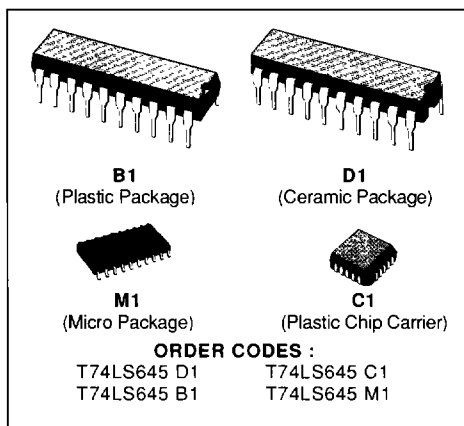


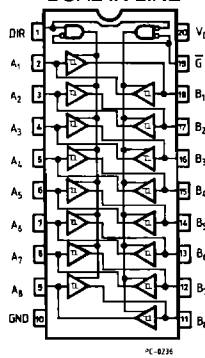
OCTAL BUS TRANSCEIVERS

DESCRIPTION

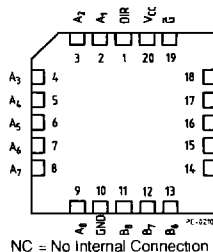
The T74LS645 is an octal bus transceiver designed for asynchronous two-way communication between data buses. Control function implementation reduces to a minimum external timing requirements. This circuit permits transmission of data from the A bus to B or from the B bus to A bus depending upon the logic level of the direction control (DIR) input. The device can be disabled by the Enable input (G) causing the buses to be effectively isolated.



PIN CONNECTION (top view)



CHIP CARRIER



TRUTH TABLE

CONTROL INPUTS		OPERATION
G	DIR	
L	L	B Data to A Bus
L	H	A Data to B Bus
H	X	Isolation

L = LOW Voltage Level
H = HIGH Voltage Level
X = Don't Care

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CC}	Supply Voltage	- 0.5 to 7	V
V_I	Input Voltage, Applied to Input	- 0.5 to 15	V
V_O	Output Voltage, Applied to Output	- 0.5 to 10	V
I_I	Input Current, into Inputs	- 30 to 5	mA
I_O	Output Current, into Outputs	50	mA

Stresses in excess of those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions in excess of those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

GUARANTEED OPERATING RANGE

Part Numbers	Supply Voltage			Temperature
	Min.	Typ.	Max.	
T74LS645XX	4.75 V	5.0 V	5.25 V	0 °C to + 70 °C

XX = package type.

DC CHARACTERISTICS OVER OPERATING TEMPERATURE RANGE

Symbol	Parameter	Limits			Test Condition (note 1)	Unit
		Min.	Typ. (*)	Max.		
V_{IH}	Input HIGH Voltage	2.0			Guaranteed Input HIGH Voltage for all Inputs	V
V_{IL}	Input LOW Voltage			0.6	Guaranteed Input LOW Voltage for all Inputs	V
V_{CD}	Input Clamp Diode Voltage		- 0.65	- 1.5	$V_{CC} = \text{MIN.}$, $I_{IN} = -18 \text{ mA}$	V
V_{OH}	Output HIGH Voltage	2.4	3.4		$V_{CC} = \text{MIN.}$, $I_{OH} = - 3.0 \text{ mA}$	V
		2.0			$V_{CC} = \text{MIN.}$, $I_{OH} = - 15 \text{ mA}$	V
V_{OL}	Output LOW Voltage		0.25	0.4	$I_{OL} = 12 \text{ mA}$	V
			0.35	0.5	$I_{OL} = 24 \text{ mA}$	$V_{CC} = \text{MIN}$ $V_{IN} = V_{IH}$ or V_{IL} per Truth Table
I_{OZH}	Output Off Current HIGH			20	$V_{CC} = \text{MAX.}$, $V_{OUT} = 2.7 \text{ V}$	μA
I_{OZL}	Output Off Current LOW			- 400	$V_{CC} = \text{MAX.}$, $V_{OUT} = 0.4 \text{ V}$	μA
I_{IH}	Input HIGH Current DIR or \bar{G} DIR or G A or B			20	$V_{CC} = \text{MAX.}$, $V_{IN} = 2.7 \text{ V}$	μA
				0.1	$V_{CC} = \text{MAX.}$, $V_{IN} = 7.0 \text{ V}$	mA
				0.1	$V_{CC} = \text{MAX.}$, $V_{IN} = 5.5 \text{ V}$	mA
I_{IL}	Input LOW Current			- 0.4	$V_{CC} = \text{MAX.}$, $V_{IN} = 0.4 \text{ V}$	mA
I_{OS}	Output Short Circuit Current (note 2)	- 40		- 225	$V_{CC} = \text{MAX.}$, $V_{OUT} = 0 \text{ V}$	mA
I_{CC}	Supply Current Total, Output HIGH Total, Output LOW Total at HIGH Z			70	$V_{CC} = \text{MAX}$	mA
				90		
				95		

Notes : 1. For conditions shown as MIN or MAX, use the appropriate value specified under guaranteed operating ranges.

2. Not more than one output should be shorted at a time.

(*) Typical values are at $V_{CC} = 5.0 \text{ V}$, $T_A = 25 \text{ }^\circ\text{C}$.

AC CHARACTERISTICS: $T_A = 25\text{ }^\circ\text{C}$

Symbol	Parameter	Limits			Test Conditions	Units
		Min.	Typ.	Max.		
t_{PLH} t_{PHL}	Propagation Delay, A to B		8.0 11	15 15	$C_L = 45\text{ pF}$ $R_L = 667\text{ }\Omega$	ns
t_{PLH} t_{PHL}	Propagation Delay, B to A		8.0 11	15 15		ns
t_{PZL} t_{PZH}	Output Enable Time, G DIR to A		31 26	40 40		ns
t_{PZL} t_{PZH}	Output Enable Time, G DIR to B		31 26	40 40		ns
t_{PLZ} t_{PHZ}	Output Disable Time, G DIR to A		15 15	25 25	$C_L = 5.0\text{ pF}$	ns
t_{PLZ} t_{PHZ}	Output Disable Time, G DIR to B		15 15	25 25		ns