0.1	V	Vin = V _{IH} or V _{IL} I _{OL} = 20 µA	
		4.5	—	0.0	0.1	—	0.1			
		6.0	—	0.0	0.1	—	0.1			
		4.5	—	—	0.26	—	0.33			I _{OL} = 6 mA
		6.0	—	—	0.26	—	0.33			I _{OL} = 7.8 mA
Off-state output current	I _{OZ}	6.0	—	—	±0.5	—	±5.0	µA	Vin = V _{IH} or V _{IL} , Vout = V _{CC} or GND	
Input current	I _{in}	6.0	—	—	±0.1	—	±1.0	µA	Vin = V _{CC} or GND	
Quiescent supply current	I _{CC}	6.0	—	—	4.0	—	40	µA	Vin = V _{CC} or GND, Iout = 0 µA	

AC Characteristics ($C_L = 50\text{ pF}$, Input $t_r = t_f = 6\text{ ns}$)

Item	Symbol	V_{CC} (V)	Ta = 25°C			Ta = -40 to +85°C		Unit	Test Conditions
			Min	Typ	Max	Min	Max		
Propagation delay time	t_{PLH}	2.0	—	—	90	—	115	ns	
	t_{PHL}	4.5	—	12	18	—	23		
		6.0	—	—	15	—	20		
Output enable time	t_{ZH}	2.0	—	—	230	—	290	ns	
	t_{ZL}	4.5	—	15	46	—	58		
		6.0	—	—	39	—	49		
Output disable time	t_{HZ}	2.0	—	—	215	—	270	ns	
	t_{LZ}	4.5	—	17	43	—	54		
		6.0	—	—	37	—	46		
Output rise/fall time	t_{TLH}	2.0	—	—	60	—	75	ns	
	t_{THL}	4.5	—	4	12	—	15		
		6.0	—	—	10	—	13		
Input capacitance	C_{in}	—	—	5	10	—	10	pF	



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



*Dimension including the plating thickness
Base material dimension

Hitachi Code	FP-20DA
JEDEC	—
EIAJ	Conforms
Weight (reference value)	0.31 g

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